

**DEGREE/PROGRAM CHANGE
FORM C
Form Number: C1675**

Fields marked with * are required

Name of Initiator: Megan Ashley Morrison **Email:** mmorri03@unm.edu **Phone Number:** 505 277-3112
Date: 09-25-2015

Associated Forms exist? Yes Initiator's Title Admin Assistant I: Computer Science
Faculty Contact Stephanie Forrest Administrative Contact Megan Morrison
Department Computer Science Admin Email meganm@cs.unm.edu
Branch Admin Phone 277-3112

Proposed effective term

Semester Fall Year 2016

Course Information

Select Appropriate Program Graduate Degree Program
Name of New or Existing Program Ph.D. Computer Science
Select Category Degree Degree Type Ph.D.
Select Action Revision

Exact Title and Requirements as they should appear in the catalog. If there is a change, upload current and proposed requirements.

See current catalog for format within the respective college (upload a doc/pdf file)

[PhD 2015.docx](#)

Does this change affect other departmental program/branch campuses? If yes, indicate below.

Reason(s) for Request (enter text below or upload a doc/pdf file)

Reduce the required number of core courses to add flexibility to the program, especially for students working on interdisciplinary projects. - To add a new course in empirical methods to the core in response to the growing emphasis on experimental methods and data science throughout computer science. - To add a research milestone and Research Practicum to help students initiate research projects and find permanent dissertation advisors more quickly. Taken together, these modifications will better prepare CS Ph.D. students to conduct state-of-the-art research, and it will help structure and accelerate their research progress through the program

Upload a document that includes justification for the program, impact on long-range planning, detailed budget analysis and faculty workload implications.(upload a doc/pdf file)

[PhD 2015.docx](#)

Are you proposing a new undergraduate degree or new undergraduate certificate? If yes, upload the following documents.

Upload a two-page Executive Summary authorized by Associate Provost. (upload a doc/pdf file)

Upload memo from Associate Provost authorizing go-ahead to full proposal. (upload a doc/pdf file)

Computer Science Ph.D. Program

Current Information	New Information
<p data-bbox="188 310 737 342">Doctor of Philosophy in Computer Science</p> <p data-bbox="188 390 792 884">The Doctor of Philosophy in Computer Science (Ph.D.) is offered through a cooperative program involving the Computer Science departments at the University of New Mexico, New Mexico State University (Las Cruces, NM) and the New Mexico Institute of Mining and Technology (Socorro, NM). Doctoral students at the University of New Mexico may specialize in areas of current interest to the University of New Mexico faculty, or, by special arrangement, they may work in areas of interest to faculty at either of the other two universities.</p> <p data-bbox="188 932 526 963">Graduation Requirements</p> <p data-bbox="188 1012 704 1119">In addition to all Graduate Studies requirements for the Ph.D. degree the department also requires the following:</p> <ul data-bbox="240 1167 779 1894" style="list-style-type: none"> <li data-bbox="240 1167 779 1388">• 4 credit hours of CS 592 (Colloquium), taken from the University of New Mexico. If the student enters the program with a master’s degree, the requirement is reduced to 2 credit hours of CS 592. <li data-bbox="240 1398 779 1545">• At least 24 of the credit hours, exclusive of dissertation, must be completed at one of the three New Mexico universities. <li data-bbox="240 1556 779 1894">• At least 30 credit hours, exclusive of dissertation, must be in courses numbered 500 or above. Of these credit hours, at most 12 may come from individual study courses (at the University of New Mexico, CS 551 and CS 650). If the student enters the program with a master’s degree, the requirement is reduced to 18 credit 	<p data-bbox="821 310 1370 342">Doctor of Philosophy in Computer Science</p> <p data-bbox="821 390 1429 884">The Doctor of Philosophy in Computer Science (Ph.D.) is offered through a cooperative program involving the Computer Science departments at the University of New Mexico, New Mexico State University (Las Cruces, NM) and the New Mexico Institute of Mining and Technology (Socorro, NM). Doctoral students at the University of New Mexico may specialize in areas of current interest to the University of New Mexico faculty, or, by special arrangement, they may work in areas of interest to faculty at either of the other two universities.</p> <p data-bbox="821 932 1159 963">Graduation Requirements</p> <p data-bbox="821 1012 1338 1119">In addition to all Graduate Studies requirements for the Ph.D. degree the department also requires the following:</p> <ul data-bbox="873 1167 1412 1894" style="list-style-type: none"> <li data-bbox="873 1167 1412 1388">• 4 credit hours of CS 592 (Colloquium), taken from the University of New Mexico. If the student enters the program with a master’s degree, the requirement is reduced to 2 credit hours of CS 592. <li data-bbox="873 1398 1412 1545">• At least 24 of the credit hours, exclusive of dissertation, must be completed at one of the three New Mexico universities. <li data-bbox="873 1556 1412 1894">• At least 30 credit hours, exclusive of dissertation, must be in courses numbered 500 or above. Of these credit hours, at most 12 may come from individual study courses (at the University of New Mexico, CS 551 and CS 650). If the student enters the program with a master’s degree, the requirement is reduced to 18 credit

<p>hours in courses numbered 500 and above—at most 9 of these credit hours may come from individual study courses.</p> <ul style="list-style-type: none"> • Passing marks on the comprehensive course work, on the oral candidacy examination and on a final oral examination in the student’s area of specialization. <p>Every student who has passed the comprehensive course work requirement must give one Colloquium per year (scheduled as part of the regular departmental colloquium series), surveying the student’s work to date.</p> <p>Teaching requirement for the doctorate: As a requirement for the Ph.D. in Computer Science, all students complete a one-semester teaching assignment. Typically and preferably, this assignment involves running a class section, including classroom lecturing; there is, however, some flexibility in tailoring this assignment to each particular student. The student is encouraged to fulfill this requirement early in his or her studies, as the teaching experience is expected to help solidify the student’s mastery of core Computer Science material.</p> <p>Ph.D. Comprehensive Course Work</p> <p>All students pursuing a Ph.D. degree are required to complete 24 credit hours of comprehensive course work to provide knowledge in core areas of computer science.</p> <p>Students must choose two courses from each category below. Students must have a minimum grade for each individual class of "B-" and have a minimum cumulative GPA for all eight classes of 3.5.</p>	<p>hours in courses numbered 500 and above—at most 9 of these credit hours may come from individual study courses.</p> <ul style="list-style-type: none"> • Passing marks on the comprehensive course work, on the oral candidacy examination and on a final oral examination in the student’s area of specialization. <p>Every student who has passed the comprehensive course work requirement must give one Colloquium before graduation surveying the student’s work to date.</p> <p>Teaching requirement for the doctorate: As a requirement for the Ph.D. in Computer Science, all students complete a one-semester teaching assignment. Typically and preferably, this assignment involves running a class section, including classroom lecturing; there is, however, some flexibility in tailoring this assignment to each particular student. The student is encouraged to fulfill this requirement early in his or her studies, as the teaching experience is expected to help solidify the student’s mastery of core Computer Science material.</p> <p>Ph.D. Comprehensive Course Work</p> <p>All students pursuing a Ph.D. degree are required to complete at least 18 credit hours of comprehensive course work to provide knowledge in core areas of computer science. Students must also take at least two additional CS graduate level courses in their area of research specialization.</p> <p>Students must choose two courses from each category below. Students must achieve a minimum cumulative GPA for the comprehensive courses of 3.5.</p>
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<p>Systems CS 544 Cybersecurity CS 564 Introduction to Database Management CS 585 Computer Networks CS 587 Advanced Computer Operating Systems</p> <p>Languages CS 550 Programming Languages and Systems CS 558 Software Foundations choose one of the following: CS 554 Compiler Construction CS 555 Advanced Topics in Compiler Construction</p> <p>Theory CS 500 Introduction to the Theory of Computation CS 561 Algorithms and Data Structures CS 530 Geometric and Probabilistic Methods</p> <p>Empirical Methods CS 512 Advanced Image Synthesis CS 523 Complex Adaptive Systems CS 527 Principles of Artificially Intelligent Machines CS 529 Introduction to Machine Learning</p> <p>Students must complete the comprehensive course work as noted above. Upon completion of this course work the student is allowed to work toward the dissertation. The student's advisor and the graduate advisor or department chairperson then appoint a dissertation committee which determines the student's remaining program of study and conduct the candidacy examination. The candidacy examination verifies that the student possesses the specialized knowledge required for his/her area of research and ensures that the proposed dissertation topic is adequate in scope, originality and significance. The student is admitted to candidacy for the</p>	<p>Systems CS 554 Compiler Construction CS 585 Computer Networks CS 587 Advanced Computer Operating Systems</p> <p>Theory CS 500 Introduction to the Theory of Computation CS 561 Algorithms and Data Structures CS 550 Programming Languages and Systems</p> <p>Empirical Methods CS 530 Geometric and Probabilistic Methods in Computer Science CS 533 Experimental Methods in Computer Science</p> <p>Students are also required to complete a language requirement by taking at least one of the following: CS 550 Programming Languages and Systems CS 554 Compiler Construction CS 558 Software Foundations</p> <p>All Ph.D. students must also complete a Research Milestone. The milestone is a validation by a small committee of CS faculty on behalf of the Department that the student has demonstrated the ability to conduct independent research at a level appropriate for developing and completing a dissertation in the department.</p> <p>Research Milestone Requirement Within 2.5 calendar years of matriculation, each Ph.D. student is required to write and successfully defend a paper or report documenting significant technical research by the student. The paper should describe the student's body of work and be written in a style that is appropriate for submission to a</p>
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doctorate upon completion of the comprehensive course work and candidacy examination, with the approval of the doctoral committee and the Dean of Graduate Studies. Finally, the committee evaluates the student's doctoral dissertation and conducts the final oral examination on the student's area of specialization.

A brochure describing the program and requirements can be obtained from the department.

peer-reviewed computer science conference.

Ordinarily, Ph.D. students will select a subject area advisor for the milestone project at the beginning of their second year in the program and register for the Research Practicum (CS 600). The Practicum will provide intensive supervision for one semester, in collaboration with the subject area advisor, as the student develops a milestone project and begins to research it. All students are required to have submitted the milestone paper and presented it to a committee of three CS faculty by the fourth week of the Fall semester of their 3rd year (5th semester in the program, or 6th semester for January admits). The Committee consists of the Practicum instructor, the subject area advisor, and an additional member appointed by the Graduate Committee. If the Committee determines that either the paper or the presentation is not satisfactory, the student has the rest of the semester to work with the Committee to produce a satisfactory outcome. If the student fails to pass the milestone by January (beginning of the 6th semester in the program), then the student will be asked to leave the program. Students who successfully complete the milestone before their third semester in the program (both the paper and presentation) can be exempted from the Practicum at the discretion of their advisor.

In addition to this process, all students will continue to receive annual evaluations from the department.

Students must complete the comprehensive course work and research milestone as noted above. Upon completion of this course work the student is allowed to work toward the dissertation. The student's advisor and the graduate advisor or department chairperson then appoint a dissertation committee which

determines the student's remaining program of study and conduct the candidacy examination. The candidacy examination verifies that the student possesses the specialized knowledge required for his/her area of research and ensures that the proposed dissertation topic is adequate in scope, originality and significance. The student is admitted to candidacy for the doctorate upon completion of the comprehensive course work and candidacy examination, with the approval of the doctoral committee and the Dean of Graduate Studies. Finally, the committee evaluates the student's doctoral dissertation and conducts the final oral examination on the student's area of specialization.

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