

# Program Policy for the MS Degree in Computer and Information Sciences

The Master of Science Degree in Computer and Information Sciences (the MS) program is designed for students who are interested in obtaining a graduate-level understanding of computer and information sciences.

The non-thesis track is intended for students who view the MS as a terminal professional degree. The thesis track is intended for students who are also interested in research in computer and information sciences and may consider pursuing a PhD.

Students begin the program following the non-thesis track. Admission does not guarantee that a student can follow the thesis track. Entry to the thesis track occurs once the student's advisory committee is approved by the Department.

Students who are confident in their interest in research in computer and information sciences are encouraged to apply to the PhD degree program.

Students who believe that they have already satisfied a degree requirement (e.g., by taking prior graduate-level coursework), may submit a degree requirements modification request.

## Admission Requirements

Admission to the program is competitive. Those who meet stated minimum requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer other appropriate strengths.

Minimum requirements:

- the equivalent of a bachelor's degree at the University of Delaware. A minimum grade average of 3.2 in the major field of study and an overall cumulative index of 3.0 is required.
- scholarly competence in mathematics and computer programming. Applicants are expected to know the material covered by at least one undergraduate course in each of the following topics: structured high-level language programming; data structures; computer architecture; operating systems; and analysis of algorithms. Additionally, applicants must have completed the equivalent of at least four undergraduate courses in the following topics: calculus; discrete mathematics; probability and statistics; mathematical logic; or comparable formal subjects, such as theory of computation.
- minimum GRE scores of 153 for the verbal section, 155 for the quantitative section, and 4.0 for the analytical writing section. The GRE subject test is not required.
- a satisfactory level of proficiency in the English language. International applicants must demonstrate a satisfactory level of proficiency in the English language. For international

applicants, the University of Delaware requires an official TOEFL score of at least 79 on the Internet-based test. A TOEFL score of at least 100 is required to be considered for a teaching assistantship.

- three (3) letters of recommendation from professors (preferably), employers, or others that assess the applicant's potential for success in the program.

## Application Process and Deadlines

Applicants should submit all required materials using the University's [graduate application website](#).

For admission for Fall semesters, all application materials must be received by July 1.

For admission for Spring semesters, all application materials must be received by December 1.

## Degree Requirements

### Non-Thesis Track

#### Coursework Requirements

The coursework requirement comprises three components. The breadth component ensures that students have a broad view of computer and information sciences. The elective component allows students to specialize in an area that is related to their career goals. The seminar component prepares students to successfully complete the MS and exposes them to broader issues such as professional and ethical responsibilities and the impacts of computer and information sciences on society.

#### Breadth Component

Students must complete 12 credits of breadth classes, at least 3 credits from each of the following areas:

- Theory, Mathematical, and Formal Reasoning
- System Design and Implementation
- ML/AI, Interacting with Data, and Statistical Applications
- Human-facing

Breadth courses must be taken using the standard grading option (i.e., letter grades).

A breadth course may satisfy multiple areas. However, the same breadth course may not be used to satisfy more than one area.

## Elective Component

Students must complete 18 credits of elective courses.

Elective courses must be taken using the standard grading option (i.e., letter grades).

Students are encouraged to use graduate-level courses in areas outside of computer and information sciences to satisfy this requirement. Students who wish to do so must submit a course substitution request.

## Seminar Component

Students must register for and satisfactorily participate in the Departmental seminar (CISC890) each semester.

# Thesis Track

## Coursework Requirements

The coursework requirement comprises four components. The breadth component ensures that students have a broad view of computer and information sciences. The elective component allows students to specialize in an area that is related to their career goals. The seminar component prepares students to successfully complete the MS and exposes them to broader issues such as professional and ethical responsibilities and the impacts of computer and information sciences on society. The thesis component ensures that students have time to devote to their research.

## Breadth Component

Students must complete 12 credits of breadth classes, at least 3 credits from each of the following areas:

- Theory, Mathematical, and Formal Reasoning
- System Design and Implementation
- ML/AI, Interacting with Data, and Statistical Applications
- Human-facing

Breadth courses must be taken using the standard grading option (i.e., letter grades).

A breadth course may satisfy multiple areas. However, the same breadth course may not be used to satisfy more than one area.

## Elective Component

Students must complete 12 credits of elective courses.

Elective courses must be taken using the standard grading option (i.e., letter grades).

Students are encouraged to use graduate-level courses in areas outside of computer and information sciences to satisfy this requirement. Students who wish to do so must submit a course substitution request.

## Seminar Component

Students must register for and satisfactorily participate in the Departmental seminar (CISC890) each semester.

## Thesis Component

Students must complete 6 credits of Master's Thesis (CISC869).

## Research Requirements

The research requirements comprise one component. The thesis examination ensures that students have the ability to perform research in a chosen area of computer and information sciences.

## Thesis Examination

Students must pass the thesis examination.

The thesis examination ensures that students have the ability to perform research in a chosen area of computer and information sciences.

Each student must establish an advisory committee. The advisory committee must be approved by the Department.

Each student must author a thesis that describes the results of original research in a chosen area of computer and information sciences.

Each student's advisory committee must assess the student's ability to conduct and report the results of basic research in both oral and written form. The assessment must include a public, oral defense of the thesis.

The outcome of the thesis examination is decided by the student's advisory committee. A majority vote in favor is needed to pass.

# Educational Goals

After completing the MS, graduates will be able to:

- summarize the professional and ethical responsibilities related to computer and information sciences as measured by the successful completion of Responsible Conduct of Research training and the seminar component of the coursework requirements
- identify, analyze, and solve a broad range of computer and information sciences problems using appropriate tools, techniques, approaches, and algorithms as measured by the successful completion of the breadth component of the coursework requirements
- demonstrate a deeper understanding of a chosen area of computer and information sciences as measured by successful completion of the elective component of the coursework requirements
- assess the impacts of computer and information sciences on society and a chosen discipline as measured by the successful completion of the seminar component of the coursework requirements
- optionally, if they enter the thesis track, plan, conduct, present, and defend a research project as measured by the successful completion of the thesis examination

## Financial Aid

Entering and continuing students are eligible for several types of financial aid. However, the Department prioritizes supporting PhD students; only occasionally are exceptional MS students offered financial aid.

## University Funding

Students enrolled in the program are eligible for [various assistantships, fellowships, and scholarships offered by the University](#).

## Teaching Assistantships

The Department offers teaching assistantships to qualified students on a competitive basis. Teaching assistantships cover tuition and provide a separate stipend.

Students who are awarded a teaching assistantship are expected to perform teaching and other instructional activities (e.g., grading, holding office hours, etc.) for up to 20 hours per week.

Students who apply to the program by the financial aid-deadline are automatically considered for a teaching assistantship; no separate application is necessary. Continuing students may apply for a teaching assistantship by contacting the Academic Coordinator..

## Research Assistantships

Departmental faculty offer research assistantships to qualified students on a competitive basis. Research assistantships cover tuition and provide a separate stipend.

Students who are awarded a research assistantship are expected to spend 20 hours per week on their assigned duties.

To apply for a research assistantship, students should contact departmental faculty directly.

## Departmental Operations

The following subsections describe the processes and procedures that Students (the Student) in the Department of Computer and Information Sciences (the Department) at the University of Delaware (the University) should follow. The keywords **MUST**, **MUST NOT**, **SHOULD**, **SHOULD NOT** and **MAY** should be interpreted according to [RFC2119](#).

## Degree Requirements Modification Request Process

To request a modification to their degree requirements, the Student **MUST** contact the Graduate Education Committee.

Degree requirements modification requests **SHOULD** be made as soon as possible after the Student matriculates.

Degree requirements modifications requests based on prior graduate-level coursework **MUST** include a copy of the Student's transcript that includes the name, number of credits, and grade received for the prior coursework. Additional information such as syllabi, assignments, examinations, etc. may be necessary.

The Graduate Education Committee **MUST** update the Student's degree audit to indicate any approved modifications.

## Course Substitution Request Process

To request a course substitution, the Student **MUST** contact the Graduate Education Committee.

Course substitution requests **MUST** include (1) a copy of the Graduate Catalog entry for the course the Student is requesting to take and (2) a brief explanation of how the course relates to the Student's dissertation research or career goals.

Course substitution requests **MUST** be made prior to the Student enrolling in the course.

The Graduate Education Committee MUST update the Student's degree audit to indicate any approved substitutions.

## Thesis Examination Process

The purpose of the Thesis Examination is to ensure that the Student has the ability to perform basic research in a chosen area of computer and information sciences.

The Student MUST undertake all of the following steps with the help and guidance of their Advisory Committee.

### Step 1: Establish the Area

The Student MUST determine the area of the research (the Area). The [ACM Computing Classification System](#) or the [Computer Science Ontology](#) may be of use for this task.

### Step 2: Identify the Chairperson

The Student MUST identify the Chairperson for the Thesis Examination. Multiple faculty MAY, jointly, fill the role of Chairperson.

The Chairperson:

- MUST be a tenure-track faculty member of the University with greater than 5% appointment in the Department
- MUST have an established track record of publication in the Area

### Step 3: Define the Project

The Student MUST collaborate with the Chairperson to define the Thesis Examination Project (the Project).

The Project:

- MUST be approved by the Chairperson
- MUST include a thorough literature search and a summary of the relevant literature in the Area
- MUST make an original contribution
- SHOULD have a reasonable expectation of leading to a publication in an appropriate venue

### Step 4: Establish the Committee

The Student MUST consult with the Chairperson to establish the Thesis Examination Committee.

The Thesis Examination Committee MUST comprise at least two Committee Members.

The Chairperson MUST be a member of the Thesis Examination .

The Thesis Examination Committee MUST include a Secondary Member. The Secondary Member:

- MUST be a full-time faculty member of the University with greater than 5% appointment in the Department
- MUST NOT have an established track record of publication in the Area

In addition to the Chairperson and the Secondary Member, the Thesis Examination Committee MAY include Additional Members.

The Thesis Examination Committee MUST be approved by the Department. The Student MUST request Departmental approval of the Thesis Examination Committee by contacting the Graduate Coordinator..

## Step 5: Author the Thesis

The Student MUST author a thesis (the Thesis). The Student decides the format and content of the Thesis, but it:

- MUST describe the Project and its results
- MUST adhere to the expectations established by the Area's research community, as communicated by the Chairperson
- MUST be written in English and in a scholarly and competent manner

## Step 6: Assessment

The Thesis Examination Committee MUST assess the Student's ability to conduct and report the results of basic research in both oral and written form. The form of the assessment is decided by the Thesis Examination Committee but it MUST include a public, oral defense of the Thesis, conducted in English.

The Student decides the time and date of the oral defense but it:

- MUST be acceptable to all members of the Thesis Examination Committee
- SHOULD be during business hours (9am to 5pm EST, Monday through Friday)
- SHOULD take approximately one hour

The Student MUST provide the Thesis Examination Committee with a copy of the Thesis at least two weeks prior to the date of the oral defense. The Student MUST provide the Graduate Coordinator with a copy of the Thesis and the time, date, and location of the oral defense at least two weeks before it occurs. The Graduate Coordinator will announce the date, time, and location of the oral defense to the Department.



## Step 7: Outcome of the Examination

The outcome of the Thesis Examination is decided by the Thesis Examination Committee. The Thesis Examination Committee SHOULD strive to achieve consensus concerning the outcome. In case of dissenting votes, a majority vote in favor is needed to pass the Thesis Examination. If the outcome is Pass, the Chairperson of the Advisory Committee MUST update the Student's degree audit to indicate that the Dissertation Examination requirement is satisfied.

## Graduate Degree Application Process

To apply for the MS degree, the Student MUST email a completed copy of the [Advanced Degree Application](#) (AAD) to the Graduate Coordinator.

The Graduate Coordinator will:

1. review the submitted AAD
2. verify that the Student has satisfied or, by the end of the current semester, will satisfy the Degree Requirements
3. complete Section 6 of the AAD by obtaining the necessary signatures and approvals
4. provide a copy of the completed AAD to the Student and the Graduate College

## Instructions for Completing the AAD

The Student MUST read the 8 numbered items under the PLEASE NOTE heading on the first page.

In Section 1:

- The Student MUST enter "Computer Science" under MAJOR and MUST leave CONCENTRATION blank.
- The Student MUST enter the sum of the credits of the courses listed in Section 5 under TOTAL CREDITS REQUIRED FOR THE DEGREE.

In Section 3, the Student MUST check only the box for MS Master of Science.

In Section 4:

- If they are on the non-thesis track, the Student MUST check only the box for Non-Thesis Option
- If they are on the thesis track, the Student MUST check only the box for Master's Thesis

In Section 5:

- The Student MUST list only courses that appear on their transcript
- The Student MUST list only courses that satisfy a degree requirement (i.e., the courses that are listed on the corresponding coursework checkout sheet). Enter the grade for the course under GR and the number of credits under CR. Courses in which the Student is currently enrolled MUST be listed; leave the grade blank.

In Section 6:

- If they are on the non-thesis track, the Student **MUST** leave all signatures blank.
- If they are on the thesis track, the Student **MUST** have the Chairperson of their advisory committee sign as advisor.