Graduate Brochure
Department of Computer Science and Engineering
Texas A&M University

Last Updated April 9, 2015

Abstract. This document is a summary description of the graduate programs in the Department of Computer Science and Engineering. Current and prospective graduate students should be familiar with appropriate requirements in the latest version of this document and the current Texas A&M University graduate catalog. Links to other relevant information are included at the end of this document and on the graduate program webpages.

The degree requirements and all other information are subject to change without notice. Students who enroll at Texas A&M University will be allowed to graduate under the degree requirements in effect during their first semester. Every effort will be made to honor such obligations, although reasonable perturbations and substitutions may sometimes be required.

1. GENERAL INFORMATION

1.1. College Station/Bryan

The College Station/Bryan area has a 2010 population of approximately 230,000. Five of the six largest cities in Texas (Houston, Dallas, San Antonio, Ft. Worth, and Austin) are within 175 miles of the area. The Department has significant industrial connections in each of these cities. This is complemented by a growing industrial base in the local area. The area is known for a good quality of life that includes strong public school systems, parks, performing arts, sporting activities, and excellent, affordable housing.

1.2. Texas A&M University

Texas A&M University was established in 1876 as the first public institution of higher education in Texas, and is one of the state's flagship universities. Texas A&M was the first university in the nation to receive land, sea and space grant designations. It has 2,800 faculty; over 9,000 graduate and professional students; and more than 38,000 undergraduate students on a spacious campus. Recent rankings of Texas A&M:

- Fourth in new National Merit scholars, nationally.
- Sixth in total value of endowments, nationally.
- Eleventh in research funding nationally.

1.3. The College of Engineering

The Dwight Look College of Engineering is one of the nation's largest and is consistently listed among the country's top 10 public graduate schools. It has 12 academic departments and is dedicated to providing a quality educational experience for its students. The college's minority engineering, women's, and honors programs are focal points in efforts to attract and retain students for engineering and science careers.

1.4. The Department

The computer science programs at Texas A&M began in 1962 and the department was formed in 1983. Today, the Department includes 37 tenured and tenure-track faculty, 5 lecturers, several research faculty, and approximately 350 graduate students and 650 undergraduate majors. The Department offers undergraduate and graduate degrees in Computer Science and, jointly with the Department of Electrical and Computer Engineering, in Computer Engineering.

1.5. Graduate Program

Advanced study in computer science and computer engineering provides students with the skills to design and utilize modern computer systems. The Department encourages both fundamental research in computing and interdisciplinary research. Research projects in diverse areas offer students a wide range of opportunities to gain experience while completing requirements for advanced degrees. Significant computational facilities, networks, and other resources are available to support student research.

Graduate studies in the Department can lead to the following degrees:

- Master of Computer Science (MCS)
- Master of Engineering in Computer Engineering (MEN)
- Master of Science in Computer Science (MSCS)
- Master of Science in Computer Engineering (MSCE)
- Doctor of Philosophy in Computer Science (PhDCS)
- Doctor of Philosophy in Computer Engineering (PhDCE)

The graduate degree programs are described in Section 4.

1.6. Graduate Faculty

A complete list of faculty in the Department that can serve on Advisory Committees for graduate degrees at Texas A&M University is available online along with their research interests. Additional information is available in each faculty member's personal webpage and lab webpages.

2. ADMISSION

2.1. Application Process and Deadlines

Applications for graduate study should be completed on-line. Application fees, deadlines, required documentation, test scores, and other requirements are explained in the materials associated with either application format.

The application deadline for fall (September) admission is January 1 of that year, for full consideration for all departmental fellowships and assistantships. In order to avoid delays in

admission processing, we strongly recommend you submit your initial application by November 1. Test scores and letters can arrive later; the general application deadline for these is March 1 for fall (September) admission and August 1 for spring (January) admission. All deadlines apply to both international and U.S. applications.

Admission to the Department is very competitive and there are a limited number of openings available each year. Applications are typically not processed until they are complete, so make sure that all materials (e.g. letters, test scores) are submitted **soon** after the deadline.

There are a number of fellowships, scholarships and assistantships that are awarded by the Department and the University each year to the most competitive applicants. Applications received by January 1 or soon thereafter for fall (September) admission will receive full consideration for all such opportunities. There are relatively few fellowships and assistantships awarded for spring (January) admission.

Read the Texas A&M Admissions application instructions; international students should read the Admissions sections relevant to them. The Department also has a frequently-asked questions and answer list (FAQ).

The following is the step-by-step procedure for applying:

(1) Create an application in the ApplyTexas system.

  (a) Choose the option Texas A&M University from the dropdown list. (You can also apply to other Texas public universities with this system).

  (b) If you are applying to the computer science program, select "Computer Science" as the major. If you are applying to the computer engineering program, select "Computer Engineering as the major.

    − If you are applying to Computer Engineering, then you also need to select the department, Computer Science and Engineering (CSCE) or Electrical and Computer Engineering (ECEN). (The ApplyTexas web site may still list computer science as CPSC).

    − The degree program is not considered in the admission process, so if you select the wrong program do not be concerned. This can be changed after admission. We will not change it before admission.

  (c) You will be required to pay the admission fee. The fee **CANNOT** be waived. **Do not send us emails requesting a fee waiver.**

  (d) Do **NOT** enter names of recommenders or statement of purpose (SOP) even if you are prompted to do so. You will do this later. If you did enter your recommenders or SOP in ApplyTexas, this is okay, but we will not look at them.

(2) Your application will be forwarded by the ApplyTexas system to Texas A&M Admissions. **This may take several days, particularly during holidays or busy times.**

  (a) TAMU Admissions will email you your university identification number (UIN). (The UIN is sometimes referred to as a student identification number – SID). In the past it has taken as long as three weeks to receive your UIN, but more recently it has come within a few days. You must wait patiently for it before you can proceed to the next step. **Do not email the department asking for your UIN**.

  (b) You use your UIN to create your official email (Neo) account. Your user name for this account is referred to as your NetID. Email regarding admissions is sent to this account. You may have it forwarded to another location.

(3) Have your test scores and official transcripts of previous degrees sent to TAMU Admissions; see their website for the precise procedure. **Do not send test scores and official transcripts directly to the department.** GRE and TOEFL (if needed) test scores must be sent directly from the Educational Testing Service to Texas A&M University (Code 6003, **NO** department code); the scores must be from test dates that are within five years for the GRE and within two years for the TOEFL at the time of **application**. You can upload unofficial scores to the department to speed up our application review process, but you cannot be officially admitted without official scores.

(4) With your NetID and password, you will be able to access the Applicant Information System (AIS), and edit your application information. Do **NOT** enter names of recommenders or a statement of purpose into AIS. If you did enter recommenders into AIS, do not enter them into the Department admission system (apply2.cse.tamu.edu), as we do not want your recommenders to get two requests.

(5) TAMU Admissions will electronically send your application data to the Department. This may only occur every few weeks if it is long before the application deadline, then daily as the deadline gets closer. TAMU Admissions may not perform data transfers during the roughly two weeks of vacation just prior to January 1. If you submitted your application in late December, do not be concerned about this delay. Applying earlier will avoid this delay.

(6) You will receive an email to start using apply2.cse.tamu.edu. This will be the only admission system you use for the remainder of the application process. When you receive this email, do the following:

  (a) Enter official email addresses of all your recommenders (i.e. university email address).

  (b) Upload your statement of purpose.

  (c) Select areas of research interest.

  (d) Upload resume and other relevant documents, such as publications.

By submitting your data in apply2.cse.tamu.edu, the Department can start working on your application immediately. Information you submit to applicant.tamu.edu may be delayed in getting to us.

Your recommenders will receive an email with a link to click to upload their letter. **Recommendation letters mailed or emailed to us will be discarded.** Often we hear that international recommenders did not receive an email from us. This is likely due to mail problems on their end,

such as spam filters. In apply2.cse.tamu.edu you can ask that the recommender email be resent.

(7) Once the recommendations, test scores and transcripts are received by the Department, your application will be complete. Note that AIS may still show your application as incomplete. Use apply2.cse.tamu.edu to determine the status of your application with the Department.

(8) You will be informed about the application decision via email. Decisions for PhD students are typically made by the end of February, while MS student decisions are typically made by the end of March, for fall admissions.

(9) We do not respond to emails asking questions that are answered in this brochure or in the Graduate Advising FAQ web pages.

2.2. Entrance Requirements

Applicants must fulfill the requirements for admission to graduate studies as specified in the graduate catalog and must hold a bachelor's degree, ideally in computer science, computer engineering, or a related field, or equivalent experience. Undergraduate preparation should include:

- Data structures and analysis of algorithms.
- Operating systems, compilers, and database systems.
- Digital design and computer systems architecture.
- Several high-level programming languages.
- Mathematics including calculus, linear algebra, and discrete mathematics.

Students are responsible for all course prerequisites. While most undergraduate courses cannot be applied toward graduate degrees, graduate students may take them to ensure they have the appropriate preparation. Students are encouraged to discuss their background with the Graduate Advisor if they have questions.

All applicants are required to take the general Graduate Record Examination (GRE). Students who do not have a traditional background are encouraged to take the GRE subject test in computer science.

Applicants whose native language is not English are required to submit proof of English proficiency. Please refer to the Graduate Admissions webpage for requirements (e.g., TOEFL, IELTS). TAMU Admissions determines whether your country's language is English.

2.3. Evaluation Criteria

All applications are reviewed by the Department's Graduate Admissions Committee. The criteria used in evaluation of applicants for admission to graduate study in computer science and engineering include:

- academic performance on previous degrees,
- GRE scores and, if applicable, TOEFL scores,
- relevant background,
- letters of recommendation,
- the applicant's statement of purpose, and
- other relevant information.

The Admissions Committee is primarily interested in determining your potential to perform research.

2.4. Contents of Your Application

Statement of Purpose (SOP): The Department does not have any specific requirements for the one-page SOP. However, the Admissions Committee would like to see a discussion of the following issues: why you want to pursue graduate studies in CSE, why you are interested in Texas A&M, and most importantly, your research interests, your background for working in this area, and a description of your research plan (if any). Your SOP should not recall your earliest remembrances of exposure to a computer or provide a general academic background.

Letters of Recommendation: The preferred source of letters of recommendation is the faculty who advised you in research projects and who taught your most advanced computing courses. We are most interested in assessments of your research potential and scholarly aptitude, and your rank and performance in the courses they taught you. If you cannot obtain enough letters from your current or previous professors, then you may also include letters from employers. However, you should understand that in most cases such a letter will not be given the same weight as letters from your professors.

Resume/Curriculum Vitae: We strongly recommend that you include a brief resume (curriculum vitae) addressing university academics and closely related professional activities. The information in the resume is often more useful than what appears in the official application.

Other Items: If you are applying before graduating from your current degree program, indicate current and planned courses for which grades will not be on your transcripts. If you have peer-reviewed technical publications in international conferences and journals, then you may include them with your application materials.

Things to Avoid: Please do not include information about secondary school performance, testing, or other pre-university studies. Do not submit copies of class projects or publications that did not appear in peer-reviewed international venues. If you feel you have additional material that is very important, then please place it on a webpage and submit the URL. You may include URLs that enable access to descriptions of your university programs but please do not include syllabi. Do not contact Department faculty until you have carefully studied their web site and read their papers, so you can explain in detail why you think there is a good potential research match.

3. FINANCIAL SUPPORT

There are a number of fellowships, scholarships, and assistantships available within the Department of Computer Science and Engineering. PhD students receive the highest priority for Departmental assistantships, fellowships and scholarships. Most faculty award their research assistantships similarly. Assistantship positions require an average of 20 hours of work per week. Assistantships include 9 credit-hours of tuition and fees. Students with assistantships are eligible for University health insurance coverage and a portion of their

monthly premium is paid by the employer. Information on health insurance premiums and coverage is available online.

Unless they are a sponsored student, all applicants are automatically considered for university and departmental fellowships, scholarships and assistantships. You do not need to separately apply for financial support with your application. Applicants who are not admitted with financial support can apply for it at apply2.cse.tamu.edu. Applications for financial support are reviewed by the Department's Assistantship and Awards Committee. Note that international applicants do not need to submit financial support data to International Student Services until after they are admitted.

Research assistantships are offered by faculty. Inquiries about these opportunities may be initiated by individual faculty members or by applicants. If you intend to contact a faculty member, first study their website and read their research publications, so that you can be certain there is mutual research interest.

Additional positions are available in other campus departments where students can work as programmers, systems analysts, web developers and computer operators. Some of these positions are graduate assistantships that qualify for the same benefits (such as in-state tuition) as Departmental assistantships. Arrangements with other departments are made by the student. Additional postings of jobs outside the Department are available online at jobsforaggies.tamu.edu. Access to this site may be restricted until after you have registered for courses.

4. DEGREE PROGRAMS

This section describes the graduate degrees offered by the Department in Computer Science (Section 4.1) and in Computer Engineering (Section 4.2). The major steps and deadlines that should be completed for the various degrees are outlined in Section 4.3, and some restrictions and clarifications regarding degree requirements are given in Section 4.4. For additional information, please see the Department's graduate program webpages.

Graduate students will be advised by the Graduate Advisor until they have formed an Advisory Committee and have an approved degree plan. Advisory Committee details are included with the description of each degree in this section. Appointments with the Graduate Advisor can be made by calling +1-979-845-4087 or sending email to grad-advisor@cse.tamu.edu.

Degree plans are filed on the Office of Graduate Studies Degree Plan Submission System.

4.1. COMPUTER SCIENCE

The Department of Computer Science and Engineering offers the following degrees in Computer Science: a professional master's degree (MCS), a master's degree with thesis (MSCS), and a PhD degree (PhDCS).

4.1.1. Master of Computer Science (MCS)

The Master of Computer Science (MCS) should be thought of as a professional, terminal degree. This degree does not include a thesis, project, or final examination.

Advisory Committee: MCS students will have a default advisory committee consisting solely of the Graduate Advisor as chair.

Degree Plan: Requirements for the MCS degree include:

- At least 18 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 18 hours of graded CSCE graduate coursework.
- At most one *approved* three-credit 400–level CSCE undergraduate course. See Section 4.4. This course does **NOT** count towards the 18 hours of CSCE graded graduate coursework.
- Up to 6 credit hours of non-CSCE graded graduate coursework (excluding 681, 684, 685, 691).
- 1 credit hour of CSCE 681 (Graduate Seminar).
- Up to 3 credit hours of CSCE 685 (Directed Studies).
- A total of at least 30 credit hours satisfying the above requirements.

The major steps, and deadlines for completing them, required for the MCS degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

4.1.2. Master of Science in Computer Science (MSCS)

The Master of Science in Computer Science (MSCS) is a research degree. A thesis and final examination (thesis defense) are required. Students who complete the MSCS may file a Letter of Intent requesting admission to the PhD program.

Advisory Committee The student must select an Advisory Committee Chair from the Department's graduate faculty. If a student wishes to have a Chair who does not have an appointment with the Department, then the committee must have two Co-Chairs, including one who is a member of the Department's graduate faculty. (A committee has either one Chair or two Co-Chairs.)

The Chair and the student work together to select the remainder of the Advisory Committee. The Advisory Committee for the Master of Science in Computer Science (MSCS) consists of at least three members from the Texas A&M graduate faculty (the Chair counts as a member). There must be at least one member from another department and there must be a majority from the Department. Note that all faculty members with full joint appointments in the Department will be considered as Departmental faculty when evaluating the composition of the committee. Faculty who hold courtesy appointments will count as outside members of the committee. The Graduate Advising office can provide information on which faculty hold joint appointments.

The Advisory Committee can have supplemental members who are not members of the Texas A&M graduate faculty (and hence do not count when evaluating the composition of the

committee). Supplemental members are usually added because they have some special expertise that is relevant to the student's research topic. Such members are added by "Special Appointment" requests. Check with the Graduate Advising office for more information.

After the student and Chair agree on a tentative Advisory Committee, the student will then meet with each prospective committee member to determine whether this committee assignment is agreeable, and then file a degree plan.

Degree Plan The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the MSCS degree include:

- At least 18 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).

- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 18 hours of graded CSCE graduate coursework.

- At most one *approved* three-credit 400–level CSCE undergraduate course. See Section 4.4. This course does **NOT** count towards the 18 hours of CSCE graded graduate coursework.

- At most 6 credit hours of non-CSCE graded graduate coursework (excluding 681, 684, 685, 691).

- 1 credit hour of CSCE 681 (Graduate Seminar).

- 4 to 7 credit hours of CSCE 691 (Research).

- Up to 3 credit hours of CSCE 685 (Directed Studies). The combination of 685 and 691 cannot exceed 7 credit hours.

- A total of at least 32 credit hours.

The major steps, and deadlines for completing them, required for the MSCS degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

4.1.3. PhD in Computer Science (PhDCS)

Advisory Committee The PhD Advisory Committee is the same as the Master of Science in Computer Science (MSCS) degree except that it must have a minimum of four members, a majority from the Department and at least one from another department.

Degree Plan The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the PhDCS degree include:

- At least 30 credit hours of graded graduate coursework (excluding 681, 684, 685, and 691).

- Three breadth CSCE courses, one selected from each of these sets: Theory (627, 629), Systems (605, 613, 614) and Software (604, 606, 655). These must be passed with a grade of B or better. These count toward the requirement of 30 hours of graded graduate coursework.

- At most 6 credit hours of approved non-CSCE graded graduate coursework (excluding 681, 684, 685, 691). This

counts towards the requirement of 30 hours of graded graduate coursework.

- 1 to 2 credit hours of CSCE 681 (Graduate Seminar).

- At least 18 credit hours of CSCE 691 (Research). Normally the number of CSCE 691 hours will be increased to meet the required total number of credit hours.

- A total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master's degree).

The major steps, and deadlines for completing them, required for the PhDCS degree is outlined in Section 4.3. At most 32 credit hours from other graduate degree programs (e.g., an MSCS) can be applied to the PhD degree. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

4.2. COMPUTER ENGINEERING

The Computer Engineering programs provide opportunities for students with interests in computer engineering to focus their studies more directly in this area. Degrees in computer engineering paralleling the computer science degrees are offered: a professional, terminal course-work only masters degree (MEN), a research masters degree (MSCE), and a PhD degree (PhDCE).

The Computer Engineering program is jointly administered by the Department of Computer Science and Engineering (CSCE) and by the Department of Electrical and Computer Engineering (ECEN). Each department has slightly different requirements for the various computer engineering degrees and hence students are cautioned to ensure that they are following the guidelines appropriate for their home department. Also, there are faculties in both departments that are designated as computer engineering faculty; see ce.tamu.edu for a listing of all Computer Engineering faculty in both departments. Note that the degree requirements listed on ce.tamu.edu are for Electrical and Computer Engineering, **NOT** Computer Science and Engineering.

4.2.1. Master of Engineering (MEN)

The Master of Engineering in Computer Engineering (MEN) should be thought of as a professional, terminal degree. This degree does not include a thesis, project, or final examination.

Advisory Committee: MEN students will have a default advisory committee consisting solely of the Graduate Advisor as chair.

Degree Plan Requirements for the MEN degree include:

- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE681, 684, 685, 691).

- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).

- At least 6 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.

- At most one *approved* three-credit 400–level CSCE or ECEN undergraduate course. See Section 4.4. This course does **NOT** count towards the 12 hours of CSCE graded graduate coursework.
- 1 credit hour of CSCE 681 (Graduate Seminar).
- Up to 3 credit hours of CSCE 685 (Directed Studies).
- A total of at least 30 credit hours satisfying the above requirements.

The major steps, and deadlines for completing them, required for the MEN degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

4.2.2. Master of Science in Computer Engineering (MSCE)

The Master of Science in Computer Engineering (MSCE) is a research degree. A thesis and final examination (thesis defense) are required. Students who complete the MSCE may file a Letter of Intent requesting admission to the PhD program.

Advisory Committee The MSCE advisory committee is like that of the MSCS degree with the additional requirement that the Chair or a Co-Chair must be a member of the computer engineering faculty (see Section 7).

Degree Plan The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the MSCE degree include:

- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
- At least 6 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
- At most one *approved* three-credit 400–level CSCE or ECEN undergraduate course. See Section 4.4. This course does **NOT** count towards the 12 hours of CSCE graded graduate coursework.
- 1 credit hour of CSCE 681 (Graduate Seminar).
- 4 to 7 credit hours of CSCE 691 (Research).
- Up to 3 credit hours of CSCE 685 (Directed Studies). The combination of 685 and 691 cannot exceed 7 credit hours.
- A total of at least 32 credit hours.

The major steps, and deadlines for completing them, required for the MSCE degree is outlined in Section 4.3. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

4.2.3. PhD in Computer Engineering (PhDCE)

Advisory Committee The PhDCE advisory committee is like that of the PhDCS degree with the additional requirement that the Chair or a Co-Chair must be a member of the computer engineering faculty.

Degree Plan The degree plan should be completed by the student in consultation with the Chair and the Advisory Committee. Requirements for the PhDCE degree include:

- At least 30 credit hours of graduated graduate coursework (excluding 681, 684, 685, 691).
- At least 12 credit hours of graded CSCE graduate coursework (excluding CSCE 681, 684, 685, 691).
- At least 6 credit hours of graded ECEN graduate coursework that is not cross-listed with CSCE (excluding ECEN 681, 684, 685, 691).
- At least 12 credit hours of graded elective graduate coursework (excluding 681, 684, 685, and 691). This may include CSCE, ECEN, or other approved graduate courses.
- 1 to 2 credit hours of CSCE 681 (Graduate Seminar).
- At least 18 credit hours of CSCE 691 (Research). Normally the number of CSCE 691 hours will be increased to meet the required total number of credit hours.
- A total of at least 96 credit hours (or at least 64 credit hours if the student has a prior, approved and related master's degree).

The major steps, and deadlines for completing them, required for the PhDCE degree is outlined in Section 4.3. At most 32 credit hours from other graduate degree programs (e.g., an MSCE) can be applied to the PhD degree. Section 4.4 lists restrictions on the courses that can be used on the degree plan, as well as other common questions/issues. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

4.3. Requirements and Deadlines for Graduate Degrees

This section outlines the major steps, and deadlines for completing them, that should be completed for the various degrees:

- MCS and MEN (non-thesis masters degrees)
- MSCS and MSCE (thesis masters degrees)
- PhDCS and PhDCE

The Department has additional procedures or requirements that students are responsible for following and which are documented on the Department's graduate program webpages.

As noted below, many of the steps have associated Office of Graduate Studies (OGS) forms that need to be submitted. These forms are available on the OGS website. In all cases, the student is responsible for filling out the form before bringing it to the Graduate Advising office for Departmental approval. OGS forms are PDF templates, and students must **TYPE** in all entries before printing out the form (this includes the faculty member names, which appear below the signature lines). Hand-written forms are not accepted. MS and PhD students should also obtain the signatures of their committee members (but not the Department Head) before bringing the forms to the advising office. **Do not take these forms to the department head or**

associate head. The Graduate Advising staff will submit approved forms to OGS.

4.3.1. MCS and MEN requirements and deadlines

This section lists the major steps that must be completed for the MCS and MEN degrees. Much of this information is taken from the 'Steps to Fulfill Masters Degree Requirements' on the Office of Graduate Studies (OGS) website.

− **Degree Plan.** MCS and MEN students must file an approved degree plan.

  *OGS Form**s*: Degree Plan. Degree plans are filed online.

  Departmental Procedures: No.

  Deadline: By the end of the first semester after the student has completed 9 credit hours (normally their second semester). Students have a registration hold preventing them from registering for later semesters until their degree plan has been approved.

− **Final Examination.** The oral final exam for the MCS and MEN is waived. Once the student files for graduation and appears on the graduation list, the department automatically submits the Request for Exemption from Final Examination form to OGS. Students must file for graduation by the official deadline (typically the end of the second week of the semester) in order to ensure that the Final Exam exemption is filed on time. **Failure to file for graduation on time will result in failure to graduate that semester.**

4.3.2. MSCS and MSCE

This section lists the major steps that must be completed for the MSCS and MSCE degrees. Much of this information is taken from the 'Steps to Fulfill Masters Degree Requirements' on the OGS website. Information about Department procedures is available on the graduate program webpages.

As noted above, many of the steps have associated OGS forms that need to be submitted. These forms are available on the OGS website. In all cases, the student is responsible for filling out the form and getting the signatures of all committee members (but **NOT** the Department Head) before bringing the form to the Graduate Advising office for Departmental approval. The Advising staff will submit the forms to the OGS.

− **Advisory Committee and Degree Plan**. MSCS and MSCE students must form an Advisory Committee and file an approved degree plan.

  OGS Forms: Degree Plan. Degree plans are filed online.

  Departmental Procedures: No.

  Deadline: By the end of the first semester after the student has completed 9 credit hours (normally their second semester), and no later than 120 days prior to submission of the Request for Final Examination (thesis defense) to OGS. Students have a registration hold preventing them from registering for later semesters until their degree plan has been approved.

− **Thesis Proposal**. The student must submit a Master of Science thesis proposal as described in the graduate catalog.

  OGS Forms: Proposal Title Page

  Departmental Procedures: Yes, documented on web pages.

  Deadline: The thesis proposal cannot be submitted before the degree plan and it must be submitted to OGS at least 15 calendar days before the Request for Final Examination (thesis defense) is submitted to OGS (or about 4 weeks before the defense). Precise submission deadlines for graduation in a particular semester are listed on the OGS calendar.

− **Final Examination**. The student must pass a final oral examination given by the Advisory Committee as described in the graduate catalog. The part of the final examination that is related to the presentation of the student's research is public (thesis defense).

  OGS Forms: Request for Final Examination, Report of Final Exam (sent to Graduate Advising by OGS)

  Departmental Procedures: Yes, documented on web pages.

  Deadlines: The Request for Final Examination must be received by OGS at least 10 working days before the exam. Final exam deadlines are listed on the OGS calendar (usually about 8 weeks before graduation).

− **Thesis**. The student must submit a Master of Science thesis as described in the graduate catalog and on the OGS website.

  OGS Forms: Thesis Approval Form

  Departmental Procedures: Yes, documented on web pages.

  Deadline: The approved thesis cannot be submitted until the Final Examination has been passed and it must be submitted within one year of the Final Examination. Thesis submission deadlines are listed on the OGS calendar (usually about 6 weeks before graduation). See the Thesis Clerk website for more details.

4.3.3. PhDCS and PhDCE

This section lists the major steps that should be completed for the PhD in computer science or in computer engineering. Much of this information is taken from the 'Steps to Fulfill Preliminary Exam' and 'Steps to Fulfill Doctoral Degree Requirements' on the OGS website. Information about Department procedures is available on the graduate program webpages.

As noted below, many of the steps have associated OGS forms that need to be submitted. These forms are available on the OGS website. In all cases, the student is responsible for filling out the form and getting the signatures of all committee members (but **NOT** the Department Head) before bringing the form to the advising office for Departmental approval. The Graduate Advising staff will submit the forms to the OGS.

− **Ph.D. Student Annual Review**. All doctoral students in the department are reviewed annually by the entire faculty. The purpose of the Ph.D. student annual review procedure is to encourage and motivate Ph.D. student research, and to provide additional mentoring for graduate study. The student is required to prepare and file certain materials for this review by the announced deadline, typically in mid-April. Details are provided in the Ph.D. Student Annual Review Procedure.

− **Advisory Committee and Degree Plan**. PhD students must form an Advisory Committee and file an approved degree plan.

OGS Forms: Degree Plan. Degree plans are filed online.

Departmental Procedures: No.

Deadline: By the end of the student's third semester (excluding summer), and at least 90 days prior to the preliminary exam. The precise deadline prior to the preliminary exam is listed on the OGS calendar.

− **Qualifier Exam**. All students who started the PhD program in Fall 2010 or later are required to pass the PhD Qualifying Exam (Qual) by the end of their fourth regular semester (i.e., Spring or Fall). A maximum of two attempts are allowed to pass the Qual.

The exam is a two-hour oral exam conducted by a committee of three faculty members. The student selects one of the following areas for the exam: (1) Theory/Algorithms, (2) Software, (3) Systems, (4) Human-Computer Systems and Information, or (5) Intelligent Systems and Robotics. The committee is formed by the Graduate Advisor's office subject to the following constraints: two members must belong to the area selected by the student, and the third member must not belong to the selected area. The student's academic advisor, GAR supervisor(s) or 691 instructor(s) may not serve on the committee.

− **Preliminary Exam**. The student must pass the Preliminary Examination given by the Advisory Committee as described in the graduate catalog. The Preliminary Exam consists of written and oral portions. Each committee member administers a written exam during the 3 weeks prior to the common oral examination.

OGS Forms: Preliminary Exam Checklist, Report of the Preliminary Exam

Departmental Procedures: Yes, documented on web pages.

Deadline: Eligibility requirements and deadlines for scheduling and reporting on PhD Preliminary Exams are documented on the graduate program webpages. Roughly, the Preliminary Exam is typically held at about the time that the degree plan coursework requirements are completed, and it cannot be taken in the same semester that the degree plan is filed or that the student plans to defend.

− **Dissertation Proposal**. The student must submit a PhD dissertation proposal as described in the graduate catalog. The dissertation proposal may be presented at the oral preliminary exam, or at a separate proposal presentation, at the discretion of the Advisory Committee.

OGS Forms: Proposal Title Page

Departmental Procedures: Yes, documented on web pages.

Deadline: Typically the Preliminary Exam is passed before the approved proposal is submitted. The university requires that the proposal be submitted to OGS at least 15 calendar days before the Request for Final Examination is submitted to OGS (or about 4 weeks before the defense). Precise deadlines are listed on the OGS calendar.

− **Final Examination**. The student must pass the Final Examination (dissertation defense) given by the Advisory Committee as described in the graduate catalog. A final examination is required, which includes a public presentation of the candidate's research.

OGS Forms: Request for Final Examination, Report of Final Exam (sent to Graduate Advising by OGS)

Departmental Procedures: Yes, documented on web pages.

Deadlines: Eligibility requirements for scheduling and reporting on PhD Final Exams (dissertation defenses) are documented in the graduate catalog. The Final Examination cannot be held until all coursework on the degree plan has been completed. The Request for Final Examination must be received by OGS at least 10 working days before the exam. Final exam deadlines are listed on the OGS calendar (usually about 8 weeks before graduation).

− **Dissertation**. A PhD Dissertation as described in the graduate catalog and on the OGS website. The ability to perform independent research must be demonstrated by the dissertation. The dissertation must be the original work of the candidate. While acceptance of the dissertation is based primarily on its scholarly merit, it must also exhibit creditable literary workmanship. (Please see the graduate catalog for further details.) The Department expects the student to submit a research paper to at least one refereed journal or conference prior to the dissertation defense.

OGS Forms: No

Departmental Procedures: Yes, documented on web pages.

Deadline: The approved dissertation cannot be submitted until the Final Examination has been passed and it must be submitted within one year of the Final Examination. Dissertation submission deadlines are listed on the OGS calendar (usually about 6 weeks before graduation). See the Thesis Clerk website for more details.

4.4.Degree Plan Restriction and Clarifications

There are some restrictions on the courses that can be used on degree plans. Some of the most common issues are noted below. Some of these are Office of Graduate Studies requirements and some are Departmental requirements. Unless otherwise noted, the restrictions apply to all graduate degrees offered by the Department. For additional information and clarification, please see the graduate catalog and the Department's graduate program webpages.

All Graduate Degrees

− Courses used for one degree cannot be used to reduce the number of credit hours required for another degree, and courses that are apparently the same cannot both be used for credit. An exception is that a previous related master's degree can be used to reduce the total number of hours required for the PhD degree from 96 to 64. The master's degree certificate must be received by Admissions prior to filing a 64 credit hour PhD degree plan.

− Graded graduate courses used for a previous degree can be used to reduce the number of graded graduate courses that need to be taken for the current degree. Typically, the student replaces the credit hours that would have been used for courses with CSCE 691 credit hours. For example, if a PhD student took 24 hours of graded graduate coursework

as part of a MS degree from our department, then they would file a 64 hour PhD degree plan and it would only need to have 6 credit hours (i.e., 2 courses) of graded graduate coursework on it to reach the 30 hours required of a PhD. Similarly, if a student took a graduate computer architecture course at another university, and received a grade of A or B, then this could be used to satisfy the Systems breadth requirement. The Graduate Advisor must approve any courses taken at another university that will be used to meet current degree requirements.

- All normally-graded courses on a degree plan must be taken for a letter grade, rather than S/U grade. Courses such as CSCE 681, 684 and 691, that are normally graded S/U, can be used on a degree plan as S/U. In particular, CSCE 685 must be taken for a letter grade to be used on a degree plan.

- Stacked courses (two courses taught at the same time in the same room) cannot both be taken for credit. For example, CSCE 433 (Complexity) and CSCE 627 are currently stacked. So a student who had CSCE 433 as an undergrad cannot use CSCE 627 on a graduate degree plan.

- In a stacked course pair, a graduate student has to enroll in the graduate version of the course. For example, a graduate student must enroll in CSCE 627 when choosing a course from the stacked course pair CSCE 433/CSCE 627.

- Graduate service courses offered by the department cannot be used on degree plans for graduate credit. These include CSCE 601, 602, 603, 611 and 612. If a graduate service course is stacked with a 400-level course, then the graduate service course can be used in lieu of a 400-level course on a degree plan (for instance, CSCE 611 or CSCE 612 can be used in lieu of a 400-level course).

- Due to their overlap in content, CSCE 625 (Artificial Intelligence) cannot be used on degree plans if the student has previously taken CSCE 420 (Artificial Intelligence); the same applies to courses that are too similar at the 400 and 600 level. Similarly, ECEN 651 and CSCE 614 (Computer Architecture); and ECEN 602 and CSCE 463 (Networking); cannot both be taken for credit.

- CSCE 684 (Professional Internship) does not count towards the total hours required on a degree plan. Any CSCE 684 hours must be **in addition** to the minimums required on the degree plan. Each internship must be listed as a separate CSCE 684 on the degree plan, for 1 credit. CSCE 691 (Research) or CSCE 685 (Directed Studies) cannot be used for professional internships. No courses can be taken concurrently with CSCE 684.

- At most 12 credit hours of courses taken in post baccalaureate non-degree (G6) status at Texas A&M can be used on the degree plan; this requires approval of the Graduate Advisor.

- The university will not approve degree plans that contain an "excessive" number of credit hours beyond the minimum required for the degree (e.g. 30 for MCS/MEN, 32 for MS, 64/96 for PhD). To meet this "excess" rule, the department will permit one course plus 684 credits beyond the minimum. Students can still take additional courses beyond

the degree plan, but these cannot be added to the degree plan.

- ECEN 691 credits cannot be included in degree plans.

Masters Degrees (MCS, MEN, MSCS, MSCE)

- The MCS, MEN, MSCS, and MSCE degrees allow at most one approved three-credit 400–level CSCE undergraduate elective course to be used on the degree plan.

    o   Required courses for the CS or CE undergraduate degree at TAMU are not permitted for graduate credit; these include 462, 482 and 483.

    o   Only the following CSCE 400-level courses may be taken for graduate credit: 410, 434, 441, 443, 444, 452, 463, and 465. These courses cannot be used if the student took an equivalent course for their own previous degree(s).

- The MEN and MSCE degree allows at most one approved three-credit 400–level ECEN undergraduate elective course to be used (instead of the 400–level CSCE course, not in addition to).

    o   Only the following ECEN 400-level courses may be taken for graduate credit: 420, 421, 444, 447, 448, 455, 474, 468, 475 and 478. These courses cannot be used if the student took an equivalent course for their own previous degree(s).

- At most 12 credit hours of transfer credit can be used on a degree plan. Transfer credit must be approved by the Graduate Advisor, and transcripts must be sent to Admissions.

Doctoral Degrees (PhDCS and PhDCE)

- At least 6 credit hours of graded CSCE graduate coursework (excluding 681, 684, 685, and 691) must be taken at Texas A&M University in College Station. Thus, even if a student appears to satisfy all coursework requirements by a previous graduate degree or from transfer credit, they will still be required to take at least two graded graduate CSCE courses at Texas A&M.

5. PROGRAM REQUIREMENTS

Graduate students must fulfill the residence and scholastic requirements for graduate study as specified in the graduate catalog. In addition, the Department has these requirements:

5.1. Grade Point Requirements

Two grade point averages (GPA) are computed for graduate students at Texas A&M University, the GPA of all courses listed on the degree plan and the cumulative GPA. The cumulative GPA includes all graded graduate (600 level) and advanced undergraduate (300 and 400 level) course work completed at Texas A&M that has not been applied towards a prior degree.

To be in good academic standing, both the degree plan GPA and the cumulative GPA must be at least 3.000. A student whose grades drop below this level is considered to be scholastically deficient and will be placed on departmental probation. Students that are scholastically deficient may have a registration hold placed on them, and, by university regulations, will not be

allowed to graduate, schedule final exams (defenses), preliminary exams, etc. Scholastic deficiency may also result in the loss of fellowships or scholarships.

Each graduate assistant funded by the Department must maintain a GPA of 3.25 in both the degree plan GPA and in the cumulative GPA. A graduate assistant whose grades drop below this level may lose their assistantship. PhD students who are rated Unsatisfactory in the annual PhD review are not eligible for departmental assistantships or scholarships.

5.2. Registration Requirements

The University and the Department both have registration requirements and students must satisfy them both. The number of hours that a student is required to be registered depends on the semester (e.g., usually fewer hours are required in the summer than in fall or spring semesters) and the student's individual situation including factors such as whether they have an assistantship, completion status, and (if applicable) visa status. These rules are subject to change and should be reviewed before each registration. Updated information and clarifications can be found on the graduate program webpages.

6. COURSES

The list of graduate courses offered by the Department of Computer Science and Engineering (CSCE) is available online. Additional courses may appear in the University Graduate Catalog, but those are no longer taught. Related courses are also offered by the Departments of Electrical and Computer Engineering (ECEN), Mathematics (MATH), and Visualization (VIZA).

When determining the courses they plan to take for their degree programs, students need to be aware that not all of these courses are offered every year. The breadth courses (604, 605, 606, 613, 614, 627, 629 and 655) will normally be offered every year, except CSCE 605 is offered every other year. The more specialized graduate courses are offered every two years. However, there are some courses that are taught even less frequently than every two years. Few or no CSCE graduate courses are offered in the summer. There are usually several CSCE 689 Special Topics courses offered each fall and spring semester, and students are encouraged to be flexible in their course planning so that they can take advantage of these courses. An approximate two-year schedule of graduate course offerings is available on the graduate program webpages.

All graduate courses meet 2.5 hours per week and are 3 credits, unless otherwise noted. A listing of the courses annotated with responsible faculty and a condensed catalog description follow. All courses assume an undergraduate computer science or computer engineering background as prerequisite. The instructor may also waive prerequisites.

7. More Information

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Graduate Advisor

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url: http://www.cse.tamu.edu/academics/graduate

CSE Graduate Student Association (CSEGSA)

email: csegsa@cse.tamu.edu

Aggie Women in Computer Science (AWICS)

email: awics@cse.tamu.edu

On-line tuition and fee information (Student Business Services)