Modifications in the Degree Requirements of the PhD in Computer Science Program, George Mason University

Effective Fall 2018, the degree requirements for the PhD in Computer Science will be changing. All students entering the program in Fall 2018 or later will need to satisfy the new set of degree requirements. The new requirements can be accessed at the GMU's online [2018-19 catalog entry](#).

This document summarizes the changes, and lists the requirements that must be satisfied by **current** PhD CS students who entered the program under a prior catalog year and who will choose to change their catalog year to 2018-19 in Fall 2018 or later.
It must be noted that applying for a catalog change is entirely the student's decision – all students are required to complete the requirements of their own catalog year "by default"; however, they can choose to make a petition to switch to a later catalog.

Summary of Changes

1. Course Work Requirements:

The title of CS 700: "Quantitative Methods and Experimental Design in Computer Science" is changed as "Research Methodology in Computer Science". Every new PhD in CS student is required to take CS 700 within the first two semesters in the program. The new catalog requires the student to receive a grade of B or better in CS 700.

A new course CS 701 ("Research Experience in Computer Science"), with the prerequisite of CS 700, must be taken by all PhD CS students within the first 18 credits in the program. The new catalog requires the student to receive a grade of B or better in CS 701.

The students should note that the department is planning to offer CS 700 and CS 701 once per academic year (CS 700 in Fall and CS 701 in Spring).

The total number of required credits (72) and the dissertation research credits (24 in CS 998 and CS 999, with a minimum of 12 in CS 999) remains the same. The 48-credit formal course work requirement consists of CS 600 (3 credits), CS 700 (3 credits), CS 701 (3 credits), 9 credits of courses selected from the list of advanced graduate courses approved by the department, and 30 additional credits received in other graduate courses, which may be satisfied by a previous MS degree in Computer Science (subject to the department's approval). The students are still required to complete CS 990 and two instances of CS 800.

2. <u>Breadth Requirement:</u> The written qualifying exams (which were essentially used to satisfy the breadth requirement in prior catalogs) will continue to exist. However, in the new catalog, the students have an **option** to satisfy the breadth requirement by showing superior performance in a number of graduate core courses determined by the department, instead of taking the written qualifying exams.

Specifically, the students must show superior performance in **four** of the listed courses. The courses must be selected from at least **three different areas.** CS 583 ("Analysis of Algorithms") from Theoretical Computer Science area must be selected.

The required performance level is specified as:

i. receiving a grade of A- or better in three out of the four courses, and,

ii. receiving a grade of B or better in the fourth course.

The list of courses that can be used to satisfy the breadth requirement and their respective areas (as of Fall 2018) is given below :

Course	Area
Analysis of Algorithms (CS 583)	Theoretical Computer Science
Computer Networks (CS 555)	Systems and Networks
Operating Systems (CS 571)	Systems and Networks
Network Security (ISA 656)	Security
Database Systems (CS 550)	Databases
Artificial Intelligence (CS 580)	Artificial Intelligence
Data Mining (CS 584)	Artificial Intelligence
Compilers and Languages (CS 540)	Programming Languages
Software Construction (SWE 619)	Software Engineering
Software Testing (SWE 637)	Software Engineering
Computer Graphics (CS 551)	Visual Computing

The students can also choose to satisfy the breadth requirement by taking written qualifying exams and passing four exams in at most two consecutive attempts. However, mixing-and-matching the course grades and written qualifying exams is **not** allowed. The course-oriented criterion is the "default" way to satisfy the breadth requirement. <u>If the student takes a written qualifying exam, the course-oriented criterion can no longer apply</u>.

3. <u>Comprehensive Exam:</u> Under the new catalog rules, both the structure and timing of the Comprehensive Exam change.

Specifically, the Comprehensive Exam now consists of two separate components (a **written** component and an **oral** component). It will be administered by a departmental examination committee. The student will be able to form his/her dissertation committee only after successfully passing the comprehensive exam.

The written component will involve preparing a **critical review** of the research literature on a specific topic in the intended research area. The oral component will be about 2-hour long, and will consist of a short presentation by the student followed by a question-answer phase. It will be a public exam but only the members of the examination committee can ask questions. The student is expected to answer questions about his/her presentation, his written review, as well as the texts in the **reading list** which will be provided to the student in advance. The reading list will also include key textbooks and important research papers in the broader research area of the student, as determined by the department. A student who fails in the comprehensive exam is allowed a second and final attempt (which must occur during the following semester).

More details about the comprehensive exam procedure can be found in the [catalog entry](#).

 4. <u>Milestones and Deadlines:</u>

The new requirements establish a set of PhD milestone deadlines that must be satisfied:

Determining the research advisor and **satisfying the breadth requirement:**
Within the <u>first 24 credits</u> in the program (cannot be postponed beyond three years [for part-time students])

Taking the comprehensive exam and **completing both instances of CS 800:**
Within the <u>first 36 credits</u> in the program (cannot be postponed beyond five years [for part-time students])

There is no change in the advancement to candidacy and graduation deadlines:
6 years to candidacy, 9 years to graduation

According to the new catalog, the students are expected to make steady progress in the program by completing the required course work and research-related milestones within the specified deadlines. Students who fail to meet the deadlines will be dismissed from the program unless there are extenuating circumstances approved by the department.

Requirements for current PhD CS students who will change catalog in Fall 2018

All the requirements of the new catalog rules, including the **milestone deadlines**, must be met. While a catalog change does not "reset" the PhD clock, current students who already completed a number of credits in the PhD CS program and who are very close to a new milestone deadline, will be given some extra time as specified below.

- **CS 700:** The students do not need to re-take CS 700 if they already completed it with a grade of B or better. Students who did not take CS 700 (or complete successfully) will need to take it in the next offering [in Fall 2018].

- **CS 701:** Under the new requirements, all PhD CS students should complete CS 701 within the first 18 credits in the program.   If the student has already 18 or more credits in PhD CS, (s)he must take CS 701 in the next offering [in Spring 2019]. The students should recall that CS 700 is the prerequisite for CS 701 and plan accordingly.

- **Breadth Requirement:** Under the new requirements, all students must satisfy the breadth requirement in the first 24 credits in the PhD program (in at most three years for part-time students).
  If the student has already completed 12 or more credits, (s)he must satisfy the breadth requirement within the next 12 credits (The granted extra time can't exceed 18 months for part-time students).

  The **deadline to determine the research advisor** is determined in the same way as the deadline to satisfy the breadth requirement.

  Important: The new catalog requirements do not allow mixing-and-matching written qualifying exams and state that as soon as a student takes a written qualifying exam, the course-oriented criterion cannot be used. Consequently, **students who take a written qualifying exam in August 2018 or in a later round cannot use the course grades to satisfy the breadth requirement even if they switch to the new catalog**.

  Students who are granted a third and final qualifying exam attempt in August 2018 after failing to complete the exams in two consecutive attempts must take and pass the remaining qualifying exam(s) in August 2018 in order to remain in the PhD CS program.

- **Comprehensive Exam:** Under the new requirements, all students must satisfy the breadth requirement in the first 36 credits in the PhD program (in at most five years for part-time students).
  If the student has already completed 12 or more credits, (s)he must take the comprehensive exam within the next 24 credits (The granted extra time can't exceed 40 months for part-time students).

  The **deadline to complete both instances of CS 800** is determined in the same way as the deadline to take the comprehensive exam.

General Suggestions: Before applying for a catalog change, consider all the requirements and potential implications. We strongly recommend that you discuss the pros and cons of a catalog switch with your academic advisor. In case you decide to make a request for a catalog change, make a plan in advance to meet all the new milestone deadlines (which are firm).