

## **Master of Science in Computer Science Degree Requirements, Policies, and Procedures**

### **Summary of Procedures for M.S. Students**

- Complete every deficiency course with a “B” or higher within the first two terms
- Select a faculty advisor in your research area by the end of the first semester
- File a final plan of study (iPOS) on My ASU by the end of the second semester, or when 50% of the coursework is completed
- Select the supervisory committee and enroll in CSE 599 Thesis after filing an approved research proposal
- File an application for graduation with the Graduation Office of the Registrar in your last term on My ASU
- File an application for a final oral defense of the thesis and defend the thesis
- Deliver one bound copy of the thesis to the graduate advisor and one bound copy to the faculty advisor. Deliver two bound copies to the bookstore, which will be delivered to the library

Please review current [Graduate College policies and procedures](#).

### **Transfer of credits**

A student can transfer a maximum of six hours M.S. degree credit from another accredited institution as specified in the ASU Graduate Catalog. Only resident graduate courses with an "A" or "B" grade are eligible for transfer. A course with a grade of "Pass", "Credit", or "Satisfactory" are not acceptable for transfer. A student who wishes to transfer credits from another institution should contact the graduate advisor in the CIDSE Advising Center to initiate the transfer credit process.

### **Transfer between programs**

Students that want to change from a Master's to a Ph.D. in Computer Science must submit a new application with the Graduate College. Admission to the Ph.D. program can be denied. If admitted, the student is allowed to use only twelve credits from the original program to the new program.

A student who would like to switch from a Ph.D. to a Master's or switch Master's degree programs in Computer Science can submit a Request Change through MyASU. Nine credits are allowed to be used in the Master's program.

## **Policy for Maintaining Academic Satisfactory Progress**

A student who has been admitted to a graduate degree program in the School of Computing and Informatics, with either regular or provisional admission status, must maintain a 3.0 or higher grade point average (GPA):

1. in all work taken for graduate credit (courses numbered 500 or higher),
  2. in the coursework in the student's approved plan of study, and
  3. in all course work taken at ASU (overall GPA) post baccalaureate.
- A. A student will be placed on academic probation if one or more of the student's GPAs listed above falls below 3.0. Students will be notified by mail when placed on academic probation.
- B. A student will earn academic good standing by obtaining a 3.0 or better in the GPAs listed above by the time the next nine hours are completed. Coursework such as research and dissertation registration that are for Z or Y grade cannot be included in these nine hours.
- C. A student may be recommended for dismissal from a graduate program if the student fails to increase all of the GPAs listed above to 3.0 or better by the time he/she completes at least nine credit hours as defined in section B.

A student may appeal actions concerning dismissal by petitioning the departmental unit in which they are enrolled.

### **Deficiency Coursework**

If the student was assigned any deficiency course work, then those classes should be completed in the first year. All deficiency classes must be completed with a grade of "B" or higher within two semesters. If a student believes that an assigned deficiency course(s) has been completed at another institution, then the student must seek approval from the course coordinator by submitting a [Deficiency Evaluation form](#). If approved, the form can be submitted to the graduate advisor.

### **Continuous Enrollment and Leave of Absence Policies**

Once admitted to a graduate degree program, master's and doctoral students must be registered for a minimum of one credit hour (not audit)

during all phases of their graduate education. This includes periods when they are engaged in research, working on or defending theses or working on scientific papers, taking comprehensive exams, taking Graduate Foreign Language exams or in any other way using university facilities or faculty time including the term in which they graduate. This credit must appear on the Plan of Study or must be an appropriate graduate-level course (e.g. 595, 695, or 795, Continuing Registration). Courses with grades of “W” and “X” are not considered valid registration for continuous enrollment purposes.

Students planning to discontinue enrollment for a semester or more must request approval for a leave of absence. Student may petition the Graduate College for a leave of absence for a maximum of two semesters during their entire program. A petition for a leave of absence, endorsed by the members of the student’s supervisory committee and the head of the academic unit, must be approved by the Graduate College dean. This request must be filed and approved before the anticipated absence. An approved leave of absence will enable students to re-enter their program without re-applying to the university. Students who do not enroll for a fall or spring semester without an approved leave of absence by the Graduate College are considered withdrawn from the university under the assumption that they have decided to discontinue their program. Student removed for this reason may reapply for admission to resume their degree program; the application will be considered along with all other new applications to the degree program.

### **Selection of Faculty Advisor**

When a student has decided on a primary area of research, the student should select a faculty advisor in that area of study. The advisor must be a faculty member in Computer Science and Engineering with a rank of assistant professor or higher. The advisor will serve as the chair of the supervisory committee that supervises the student's thesis.

### **Select the Supervisory Committee**

In consultation, the faculty advisor and student form a supervisory committee. The supervisory committee must include the faculty advisor and two committee members. The faculty advisor must be a faculty member with the rank of assistant professor or higher in Computer Science and Engineering. The faculty advisor serves as the chair of the supervisory committee. For students in the

AME, IA and BMI concentrations, at least one member of the student's committee must be from that program.

## **Final Plan of Study**

A student needs to submit the final plan of study (iPOS) online through My ASU their second semester of attendance, or when 50% of the coursework is completed. The final iPOS is subject to approval by the supervisory committee and by the Graduate Program Director. After approval at the School level, the final iPOS is forwarded to the Graduation Office of the Registrar for approval. Once approved by the Graduation Office, the Graduate College reviews the iPOS for final approval.

Each M.S. student's plan of study is subject to approval by the School and the Graduate College. The plan of study must contain a minimum of 30 semester hours of approved graduate-level work (six hours of CSE 599 Thesis; at least 18 hours must be CSE-5xx credits at ASU, excluding CSE 598 courses but including CSE 599). At least 21 hours must be for formal course work (including CSE 591 but excluding CSE 590, CSE 593, and CSE 599). For the AME, BMI, and IA concentrations, please review the [concentration webpage](#) for more information on requirements.

All M.S. students must take at least three credit hours in each of the following three areas: Foundations, Systems and Applications. At least two out of the three area courses must be at 500 level (not CSE 598). The classes listed as 400 level must be taken as CSE 598. Please see the Area Courses Section for a list of courses in each area. Every M.S. student is required to take at least 9 credit hours of courses in their research area, which could include courses from the list of Area Courses or 3 credit hours of independent study. Practicum (CSE 580) and audit courses cannot be included in the iPOS.

Besides meeting the requirements specified above, a student must also pass a thesis defense.

## **List of Area Courses**

### **1. FOUNDATIONS**

CSE 450/598 Design and Analysis of Algorithms

CSE 457/598 Theory of Formal Languages

CSE 459/598 Logic for Computer Scientists I

CSE 550 Combinatorial Algorithms and Intractability

CSE 552 Randomized and Approximation Algorithms

CSE 555 Theory of Computation

## **2. SYSTEMS**

CSE 420/598 Computer Architecture I

CSE 432/598 Operating System Internals

CSE 434/598 Computer Networks

CSE 440/598 Compiler Construction

CSE 460/598 Software Analysis and Design

CSE 462/598 Software Engineering Project II

CSE 517 Hardware Design Languages

CSE 520 Computer Architecture II

CSE 530 Embedded Operating Systems Internals

CSE 531 Distributed Operating Systems

CSE 534 Advanced Computer Networks

CSE 535 Mobile Computing

CSE 536 Theory of Operating Systems

CSE 539 Applied Cryptography

CSE 543 Information Assurance and Security

CSE 561 Modeling and Simulation Theory and Applications

CSE 563 Software Requirements and Specification

CSE 564 Software Design

CSE 565 Software Verification, Validation and Testing

CSE 566 Software Project, Process and Quality Management

CSE 591 Mobile Ad Hoc Networking and Computing

CSE 591 Wireless Networks

### **3. APPLICATIONS**

CSE 408/598 Multimedia Information Systems

CSE 412/598 Database Management

CSE 470/598 Computer Graphics

CSE 471/598 Introduction to Artificial Intelligence

CSE 477/598 Introduction to CAGD

CSE 509 Digital Video Processing

CSE 510 Database System Implementation

CSE 511 Semi-Structured Data Management

CSE 512 Distributed Databases

CSE 514 Object-Oriented Databases

CSE 515 Multimedia and Web Databases

CSE 539 Applied Cryptography

CSE 570 Advanced Computer Graphics I

CSE 571 Artificial Intelligence

CSE 572 Data Mining

CSE 573 Advanced Computer Graphics II

CSE 574 Planning and Learning

CSE 577 Advanced Computer-Aided Geometric Design I

CSE 578 Advanced Computer-Aided Geometric Design II

## CSE 591 Enterprise/Service-Oriented Computing

### Courses Requiring Consent

The School offers several omnibus courses that require consent to enroll: CSE 590 Reading and Conference, CSE 595 Continuing Registration, CSE 584 Internship, and CSE 599 Thesis. To register for any of the above courses, a completed [form](#) signed by the faculty advisor must be filed with the graduate advisor to receive the override necessary to enroll.

### Thesis

An M.S. student's plan of study (iPOS) must include six hours of CSE 599 Thesis.

Before enrolling for CSE 599 Thesis, the student must consult with his or her supervisory committee (primarily with the faculty advisor) to select a topic. Each member of the student's supervisory committee must sign the [M.S. Thesis form](#) before the student can register for CSE 599.

After enrolling in CSE 599, the student must prepare a thesis proposal in accordance with the format guidelines below. This document must be typewritten in a double-spaced format and it should be approximately 5-10 pages in length.

The thesis proposal should do the following:

1. Explain what the student intends to do
2. Explain the value of the thesis
3. Outline the thesis plan
4. Define specific criteria for the completion of the thesis
5. Include a timetable for completion of the thesis
6. Include a bibliography relevant to the thesis

After the student's faculty advisor is satisfied with the student's thesis proposal, the student may submit the proposal to the rest of the supervisory committee. Any member of the committee may establish a requirement for the student to make an oral presentation of the proposal. The committee evaluates the proposal in terms of:

- a. The value of the thesis
- b. The feasibility of the thesis plan, and
- c. The student's preparation for carrying out the proposed thesis

The committee accepts the proposal as written, accepts it with changes or rejects it. When the committee accepts the proposal, each committee member must sign the approval page. Then the student must submit the proposal to the graduate advisor. A student must have an approved thesis proposal on file with the graduate advisor and an approved [MS Thesis form](#) before the student can register for CSE 599 Thesis.

A student must be enrolled in at least one graduate-level course at the time of the defense.

The Graduate College publishes information regarding the details of thesis preparation, format requirements, deadlines and defense. The student must comply with all guidelines that the Graduate College publishes regarding the submission of a thesis and the scheduling of the defense.

A student can schedule the defense after the student's faculty advisor and the Graduate College have approved the student's thesis. The student must submit a copy of the approved thesis to each member of the supervisory committee at least ten working days before the defense, and the student must also submit an announcement of the defense to the graduate advisor at least ten working days before the defense.

## **Defense**

If you are holding the defense during the interim period between semesters, you must be registered in the following semester. If you defend during the period between the Spring and Summer semester, you must be registered for the Summer session. If you defend during the period between the Summer session and Fall semester, then you must be registered in the Fall semester. Please see the [Graduate College policies](#).

Posting of the defense is a state law. If the defense announcement is not posted 10 business days before the defense, then the defense MUST be rescheduled to meet state law. For instructions on Defense Announcements, review the [Defense Announcement form](#).

Before the student submits the announcement of the defense to the graduate advisor, the student must schedule a room through the Administrative office (5<sup>th</sup> floor Brickyard) for the date and time agreed to by the supervisory committee. The [Master Defense Schedule form](#) should include an abstract, the name of the student and the names of the committee members in addition to specifying the time, date and place of the defense.

The defense includes an oral presentation of the research results. The defense is open to the public and anyone may question the candidate.



The supervisory committee evaluates the thesis and the student's performance on the defense. The committee accepts the thesis, accepts it with changes or rejects it. If the committee deems the student's work on the thesis or performance on the defense to be unsatisfactory, the student may request one more opportunity to submit a thesis and pass the defense. The student must wait until the next semester or summer session before making the second and final attempt and the student must make the second and final attempt within one year after the first attempt.

When the thesis is complete, the student must provide two bound copies for the library, one bound copy for the graduate advisor and one bound copy for the student's faculty advisor.

### **Filing for Graduation**

During the final semester, a student must file an application for graduation with the Graduation Office of the Registrar on My ASU. The student's approved final plan of study (iPOS) must be on file with the Graduate College before the student can apply for graduation.

### **TARA Requirements**

Students who have assistantships through the Ira A. Fulton Schools of Engineering are required to register for no more than and no less than 12 credit hours. These hours must be 500 level courses (audit courses are not permitted and a maximum of 9 hours of CSE 580 Practicum is permitted). All international students must pass the Interview or SPEAK test with a score of 55 to be fully certified.

### **Internship Programs**

#### **CSE 584 Internship (CPT)**

Curricular Practical Training (CPT) is a type of off-campus employment authorization for F-1 international students who must complete an internship course in order to graduate from their current degree program.

Internship may be necessary if the student needs practical engineering experience to complete qualifications for an advanced degree, needs industrial experience to gain the ability to perform required degree research, or needs the use of unique industrial facilities not available on campus to complete research study. Students must complete two semesters at ASU before becoming eligible for CPT Internship.

The student's faculty advisor determines this need in consultation with the Graduate Program Director. Internship cannot be added to a final plan of study (iPOS) if it has been approved by the Graduate College.

CSE 584 CPT Internship registration is for one credit hour per semester. Internship for the master's degree is limited to no more than two semesters and a single summer session. Internships may be part-time (20 hours per week) or full-time (40 hours per week). An international student having 12 months or more of full-time internship will become ineligible for Optional Practical Training (OPT).

Internship is only available to full-time, on-campus students. Full-time is defined as having completed nine credit hours or more for the semester preceding the internship. Students must receive all approvals from their faculty advisor and from the Graduate Program Director. All application materials for internship must be completed by the last day of regular registration for any semester.

During any regular semester (fall or spring), a student on an internship must be registered full-time. Internship (CSE 584) credit counts toward this requirement. For a summer internship the student needs to register for only one credit hour of internship.

An approved plan is required before starting the internship by filling out the [Internship Application](#) and submitting the form to the graduate advisor. Internship is not permitted for Master's degree students after all classes for the plan of study have been completed.

The Graduate Program Director evaluates all requests for internship credit.

After the internship period ends, a minimum five page report is required before a grade and credit is given. The final report will be submitted to the Industrial supervisor for comments, then to the faculty advisor for a grade assignment, and then to the graduate advisor. The student must submit the report by the end of the following term at the latest (i.e. end of Fall term for Summer internship) or the grade will be a failing grade ("E").

### **CSE 584 Embedded Systems Internship**

The Consortium for Embedded Systems internship program provides real-world work experience in embedded systems for graduate students. Students may work as interns for a maximum of three semesters.

Students must work 20 hours per week at the industry member site during spring and fall semesters and 40 hours per week during summer session.

Students must be registered for 12 credit hours during the semester they complete the internship, 3 credits of which are CSE 584 Embedded Systems Internship. Graduate students cannot use this Internship for their degree program and put it on the Plan of Study.

Students will submit an [Application for Embedded Systems Internship form](#), a resume and an unofficial transcripts to Dr. Karamvir Chatha. If hired for the internship, the student will submit the application form to the CIDSE Advising Center in Brickyard Engineering, Ste. 208 for an override to enroll.

### **CSE 584 Internship (Hourly)**

This internship program is designed to provide CSE graduate students an industrial internship experience in computer science industries and related sectors that **(a)** provides the intern direct exposure to real world professional activities, **(b)** enhances their personal and professional skills, and **(c)** increases the likelihood of professional employment opportunities in their major.

CSE 584 Internship (Hourly Worker) registration is for one credit hour per semester. A student can register for 1 credit hour of Internship during any semester (spring, 8-week summer session, or fall). A student must work 20 hours/week during a spring or fall semester, and 40 hours/week during an 8-week summer session. The summer work can (and normally will) extend beyond the 8-week summer session to cover the entire 12 weeks of the summer break, but the requirement for credit includes only the 8 weeks of the 8-week summer session.

Internship is only available to full-time, on-campus students. Full-time is defined as having completed nine credit hours or more for the semester preceding the internship. Students must receive all approvals from faculty internship coordinator. All application materials for internship must be completed by the last day of regular registration for any semester.

During any regular semester (fall or spring), a student on an internship must be registered full-time. Internship (CSE 584) credit counts toward this requirement. For a summer internship the student needs to register for only one credit hour of internship.

An approved plan is required before starting the internship by filling out the [Application for CSE 584 Internship form](#) and submitting the form to the faculty internship coordinator. Internship is not permitted for Master's degree students after all classes for the plan of study have been completed.

After the internship period ends, a minimum five page report is required before a grade and credit is given. The final report will be submitted to the Industrial supervisor for comments, then to the faculty internship coordinator. The student

must submit the report by the end of the following term at the latest (i.e. end of fall term for summer internship) or the grade will be a failing grade (“E”).

Graduate students cannot use this Internship for their degree program and put it on the Plan of Study.

If you have any questions on these policies and procedures, contact Dr. Hasan Davulcu, Internship Coordinator, at (480) 965-6385 or by email at: [cidse.internships@asu.edu](mailto:cidse.internships@asu.edu)

### **Questions**

If you have any questions on these policies and procedures, contact the CIDSE | Advising Center at (480) 965-3199 or by email at [cidse.advising@asu.edu](mailto:cidse.advising@asu.edu).