

# Requirements for the Master of Science (MS) Degree in Computer Science: A Handbook

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## 1 Introduction

**1.1** This document describes requirements and standards defined by Kansas State University and by the Department of Computer Science for the degree of Master of Science in Computer Science. All students are expected to meet these standards. If any exceptions to the requirements are warranted, the student may petition their Supervisory Committee and the Graduate Studies Committee, who must approve and support those exceptions by signing a written statement that defines alternate requirements.

**1.2** Other University requirements are described in the “Graduate Handbook” which is available on the Graduate School web page.<sup>1</sup>

## 2 Admission

**2.1** A strong background in computer science is normally required for admission. Evidence of this background should include a Bachelor’s degree in either computer science or a closely related field. Exceptional candidates with degrees in other areas will also be considered. The undergraduate grade point average should be at least 3.0, although a 3.5 GPA is recommended.

**2.2** Applicants should have taken the Graduate Record Exam (GRE) and received minimum scores of 146 Verbal, 151 Quantitative, 3.0 Analytical Writing; recommended scores are at least 150 Verbal and 160 Quantitative.

**2.3** International students who received their degree(s) abroad must take the Test of English as a Foreign Language (TOEFL) and achieve a score of at least 79, or the International English Testing System (IELTS) and achieve a score of at least 6.5. This requirement may be waived in certain cases, in particular for applicants from English-speaking countries such as the Philippines, Canada (except Quebec), and Britain.

**2.4** All qualifications taken as a whole must provide evidence of a potential to conduct scholarly research. Besides the qualifications listed above, additional qualifications may include the quantity and quality of prior training, published research, etc.

## 3 General Requirements

**3.1** The MS degree requirements include 30 credit hours of graduate-level credit. International students may have attendance requirements to maintain their immigration status.

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<sup>1</sup><https://www.ksu.edu/grad/student-success/graduate-handbook/>

**3.2** Students must maintain a grade point average of at least 3.0 in all coursework.

**3.3** Students must make regular progress toward completion of the MS degree.

**3.4** If a student is employed by the Department of Computer Science, they must enroll for at least 6 hours of graduate-level credit each Fall and Spring term of employment. International students must, if they hold a GTA position, have a score of 22 or better on the Speak section of the TOEFL, or 7 or better on the Speak section of the IELTS.

**3.5** MS students are expected to participate in the professional activities of the Department of Computer Science. They should attend seminars and research group presentations offered by the department and by the professional societies within the department.

## **4 Specific requirements for the MS Degree**

**4.1** Upon admission to the MS program, the student will be assigned an academic advisor who will remain their advisor until the student selects a research advisor.

**4.2** By the end of the first year of MS studies, the student should select and be accepted by a research advisor who must be a member of the Graduate Faculty in the Department of Computer Science. That research advisor will be referred to as the student's "Major Professor".

Because the Major Professor will organize and direct all research, students should choose him/her carefully. Faculty members are not obligated to accept every student who asks them to be their Major Professor. Also, a faculty member may impose further requirements before agreeing to serve as the Major Professor.

**4.3** In consultation with the Major Professor, students must compose a Supervisory Committee. The Major Professor is the Chair of the Supervisory Committee, which must include at least two additional members from the Graduate Faculty in the Department of Computer Science at Kansas State University.

**4.4** Students should consult regularly with their Major Professor.

### **4.5 The Program of Study**

**4.5.1** The student must meet with the members of their Supervisory Committee and formulate a Program of Study which must be filed with the Graduate School within one year of starting the program. The MS Program of Study form is found on the Graduate School web page.

**4.5.2** The Program of Study contains the following information:

1. Name of the Major Professor
2. Names of all members of the Supervisory Committee
3. Proposed title of the report or thesis
4. List of graduate credits taken and to be taken (totaling at least 30 hours). These must include the following:
  - (a) Graduate Courses taken at other universities which have been transferred. All transfer credit is subject to the approval of the Graduate Studies Committee, the student's Supervisory Committee, and the Graduate School. Up to 10 credit hours of other graduate credit may be transferred.

- (b) Hours taken at Kansas State University towards the MS degree;
- (c) Hours to be taken at Kansas State University towards the MS degree;
- (d) Any additional requirements imposed by the student's Supervisory Committee (e.g., English 516, "Written Communication for the Sciences", is sometimes required for additional writing experience).

**4.5.3** Students should *not* enroll in CIS 899 (MS Research) for a thesis or CIS 897 (Seminar in Computer Science) / CIS 898 (Master's Report in Computer Science) for a report, until a Program of Study has been approved by the Graduate School.

## 4.6 MS Breadth Requirements

**4.6.1** The Breadth Requirement requires demonstrating proficiency in six courses from different areas, as described below. *NOTE: Although the same course may appear in different areas in the lists below, no one course may be used to satisfy the requirement for more than a single area.*

- One course from the following list, with a deep emphasis on Implementation: CIS 641, CIS 690, CIS 706, CIS 722, CIS 736, CIS 801
- One course from the following list, with a deep emphasis on Languages: CIS 705, CIS 706, CIS 771, CIS 801, CIS 806
- One course from the following list, with a deep emphasis on Systems: CIS 720, CIS 721, CIS 722, CIS 725, CIS 726, CIS 750, CIS 751, CIS 755
- One course from the following list, with a deep emphasis on Applied CS: CIS 655, CIS 730, CIS 740, CIS 744, CIS 761
- One course from the following list, with a deep emphasis on Foundations: CIS 770, CIS 775
- One course at the 800-level for Specialization in an area.

**4.6.2** The student must receive a grade of B (3.0) or better in each course used to satisfy the Breadth Requirement.

**4.6.3** Courses taken at KSU as part of B.S. or approved courses from institutions with joint-PhD programs with the CS Department at KSU can be used to satisfy the breadth requirement.

**4.6.4** In extenuating situations, outside experience or courses transferred from other institutions can be proposed to satisfy Breadth Requirements if approved by the Graduate Studies Committee.

| Area           | Courses                                           |
|----------------|---------------------------------------------------|
| Implementation | CIS 641, 690, 706, 722, 736, 801                  |
| Languages      | CIS 705, 706, 771, 801, 806                       |
| Systems        | CIS 720, 721, 722, 725, 726, 750, 751, 755        |
| Applied CS     | CIS 655, 730, 740, 744, 761                       |
| Foundations    | CIS 770, 775                                      |
| Specialization | Any 800-level except CIS 897, CIS 898, or CIS 899 |

Table 1: Breadth Requirements, Areas, and Courses for MS Degree.

## 4.7 MS Thesis Option and Report Option

**4.7.1** The student must work closely with their Major Professor on research and must write a report (3 credit hours) or thesis (6 credit hours).

**4.7.2** A [thesis](#) should contain substantial original research, e.g., sufficient for one publishable paper.

**4.7.3** A [report](#) is usually non-original research work such as implementation of others' original research, or a systematization of knowledge<sup>2</sup> (SoK) by doing literature review.

**4.7.4** For an MS thesis, the student must enroll in 6 credit hours of CIS 899.

For an MS report, the student must enroll in 1 credit hour of CIS 897 and in 2 credit hours of CIS 898.

**4.7.5** The MS candidate must successfully defend their thesis or report, subject to the following conditions:

1. The candidate must schedule the oral presentation and defense (also called the Final Examination), by submitting an "Approval to Schedule Final Examination" form to the Graduate School, after having consulted with each member of the Supervisory Committee and reached agreement that the candidate is ready to defend, and on a time for the defense (which must take place while classes are in session).
2. The candidate must distribute a copy of the thesis or report to the Supervisory Committee at least ten working days prior to the defense.
3. The candidate must reserve a room for the Final Examination.
4. The candidate must notify the Department of the time and place of the defense, along with the title and abstract, to arrange for a public announcement of the Final Examination.
5. At the appointed time and place, the candidate must present the material described in their thesis or report to their Supervisory Committee in an open seminar. After the public part of the presentation, the Supervisory Committee will dismiss other persons and present further questions to the candidate. Using the ballot provided by the Graduate School to the Major Professor, the Supervisory Committee will vote "pass" or "fail" on the thesis or report and the presentation and defense of the material contained in it.

The student will pass if at least 2/3 of the Supervisory Committee votes are "pass"; if not, the candidate may (if supported by at least 2/3 of the committee) make one additional presentation of the defense. If the student fails to pass also the second presentation then the candidate must leave the MS program.

6. After the candidate has successfully completed the presentation and defense of their thesis or report, they must make any modifications recommended by the Supervisory Committee in response to their presentation and defense. Once the committee approves the documentation by signing and submitting the Electronic Thesis, Dissertations, and Reports (ETDR) Form, the candidate must submit an electronic copy of the final version of their thesis or report.<sup>3</sup>

## 4.8 MS Non-Thesis/Non-Report Option

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<sup>2</sup><https://oaklandsok.github.io/>

<sup>3</sup><https://www.ksu.edu/grad/academics/etdr/>

**4.8.1** The MS candidate must schedule an exit interview with the Supervisory Committee, subject to the following conditions:

1. The candidate must submit an “Approval to Schedule Final Examination” form to the Graduate School, after having consulted with each member of the Supervisory Committee and reached agreement on a time for the interview (which must take place while classes are in session).
2. The candidate must reserve a room for the exit interview.
3. At the appointed time and place, the Supervisory Committee will conduct a formal exit interview examination of the candidate. Using the ballot provided by the Graduate School to the Major Professor, the Supervisory Committee will vote “pass” or “fail”. (There will be no ETDR ballot.)

## **4.9 Other Issues and Exceptions**

**4.9.1** Any exceptions or issues not covered in this document will be resolved by the Graduate Studies Committee and by the Graduate Faculty of the Department of Computer Science.

**4.10** All students must complete the degree program within five years. On-campus students normally complete the program in two years while taking 6-9 credit hours per semester, whereas distance students often may take somewhat longer.