**Below are the general requirements for students entering the Master’s Program prior to January 1, 2017.**

**Master of Arts Degree**

**General Requirements**

In addition to University regulations, the requirements for the Master of Arts degree are as follows.

1. Completion of at least eight mathematics courses (24 credit hours). A minimum of five courses must be taken at the 2000 or 3000 level and completed at grade B or better. The remaining ones may be departmental courses at the 1000 level. Courses given in closely related disciplines such as computer science or statistics may be substituted for the remaining courses if approved by the Graduate Committee.
2. Achievement of an overall course average of B or better
3. The passing of a comprehensive examination

There are no specific required courses. Thus, a program can be arranged to suit each student's interests and goals. A well-prepared student studying full-time can complete the degree in one year. Most, however, take two. Pursuit of the master of arts degree beyond two years by full-time students will be allowed only with permission of the Graduate Committee. Part-time candidates may take up to the University-allowed maximum (four calendar years) to complete all requirements.

**Comprehensive Examination**

The comprehensive examination for the Master of Arts degree is based on the content of three 2000-level mathematics courses. They are chosen by the student in consultation with his or her advisor, and the topics, along with the names of three examiners, must be submitted in writing to the Graduate Committee for approval. After approval has been obtained, the examination committee, chaired by the student's advisor, will give the student a list of basic questions in the chosen areas. At an agreed-upon time, the committee will conduct an oral examination of the student. Examination questions will be drawn from the list of basic questions. The committee also will be free to ask additional questions in the areas encompassed by the chosen subjects. If the student is judged to have passed the oral part of the exam, the committee at its option will request the student to prepare a short paper on a subject in one of the examination areas. This must be submitted within two weeks, and the committee will then reconvene to determine whether the student has passed or failed.

A student who fails the examination is allowed a re-examination. The student is not bound by the subjects declared for the first exam, but any changes must be submitted in writing to the Graduate Committee. He or she also may petition for a new group of examiners.

A third examination will be allowed only in extraordinary circumstances and must be approved by the Graduate Committee.

The oral examination is open to interested faculty. However, they cannot act as examiners.

**Master of Science Degree**

**General Requirements**

In addition to the University regulations, the requirements for the Master of Science are the following.

1. The completion of at least eight courses (24 credit hours). A minimum of five courses must be taken at the 2000 or 3000 level and completed at grade B or better. The eight courses must be selected in consultation with a faculty advisor with a view to the writing of a dissertation.
2. Achievement of an overall course grade average of B or better
3. In addition to the 24 credits in item 1, completion and defense of a dissertation in mathematics

As with the Master of Arts degree, there are no specified required courses. Each student plans a program in conjunction with a faculty advisor. The significant difference between the Master of Arts and the Master of Science is the thesis requirement. Although it does not have to be as extensive or as original as a doctoral dissertation, it should clearly demonstrate the student's mastery of the chosen topic.

A well-prepared student carrying a full schedule should be capable of completing the degree within two years. During that term, the student will be expected to register in at least one course. The remaining credits needed to maintain full-time status can be obtained through research. Pursuit of the Master of Science degree by full-time students for longer than two years will be permitted only with the approval of the Graduate Committee. Part-time students are allowed as long as four calendar years from date of entry to complete all requirements.

**Thesis Defense**

The thesis defense for the Master of Science degree is an oral examination based on the content of the student's thesis. The examination is conducted by a committee consisting of three faculty members, one of whom is the student's advisor. Subject to the approval of the Graduate Committee, the committee is chosen according to the recommendations of the advisor, who then serves as chairperson. It is preferable that the committee be formed early in the student's career so that its members can guide the student in his or her work.

**Thesis Format**

The proper format for a master's thesis at the University of Pittsburgh is described in detail in the [Style and Form Manual](http://www.pitt.edu/~graduate/style.html).

**Master of Arts and Master of Science Degrees in Applied Mathematics**

The Department of Mathematics offers programs leading to the Master of Arts and the Master of Science (thesis) degrees with a major in applied mathematics. Successful completion of the program will enhance the student's potential for a position in industry or government or for additional study. The program is flexible in order to meet the needs of students whose specializations may vary widely.

In addition to the University requirements for admission to graduate school, a student should have completed courses in linear algebra, differential equations, and advanced calculus. Some computer experience is helpful. However, an undergraduate major in mathematics or applied mathematics is not necessary, and students with majors in other disciplines and who have sufficient background are a central part of the program. Moreover, well-motivated students lacking the prerequisites may be admitted with the provision that deficiencies be removed by course work in appropriate areas.

Because various program emphases are possible, students must consult their advisors concerning the alternatives. In addition to the requirements of the University, the following also apply.

1. For the Master of Arts degree, 30 credits of course work are required. A minimum of seven departmental courses must be taken, and at least five of the seven must be at the 2000 level or above.
2. The Master of Science degree requires the completion of 24 credits of course work and the completion of a thesis in mathematics (six credits). A minimum of five courses must be departmental, at least four of which must be at the 2000 level or above.
3. For either degree, courses must be distributed over the areas of numerical analysis, differential equations, and analysis. In addition, a minimum of two courses at the 2000 level or a minimum of three courses, of which one is at the 2000 level, must be taken outside the department and approved by the Graduate Committee.
4. For the Master of Arts degree, a final oral examination must be passed.  The examination is conducted by a committee consisting of three faculty members, one of whom is the student's advisor. This committee must also contain one member from outside the department who was an instructor in one of the outside courses described in item 3.  Subject to the approval of the Graduate Committee, the committee is chosen according to the recommendations of the advisor, who then serves as chairperson. The process of the examination is the same as described above in the section on Master of Arts Degree.
5. For the Master of Science degree, a thesis defense must be completed.  The thesis defense is an oral examination based on the content of the student's thesis. The examination is conducted by a committee consisting of three faculty members, one of whom is the student's advisor. This committee must also contain one member from outside the department who was an instructor in one of the outside courses described in item 3.  Subject to the approval of the Graduate Committee, the committee is chosen according to the recommendations of the advisor, who then serves as chairperson. It is preferable that the committee be formed early in the student's career so that its members can guide the student in his or her work.

**Dual Master Degree Programs**

Some dual degree programs leading to a dual master's degrees in mathematics and an allied field (e.g., computer science, engineering) exist in the department and can be arranged upon request.