APPENDIX G

THE UNIVERSITY OF NORTH CAROLINA

REQUEST FOR AUTHORIZATION TO ESTABLISH A NEW DISTANCE EDUCATION DEGREE PROGRAM OR SITE (THROUGH WHICH 50% OR MORE OF A DEGREE PROGRAM IS PROVIDED)

INSTRUCTIONS: Fill in the appropriate blanks and expand the electronic version of this form as required to include other more extensive information. Please submit three copies of the proposal to General Administration. As of January 1, 2010 submission of proposals will be electronic.

Date: Draft 12/16/13

Constituent Institution: East Carolina University
CIP Discipline Specialty Title: Computer Science
CIP Discipline Specialty Number: 11.0701 Level: M
Exact Title of the Proposed Program: Computer Science
Degree Abbreviation: MS Proposed Date of Initiation: August 2014

Will this program be completely individual access (e.g., online, videocassette, etc.)? Yes
If "yes," primary mode of delivery: Online

If cohort-based, length of time to complete the sequence (e.g., 18 mos., 2 years): N/A

List any other UNC institutions that offer similar programs in the same location (if requesting a site-based program) or a similar program online or by individual access (if requesting an individual access program):

The following information is from the UNC-GA site on distance education programs related to computing.

CIP Code	Program Title	Campus
11.0701	Computer and Information Science	NC Central University
11.0101	Computer and Information Science	NC State University

For the following question, please consult "Guidelines for Alternative, Online, or Distance Education Delivery of approved Degree Programs" from the UNC Policy Manual available on the UNC GA Academic Planning website.

One N/A (prior authorization from SACS; both Appendix F and G should be submitted to COC of SACS by the institution, if applicable)

Two N/A (prior notification to SACS; Appendix F should be submitted to COC of SACS by the institution, if applicable)

Based on the SACS policy on substantive change, by what date should the campus be notified by UNC-GA of authorization to establish? N/A

In 2002, ECU received this notification from SACS "Inasmuch as these degree programs are well established at the institution and given the Commissions' approval of technology-mediated instruction at ECU, this delivery mode is included within the scope of the institution's accreditation. No further information is requested."
The following items conform to the information required for SACS Substantive Change Procedure One.

1. Abstract (limit to one page or less)
Describe the proposed change; its location; initial date of implementation; projected number of students; description of primary target audience; projected life of the program (single cohort [indicate number of years] or ongoing); and instructional delivery methods.

The Department of Computer Science proposes to offer the existing Master of Science degree program in Computer Science in a distance education format beginning August 2014. The program will be delivered via the Internet utilizing distance education delivery tools such as Blackboard, Camtasia, Saba Meeting, and Media Site via the global classroom and Skype. Methods of delivery will be up to individual faculty members.

We expect that the majority of students who enroll in the program will be residents of North Carolina who are currently employed and are interested in further deepening their understanding of computer science, including those who have migrated into computing jobs from other disciplines and need to extend or upgrade their existing qualifications to take their new responsibilities into account.

Based on our past experience with the Software Engineering degree, we expect that in the first year the number of DE students will be small, numbering 5 to 10 students. After that, we expect it to grow steadily to a maximum of about 30 in four years. Most will be part-time students, and we expect an average of about 9 semester hours per year per student.

2. Background information
Provide a clear statement of the nature and purpose of the change in the context of the institution's mission, goals, and strategic plan; evidence of the legal authority for the change (*to be provided by UNC General Administration in authorization letter*).

For more than 65 years, the mission of East Carolina University has included support of courses and degree programs for students located beyond the borders of the campus. Historically, these off-campus programs were offered at specific sites and outreach centers, often involving the placement of university support staff, teaching faculty, and resources at locations such as military bases and community colleges.

East Carolina University engaged a variety of resources to establish direction, guiding principles, and support systems required to respond appropriately to the state's commitment to improved access to higher education. Faculty and administrators provided considerable input.

Major strategies emerging from these planning efforts included:

- Commitment to focus on delivery of complete academic programs instead of a random selection of courses
- Commitment to use regular campus faculty, not adjuncts, to deliver most courses
- Investment in student and faculty support services to facilitate development and deployment of academic programs
- Investment in an infrastructure and services to support electronically offered courses
- Development of a planning process prior to approving programs to be offered in distance education format

Distance education is now at the very core of the way ECU operates. The DE initiative has brought an added richness and diversity to the campus. DE funding has brought significant number of new tenure track faculty members to the campus and has invigorated academic discussions in every academic unit.

Incoming students, traditional and non-traditional, will expect to learn at some level online, if not completely online. ECU's ability to be globally ready, to provide access to all citizens, to improve public education, to serve to transform and sustain the economies of its regions, and to be a major influence in the improvement of healthcare in eastern North Carolina depends on how well it embraces, supports, manages, and deploys distance education and online learning both on campus as well as off campus.

ECU Tomorrow: A Vision for Leadership and Service stands as ECU's long-range strategic plan. This plan approved by the Board of Trustees, sets forth ECU's mission, vision, values, five strategic directions, and core competencies. The UNC Board of Governors approved ECU's new mission statement in November 2009.

ECU's first strategic direction as published in "ECU Tomorrow" is Education for a New Century. Increasing access to higher education is seen as one of the university's core competencies. Listed there are the goals:

- We will expand our distance education programs, delivering a high-quality East Carolina education to the thousands of North Carolinians who cannot be campus residents.
- We will tailor programs to the needs of working adults through distance education models.
- We will make an East Carolina education accessible to prospective students and reach out to those who might otherwise be unable to achieve their educational potential.
- We are committed to increasing access to higher education for all students.

This proposal is aligned with the UNC Strategic Plan "Our Time Our Future" in several ways. It aligns closely with Goal 1. Setting Degree Attainment Goals Responsive to State Needs, Goal 2. Strengthening Academic Quality, and Goal 3. Serving the People of North Carolina. This new online offering will allow students who may not be able to attend classes on campus to have access to an advanced degree in computer science, thereby helping to address the state's workforce needs. We will target recruitment of graduate students in this high-growth specialty area and we will use distance education to facilitate increased student access to the MS in Computer Science. This new online offering will contribute to UNC efforts to support Advanced Manufacturing, by contributing to the integration of information technology, computation, and software development in the production of products and development of systems to enable automation. It will support the area of Data Science, by contributing to efforts to manage "big data" as well as military, defense, and business cyber security. In addition, from a regional perspective, eastern North Carolina is home to a number of large pharmaceutical industries who have a growing need for employees with advanced knowledge of computer science.

3. Assessment of need and program planning/approval

Discuss the rationale for the change, including intended audience and an assessment of need (*include results of surveys or special studies)*, evidence of inclusion of the change in the institution's ongoing planning and evaluation processes; and documentation that faculty and other groups were involved in the review and approval of the new site or program.

The Master of Science program in computer science has been offered face-to-face at ECU since 1994. Over the years, it has had a fairly steady enrollment of 15 to 20 students.

The department began to offer a Master of Science degree in software engineering in fall 2007, with options to complete the degree either face-to-face or online. That degree has enjoyed steady growth, with 16 face-to-face and 47 online students currently enrolled. The number of online students reflects the fact that many have full-time jobs and are taking courses part time.

The demand for an online software engineering degree strongly supports a demand for an online degree in the closely related field of computer science, and is a far more reliable indicator than would be a survey or study. The U.S. Bureau of Labor Statistics estimates a 22% growth rate in jobs for software developers (much faster than average), with a current median salary of about $93,000.

Software developers can work with computer programmers, but usually need to be able to write some parts of programs themselves.

The Department of Computer Science receives regular inquiries regarding the availability of the Master of Science degree in Computer Science online. Some of our current software engineering students have indicated that they would have preferred the computer science degree if it was offered online. With the MS in computer science offered online as well, those students would now get the degree that they prefer.

Based on past experience with the Software Engineering degree, we expect the initial group of students to be small, numbering 5 to 10 students. After that, we expect it to grow steadily to a maximum of about 30. Most will be part-time students, and we expect an average of about 9 semester hours per year per student.

Provide projected annual headcount enrollment:
Individual access: Years 1) _10_ 2) _15_ 3) _25_ 4) _30_ 5) _30_

Projected total SCHs (all sites):

Year 1	**Student Credit Hours**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I			
Category II			
Category III		90	
Category IV			

Year 2	**Student Credit Hours**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I			
Category II			
Category III		135	
Category IV			

Year 3	**Student Credit Hours**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I			
Category II			
Category III		225	
Category IV			

Year 4	**Student Credit Hours**		
Program Category	**UG**	**Master's**	**Doctoral**
Category I			
Category II			
Category III		270	
Category IV			

The process of approving an online degree at ECU is as follows. Each of the University's distance education programs begins in the academic department. Faculty members work with staff from the Office of Continuing Studies to begin the planning process. Each program has a coordinator who is a full time faculty member and who develops a program design that includes both the instructional requirements and the academic resources available to meet the needs of a widely dispersed group of students.

They work to ensure that prospective students are made aware of the programs available to them and student services to support these programs are incorporated into the planning process. The Office of Institutional Planning, Assessment and Research ensures that university surveys are made available to distance education students and that their participation is encouraged.

Proposals are referred to the Academic Program Development Collaborative Team (APDC Team), an advisory body to the Academic Council. The Office of Academic Affairs, Office of Institutional Planning, Assessment and Research, Graduate School, Office of Continuing Studies, Division of Research and Graduate Studies, Division of Health Sciences, Educational Policies and Planning Committee, Undergraduate and Graduate Curriculum Committees as well as the Faculty Senate Chair are represented. A unit proposing a new degree program begins the on-campus review process by presenting the appropriate planning and establishing documents to the APDC Team, which will collaborate with the unit to strengthen the proposal. The APDC Team advises the provost on all new academic program proposals submitted as well as advises the Dean of the Graduate School on graduate programs under consideration. The Educational Policies and Planning Committee (EPPC) is informed of those recommendations.

The proposal is then reviewed by the EPPC, a standing committee of the faculty senate and then referred to the academic council. EPPC oversees the adequacy, balance, and excellence of the University's overall undergraduate and graduate programs; advises the Chancellor on educational policies and organizations, goals, standards and procedures; reviews requests for permission to plan and establish new degree programs.

The Academic Council includes the provost and senior vice chancellor for academic affairs, the vice chancellor for research and graduate studies, and the vice chancellor for health sciences. The Academic Council considers the APDC Team's and EPPC recommendations on new academic degree program proposal and makes recommendations to the chancellor.

4. Description of the substantive change (as required by SACS)
Provide a description of the proposed change, including description of the proposed program, specific outcomes and learning objectives and curriculum and schedule of proposed course offering.

Describe and provide rationale for any differences in admission, curriculum, or graduation requirements for students enrolled online or at the new site(s), or any special arrangements for grading, transcripts, or transfer policies.

Describe administrative oversight to ensure the quality of the program or services to be offered.

Our online program will have no significant differences in admission, curriculum, or graduation requirements for students enrolled online, nor any special arrangements for grading, transcripts, or transfer policies.

Academically qualified persons participate in all decision making concerning curriculum and program oversight. Permanent faculty members of ECU are responsible for presentation, management, and assessment of all distance education degree programs. A program coordinator is assigned for each degree program, whether offered on campus or electronically. Each program coordinator is a full-time ECU faculty member. A unit assessment coordinator from the academic discipline coordinates assessment of all on-campus and electronically offered degrees in the discipline.

Assessment of distance learning is fully integrated into the university-wide assessment program. Faculty and administrators within academic units oversee all distance education programs to ensure quality and content. Academically, there is no distinction between courses taught on campus and those taught via distance education. All participants must meet the same course objectives and demonstrate the same learning outcomes. The curriculum and evaluation of DE courses, however delivered, are conducted under the same procedures and personnel as on-campus courses. The

academic unit establishes the intended learning outcomes, the means of assessment, and the criteria for success, and carries out the assessment activities for both the campus and DE programs.

5. Faculty and support staff
Please Provide:
Number of faculty expected to deliver instruction: full-time faculty 9 part-time faculty 1 :

A complete roster (using the SACS "Roster of Instructional Staff" form) of those faculty employed to teach in the program, including a description of those faculty members' academic qualifications and course load in the proposed program, as well as course work taught in other programs currently offered;

ROSTER OF INSTRUCTIONAL STAFF

1	2	3	4
NAME (F, P)	COURSES TAUGHT Including Term, Course Number & Title, Credit Hours (D, UN, UT, G)	ACADEMIC DEGREES& COURSEWORK Relevant to Courses Taught, Including Institution & Major List specific graduate coursework, if needed	OTHER QUALIFICATIONS & COMMENTS Related to Courses Taught
Karl Abrahamson (F)	CSCI 5220: Program Translation (3)(G) CSCI 6220: Topics in Language Design (3) (G) CSCI 6420: Computability and Complexity (3) (G) CSCI 6410: Design and Analysis of Algorithms (3) (G) CSCI 6995: Research Project (3) (G)	Ph.D. Computer Science, University of Washington, 1980	
Junhua Ding(F)	CSCI 5210: Operating Systems II (3) (G) CSCI 6230: Software Engineering Foundations (3) (G) CSCI 6995: Research Project (3) (G) SENG 6240: Software Architecture and Design (3) (G) SENG 6247: Software Security Engineering (3) (G) SENG 6250: Software Systems Modeling and Analysis (3) (G) SENG 6255: Software Requirements Engineering (3) (G)	Ph.D. Computer Science, Florida International University, 2004	
Qin Ding(F)	CSCI 6600: Data Base Management Systems (3) (G) CSCI 6840: Data Mining (3) (G) CSCI 6995: Research Project (3) (G) CSCI 7000: Thesis (1-6) (G) CSCI 7001: Thesis: Summer Research (1) (G)	Ph.D. Computer Science, North Dakota State University, 2002	
Krishnan Gopalakrishnan(F)	CSCI 5210: Operating Systems II (3) (G) CSCI 6100: Cryptography and Information Security (3) (G) CSCI 6300: Cryptographic Protocols (3) (G)	Ph.D. Computer Science, University of Nebraska-Lincoln, 1994	

	CSCI 6420: Computability and Complexity (3) (G) CSCI 6410: Design and Analysis of Algorithms (3) (G) CSCI 6995: Research Project (3) (G) CSCI 7000: Thesis (1-6) (G)		
Mark Hills(F)	SENG 6250: Software Systems Modeling and Analysis (3) (G)	Ph.D. Computer Science, University of Illinois, Urbana, 2009	
Masao Kishore(P)	CSCI 6120: Computer Systems Architecture (3) (G) CSCI 6820: Computer Graphics (3) (G)	Ph.D. Mathematics, Princeton University, 1977	
Ronnie Smith(F)	CSCI 5800: Artificial Intelligence (3) (G) CSCI 6810: Topics in Artificial Intelligence (3) (G) CSCI 6995: Research Project (3) (G) CSCI 7000: Thesis (1-6) (G)	Ph.D. Computer Science, Duke University, 1991	
M.N.H. Tabrizi(F)	CSCI 6120: Computer Systems Architecture (3) (G) CSCI 6130: Networking and Telecommunication (3) (G) CSCI 6140: Mobile Communications and Wireless Security (3) (G) CSCI 6230: Software Engineering Foundations (3) (G) CSCI 6710: Developing e:Commerce Systems (3) (G) CSCI 6995: Research Project (3) (G) CSCI 7000: Thesis (1-6) (G) SENG 6255: Software Requirements Engineering (3) (G)	Ph.D. Control and Systems Engineering, Sheffield University, UK, 1982	Sheffield University does not name its Ph.D. degrees. The name shown is the name of the department, which offers a variety of specializations. Dr. Tabrizi's specialization is in computer science.
Sergiy Vilkomir(F)	CSCI 6905: Topics in Computer Science (3) (G) SENG 6270: Software Verification and Validation (3) (G)	Ph.D. Computer Systems Analysis, Kharkov Polytechnic University, Ukraine, 1990	
James Wirth(F)	CSCI 5220: Program Translation (3)(G) CSCI 6995: Research Project (3) (G)	Ph.D. Mathematics, University of Notre Dame, 1966	

F, P: Full-time or Part-time; D, UN, UT, G: Developmental, Undergraduate Nontransferable, Undergraduate Transferable, Graduate

Evidence that adequate number of faculty members are assigned to support the program;

Impact of the initiative on faculty workload; and

Number and responsibilities of support staff (e.g., program coordinator).

Since no new courses will be offered, the impact on computer science faculty workload relative to teaching courses will be minimal. Several courses needed for completion of the degree have already been offered online, and Software Engineering courses that can be used as electives have also been offered online. Two core courses will require development. Additional electives are expected to be

developed for online delivery as well, although students will be able to complete the degree without those in the short term. The only impact on faculty teaching workload will be the additional time to teach those courses online. Although that time is significant, the Dean has provided summer funding for developing courses for online delivery and has promised to provide more in the future. Some computer science graduate courses have already been offered online, and, by reallocating faculty time from other activities, the department will be able to cover the additional teaching time without additional faculty.

As enrollment grows, supervision of projects and theses will require additional faculty time. Four faculty currently supervise software engineering projects and theses, which leads us to believe that the remaining faculty will be adequate to supervise computer science projects and theses, once again requiring some reallocation of time.

Dr. Tabrizi serves as graduate director, including coordination of the proposed program. The department chair and the graduate coordinator together complete the computer science schedules, analyze data and complete area reports, work with other areas to ensure alignments, and address any program area concerns.

Describe means by which the institution will provide support services for students enrolled at the site(s) or online (e.g., admissions, skills assessment, course registration, academic advising, counseling, etc.).

From admission to graduation ECU provides a system of support services that acknowledge the challenges students away from the campus have in meeting the responsibilities of their families and careers in order to be successful in their academic endeavors. DE students are an integral part of the mission of the university beginning with the university's motto *Servire*, to serve. Rather than develop alternative systems for DE students, ECU has developed web based processes that support all students, both DE and campus. Careful planning and dedicated resources have permitted ECU to move from paper-based processes to a system where all ECU students can interact with the university in the same manner.

The University has made a commitment to provide an online interface for services that all students can access anytime https://onestop.ecu.edu/onestop . The ECU OneStop portal allows users (students, faculty, staff,) to personalize a single interface for access to internal campus resources. Students log in to OneStop using a PirateID and passphrase.

Through the OneStop web portal, students can access advising and registration information, their course schedule, grades, course catalog, course description, a GPA calculator, university events and announcements, and a myriad of other services. Tools available in OneStop include student course registration and tuition payment, faculty access to class rosters and a campus-wide discussion board. Students can also access OneStop from a variety of mobile devices.

The Office of Continuing Studies (OCS) serves as a bridge between the student at a distance and the academic and administrative units of the university. The office respects and understands the unique demands of distance learning and is committed to assuring quality, accessible programs and services. The office conducts its activities in partnership with the academic and administrative units of the university.

OCS is charged with assisting ECU students away from the campus by identifying the nature of their concerns and marshaling the resources of multiple offices to bring that concern to a successful conclusion. The needs and challenges of DE students are more complex and their expectations in regard to service are at a professional level demanded each day in their career settings.

Successful distance education programs require commitment, collaboration and cooperation from all facets of the university. Our mission guides us to assess each individual situation and not to simply direct students elsewhere to address their needs, but to ensure a successful resolution. These services provide a safety net for DE students as they make progress in online programs.

OCS provides a dedicated email address and a toll free number staffed by student service specialists who can reassure students and assist in navigating the online resources available to them. They can assist with general program information, procedural issues, as well as link them to resources across the campus. They provide a single point of contact for ECU students who are unable to come to the campus.

ECU has a comprehensive communication plan of email messages to students with information, available services and reminders of important dates, registration reminders, and reassurances that we are available to help.

The Options website www.options.ecu.edu provides a central repository for services and information for DE students. Orientation and online tutorials are available to assist new and current DE students. "Options for Adult Learners", an annual newspaper insert is distributed in newspapers across North Carolina.

The graduate school has developed a system that allows both prospective campus and DE students the opportunity to apply, interact and monitor their progress via a web based system. Registration, drops, withdrawals, graduation applications and transcripts can all be accomplished online in the password protected environment housed in OneStop.

The mission of the Office of Student Financial Aid is to offer a comprehensive financial aid program that attempts to meet the total financial needs of all university students, utilizing aid programs from all sources for which students are believed to be eligible, designing financial aid packages in ways which assist students in achieving a quality education and support their academic objectives. Students are encouraged to apply online and information, forms and access to key personnel is available at http://www.ecu.edu/financial/

eBill notifications for tuition statements are sent to students and/or authorized user(s) by email. Paper bills are no longer mailed. Students can set up authorized users to access their account information, recent statements, and make payments. Students can log into ONESTOP at anytime to view current account information, recent statements, and make payments. All registered students are mailed an ECU Higher One Card (Debit MasterCard) for refund preference selection. Student refunds can include Financial Aid or credits for dropping class. The Office of Continuing Studies also maintains a Business office that can assist DE students with financial matters related to the university.

The ECU DE Proctoring Center is an approved site in the UNC Online Proctoring Network. This site serves distance education students who need to make an appointment to take proctored exams, and faculty members who need to set up proctored exams for distance education courses. It serves faculty and students throughout the UNC system. Information about the UNC Online Proctoring Network is available at http://services.northcarolina.edu.

6. Library and learning resources

Describe library and information resources to support the program, including staffing and services in place to support the initiative.

Describe cooperative agreements with other institutions and include a copy of such agreements in the appendix.

Relative to electronic resources, describe how students and faculty will access information, training for faculty and students in the use of online resources, and staffing and services available to students and faculty.

The J.Y. Joyner Library and William E. Laupus Health Sciences Library serve students enrolled at East Carolina University. Both libraries provide special services for distance education students.

Off-campus access is available to all students using library resources remotely by authentication through a proxy server. The students authenticate themselves by using their ECU Pirate ID and passphrase. Further information regarding this service is available at http://media.lib.ecu.edu/reference/howdoi/display.cfm?id=46.0.

Both libraries provide library orientations and research assistance to distance education students. Library orientations are provided through online tutorials, videos, and research guides (LibGuides) which introduce services to distance students and instruct them in the use of specific library research tools. These resources are available 24 hours a day 7 days a week. Assistance with research is provided through instant messaging, text messaging, e-mail, telephone, or in-person. Distance Education students are able to request one-on-one consultation services provided through instant messaging, phone, or in-person. Students may also have contact with liaison librarians who partner with faculty to provide instruction, synchronously or asynchronously.

Joyner Library currently subscribes to more than 450 databases containing indexes to journal and magazine articles, and Laupus Library also offers an extensive collection of online databases and collections. Many of these resources offer full-text access to individual articles. Many of these resources offer full-text access to individual articles and books. A listing of these resources may be found at http://www.ecu.edu/laupuslibrary/research/electronicresources.cfm. If students wish to determine if one of the libraries have full-text access to a particular journal title, they may use the E-Journal/E-book Portal at http://jw3mh2cm6n.search.serialssolutions.com/.

Students enrolled in distance education courses may check out books from both Joyner and Laupus Libraries as well as obtain print or online journal articles. Further information about obtaining materials at a distance is available through the Interlibrary Loan/Document Delivery Departmental websites of each library: Joyner Library, http://www.ecu.edu/cs-lib/accesssrv/ill/index.cfm; Laupus Libraryhttp://www.ecu.edu/cs-dhs/laupuslibrary/departments/docdel.cfm.

J.Y. Joyner Library houses and provides access to a physical collection of over 1.9 million volumes, over 48,000 serials (print and online), over 500,000 e-books, more than 24,000 items in its digital collection and one million federal documents (print and online). The library provides access to more than 400 electronic databases made available through several consortia and its own subscriptions. All together, the electronic database collections provide access to over 76,000 full-text journal titles. Resources can be accessed through the Joyner Library web site at http://www.ecu.edu/lib.\

For computer science, Joyner Library subscribes to complete ebook packages from Springer, including Lecture Notes in Computer Science, Lecture Notes in Artificial Intelligence and other monographs on computer science topics. The library also purchases the Math ebook collection from Springer, which includes titles useful to computer science. The following table shows approximate E-Journal Portal Category Headings for Engineering & Applied Sciences.

Computer Science	720
Applied Mathematics	109
Civil & Environmental Engineering: Operations Research	100
Electrical & Computer Engineering Electrical Engineering	581
Information Technology	93
Telecommunications	238

Other collection features include: a non-book media collection with over 32,000 items in various formats, a teaching, resources and curriculum materials collection, a collection dedicated to North Carolina materials, a Special Collections Department that houses over 11,000 linear feet of manuscripts, university archival materials, and a rare book collection. The library has also established an institutional repository which includes electronic theses and dissertations of ECU students and the scholarly output of both ECU students and faculty members.

Students enrolled at East Carolina University as distance education students are provided special services to ensure access to the library's physical and electronic collections. A Distance Education

Coordinator is employed to facilitate the delivery of library services and plays an active role in shaping services to distant users. Many librarians and staff members within the library work directly with distance students as services are provided. Information about distance education services can be found at http://media.lib.ecu.edu/DE/DE_Home.cfm

Librarians from Joyner Library conduct orientation and instruction sessions to distance education students using a variety of methods. The Distance Education Coordinator provides open orientation sessions to students via web conferencing software. Orientation sessions are also offered to faculty members to provide information about library services which can be passed along to students in their distance courses. Library instruction sessions are provided via pre-recorded video, online web conferring software, embedding resources in the course management system, and in-person at the request of the teaching faculty member.

The library also provides online tutorials, videos, and research guides, LibGuides, which introduce services to distance students and instructs them in the use of specific library research tools. These resources are available 24 hours a day 7 days a week and can be located at:

http://media.lib.ecu.edu/DE/Tutorials.cfm (tutorials)
http://media.lib.ecu.edu/DE/tutorial/deservices.html (video)
http://libguides.ecu.edu/ (LibGuides)

Joyner Library offers reference services to support ECU's distance learning students in the use of library resources for learning and research. Reference services have been expanded to include online options as well as more traditional means of communication. Assistance is provided through instant messaging, text messaging, e-mail, telephone, or in-person. Distance Education students may also request one-on-one consultation services provided through instant messaging, phone, or in-person. The Distance Education Coordinator is available to provide additional assistance when needed. Students may request assistance using the "Ask a Librarian" web page at http://www.ecu.edu/cs-lib/reference/ask_a_librarian.cfm.

Students enrolled in the Master of Science degree program in Computer Science will be able to access the ACM and IEEE digital library, sciencedirect.com, and many online journals and other resources in the field subscribed by the ECU library.

7. Physical resources

Describe physical facilities and equipment to support this initiative. Assess the impact that the proposed change will have on existing programs and services.

For off-campus facilities:
Name of the agency or organization that is providing the space.
Rental, lease, or other arrangements involved in obtaining use of this space including rates.
Describe any agreements or understandings with the organization providing the space.

The College of Technology and Computer Science currently has an infrastructure setup within the Master of Science in Software Engineering program (MSSE), and its approximately 65 students are using 4 clustered IBM Blade servers with a Network Appliance 3140 NAS device providing storage. Access to the MSSE storage on the NetApp NAS is via iSCSI. The MSSE students use about 500 GB (non-reduplicated) of storage. Approximately 40 virtual machines are deployed for MSSE class work and 8 virtual machines for graduate student research projects. We employ Vmware's ESXi hypervisor on all MSSE blade servers; virtual machines run Windows 2003 server supporting MSSE Students with virtual machines in teams of 4 to 5. Graduate projects use a combination of Linux, Windows 2003 and Windows 2008 servers. Access to the student virtual machines is via RDP or NX. The college is also managing a high performance cluster that is primarily used by the Department of Biology, but that can also be used by computer science students.

Each student virtual machine has all the required/needed software including Rational Rose Enterprise Suite, IBM WebSphere, Microsoft Project, and Microsoft Office installed. We teach online students and face-to-face students at the same time. We are currently testing VMware's View environment for MSSE students. This environment offers each student their own Windows 7 environment with Rational Rose Enterprise, IBM WebSphere, MS Project and MS Office installed. The VM will be available to the student as long as they are enrolled in the MSSE program.

Additionally, the university offers an appropriate technology infrastructure to support distance education. The university recognizes the vital need for a robust and reliable network, and consistently researches and implements infrastructure upgrades and improved processes to ensure network integrity and improve network uptime. Additionally, the Official content management system for the University runs on state of the art hardware, which guarantees a high level of quality with minimal downtime.

Technology at ECU is supported collaboratively through the efforts of Information Technology and Computing Services, Joyner and Laupus Libraries, and Distributed Information Technology units among colleges. Additionally, the College of Technology and Computer Science has a system support staff and infrastructure needed to support online education.

Information Technology and Computing Services (ITCS) supports the planning, coordination and implementation of computing on the ECU campus as well as the computing products and services related to the instruction, research and service goals of East Carolina University. ECU's information technology road map is developed and updated by the Information Resources Coordinating Council (IRCC), which guides the selection of campus-wide IT projects. IT Governance establishes the decision-making process, defines accountability and identifies responsibility for technology across the university.

In March 2010, we had Blackboard Consulting Services perform a Performance Audit and Tuning Engagement on our Production (Blackboard 8) and Development/Pilot (Blackboard 9) environments. The outcome of the engagement indicated our production system was well tuned, designed, and capable of supporting our students.

Because of the importance of this environment to the University, ITCS has taken a High Availability first, disaster recovery last approach. Each server is built with component redundancy for processors, memory, power supplies, network cards, fiber cards, etc. Multiple fully redundant systems power the database and applications tiers. The redundant servers are split between our primary (Cotanche) and secondary (GE99) data centers and are connected via multi-pathed replicated storage also split between both data centers. Sun Clustering is used to provide automatic failover for the database tier, while load balancing provides seamless redundancy for the applications tier. The design ensures that ECU can maintain BlackBoard services in the face of an entire data center failure. In addition, full system nightly backups are maintained offsite and recovery procedures are routinely tested should they be needed.

Through ECU's nearly Petabyte of storage, adequate storage and backup is available for student work, academic websites, student and faculty blogs. There are several resources available for the sharing of video. The primary resource for sharing student work is iTunes and a winmedia streaming server. Both of these resources enable students and faculty to upload unlimited amounts of video for use in courses.

The primary video infrastructure used to record lectures is through Media Site. Our Mediasite 5.5 setup is based on a high availability load balancing infrastructure, we currently run two application servers and one video content server that facilitate all of the capture from 35+ recorders to 13 departmental sites for both on demand and live streaming presentations. All sites have Active Directory authentication or local user authentication to view information and sensitive material.

The main internet connection for the University is provided by the North Carolina Research and Educational Network (NCREN). The connection to NCREN is a 1 gigabit per second connection to the

NRCEN Remote Point of Presence (RPOP) which is connected to the NCREN backbone by two 1 gigabit per second connections taking diverse paths back into the NCREN network.

To ensure success, adequate funding is provided for the technology infrastructure for distance education, through an education and technology student fee, which funds Blackboard, Centra, Second Life, retention tools (e.g., Starfish, Yammer), MediaSite, Moodle, Virtual Computing Lab, Help Desk Support, Software downloads (e.g., SPSS, SAS, Minitab, Mathematica, SAV, Nvivo), and other services that support distance education. Students receive an ECU PirateID that provides an e-mail account; access to web-based course management systems (Blackboard and Moodle), Web space, and electronic file storage space; and full access to electronic information and databases. Assistance with computer configurations, software interfaces, and technology problems is provided through ECU's Help Desk and the ACE Student Computing Support Center.

In conjunction with ITCS, the College provides an enterprise class infrastructure designed to provide faculty and students 24 X 7 access to all the technical resources necessary to sustain research and instruction. The college provides scalable storage and compute facilities capable of meeting the computing and data storage requirements of all college faculty and students. The computing infrastructure is configured to eliminate a single point of failure and to provide an ability to adapt to demand fluctuations by automatically adding computing resources as needed. In addition, the college's enterprise class storage infrastructure has been configured to sustain a high rate of operation as required by current desktop and virtualization technology and to provide the highest level of data integrity. The College continues to position it's infrastructure as a fundamental requirement for instruction and research and to provide access for a myriad of computing devices.

8. Financial support

Describe financial resources to support the change, including the budget for the first year of the proposed program. Include projected revenues (including tuition and fees receipts, state appropriations based on projected SCHs, grants, etc.) and expenditures, as well as amount of resources going to institutions or organizations for contractual or support services.

The following table summarizes the budget for the first year, in which enrollment is anticipated to be much lower than in subsequent years. As discussed above, current resources are adequate through reallocation of responsibilities.

Description	Total	
Faculty Salaries	40,097	80,195 (average faculty salary)/18 (faculty hrs.) x 9(semester hrs. in first year)
Benefits	9,222	(23% x 40,097)
Supplies & Materials	750	$250 per course (250 x 3 courses in first year)
Total Budget	50,069	(faculty salaries, benefits, supplies & materials)
Tuition Revenue	16,767	$207 (DE in-state tuition) x (81 SCH's from first year)
	7,299	$811 (DE out-of-state tuition) x (9 SCH's from first year)
Enrollment revenue	19,378	(40,097 average faculty salary) / (169.52 matrix FTE) x (90 SCH's from first year)

Student credit hours (SCHs) delivered to non-North Carolina residents receiving instruction outside the boundaries of North Carolina are not eligible for State-provided enrollment funding and these SCHs should not be reported on the funding matrix. The institution must set the rate charged for these SCHs at a level sufficient to cover the cost of instruction, which should be at least double the official in-state tuition rate. Indicate the average number of SCHs per semester that will be delivered to non-NC residents receiving instruction outside the boundaries of NC and the tuition that will be charged per-SCH for this instruction:

SCHs per semester delivered to non-NC residents receiving the instruction outside of NC boundaries: 3 SCH's.

Per-SCH charge, tuition and fees, for this out-of-state instruction to non-NC residents: $826.00.

If a site-based degree program is to be offered out of state, a more detailed justification is required. Please provide the rationale for offer the program out-of-state and the how resources will be secured to support the program, and indicate whether any State-supported resources will be used in the program. N/A

9. Evaluation and assessment
Describe the means used by the institution to monitor and ensure the quality of the degree program and off-campus site(s).

Summarize procedures for systematic evaluation of instructional results, including the process for monitoring and evaluating programs at the new site, as well as using the results of evaluation to improve institutional programs, services, and operations.

The computer science curriculum at East Carolina University primarily prepares students to work in industry as programmers and as software engineers, designers, or architects who create software. The computer science degree covers the theory and practice of software design, as well as computer architecture and operation.

For successful completion, our MS program requires, and will continue to require, 30 total credit hours, composed of the following:

Core courses
CSCI 5210: Operating Systems II (3) or CSCI 5220: Program Translation (3)
CSCI 6120: Computer Systems Architecture (3)
CSCI 6230: Software Engineering Foundations (3)
CSCI 6420: Computability and Complexity (3)

Elective courses (18 s.h.)
CSCI 5800: Artificial Intelligence (3)
CSCI 6100: Cryptography and Information Security (3)
CSCI 6130: Networking and Telecommunication (3)
CSCI 6140: Mobile Communications and Wireless Security (3)
CSCI 6220: Topics in Language Design (3)
CSCI 6300: Cryptographic Protocols (3)
CSCI 6410: Design and Analysis of Algorithms (3)
CSCI 6600: Data Base Management Systems (3)
CSCI 6710: Developing e:Commerce Systems (3)
CSCI 6810: Topics in Artificial Intelligence (3)
CSCI 6820: Computer Graphics (3)
CSCI 6840: Data Mining (3)
CSCI 6905: Topics in Computer Science (3)
CSCI 6995: Research Project (3)
CSCI 7000: Thesis (1:6)
CSCI 7001: Thesis: Summer Research (1)

Up to 6 sh. of the following courses can count toward the 18 s.h. of electives.
SENG 6240 - Software Architecture and Design (3)
SENG 6247 - Software Security Engineering (3)
SENG 6250 - Software Systems Modeling and Analysis (3)
SENG 6255 - Software Requirements Engineering (3)
SENG 6270 - Software Verification and Validation (3)

The student must pass a comprehensive examination and complete CSCI 6995 or CSCI 7000 under the direction of an advisor. The project or thesis must be successfully defended before the student's examination committee.

Students who successfully complete the Master of Science degree in computer science will possess considerable problem solving ability and flexibility. Students will also be able to solve a range of problems that are much larger than those the students completed in their course work and project or thesis. Finally, these students will possess a theoretical background that will enable them to learn new computer technologies and keep abreast of the rapid changes in this constantly evolving field. Specific outcomes are as follows.

1. (Problem Solving) Students will acquire sufficient knowledge of computer science theory and practice to allow them to analyze and solve problems in four core areas of computer science that are selected by the student based on his or her course work and interests, subject to faculty approval.

2. (Software Development) Students will acquire the knowledge ability to apply design and development principles in the construction of software systems.

3. (Professionalism) Students will acquire knowledge about different ways to become professionally engaged, including attending seminars or other talks, attending conferences and participating in professional organizations.

4. (Global) Students will use disciplinary concepts to explain how global and local issues are interconnected, such as the need for local security in a global Internet, completing local tasks by interaction with colleagues in other countries, and the need for software and web interfaces to be designed for use around the world.

5. (Leadership) Students will demonstrates knowledge of ethical principles and their application in leadership in computing disciplines.

With a look toward continuous improvement, the provost appointed the ECU Online Quality Council. Their charge was to develop university-wide training standards and an ongoing peer review process for faculty teaching distance education courses. This university-wide group included subcommittees that examined standards, the peer review process, and support services. This work resulted in the revision of the university's faculty manual.

The Office of Institutional Planning, Assessment and Research coordinates the assessment of student learning outcomes in academic degree programs. A standard format for reporting goals, criteria for success, results, and use of results has been implemented and an assessment coordinator for academic affairs has been working with an assessment team, consisting of representatives from all academic units.

Programs delivered through distance education are fully integrated into the university-wide assessment program. The academic unit develops the assessment plan for the program regardless of

the mode of delivery. The ECU Policy on Distance Education states that faculty and administrators within academic units oversee all distance education programs to ensure quality and content. Academically, there is to be no distinction between courses taught on campus and those taught via distance education. All participants must meet the same course objectives and demonstrate the same learning outcomes. The curriculum and evaluation of DE courses, however delivered, are conducted under the same procedures and personnel as on-campus courses. As stated in the university's policy on distance education, the academic unit establishes the intended learning outcomes, the means of assessment, and the criteria for success, and carries out the assessment activities for both the campus and DE programs.

Faculty members teaching distance education courses have access to consultation, implementation, and evaluation support from appropriate supporting units (i.e. Office of Faculty Excellence, IPAR, college Instructional Support Consultants, library services, etc.) and will be provided with appropriate equipment, software, and communications access necessary to provide effective distance education. All faculty teaching distance education courses will engage in at least one training activity each academic year that addresses advances in the methodologies and technologies used in distance education.

Assessment of the Master of Science in Computer Science program will be based on outcomes listed above, assessed in CSCI 6230 (for the Global and Leadership outcomes), the comprehensive examination (for the Problem Solving outcome), the student's project or thesis (for the Software Development outcome) and an exit survey (for the Professionalism outcome).

In 2009, ECU purchased TracDat, an SCT software product that is being used to help manage the institutional planning and assessment process, allowing faculty and administrators to enter program and departmental strategic plans, including assessment plans, assessment methods, and outcomes, and to vertically and horizontally align their goals to other departmental, divisional, and college-wide goals. The templates assure a uniformity of reporting that simplifies collection, review, management, and utilization of data.

TracDat holds all assessment plans and reports which include student learning and administrative outcomes, assessment methods, criterion for success, results and action steps. Concise reports can be generated within the system to assist with planning and program improvement.

In accordance with accreditation requirements, the institution will ensure that the student who registers in a distance education course or program is the same student who participates in and completes the program and receives the academic credit.

ECU utilizes a web-based authentication system to determine that the student registered in a distance education course is the student who participates in, completes, and receives credit for the course. The authentication system requires that the student securely log on to ECU's network using a unique user identification (Pirate ID) and with a unique and user-determined passphrase.

Upon admission, new students receive both their PirateID username and ECU ID number. Once received, new users log in to the PirateID (PID) auto-registration system and follow the step-by-step screens to activate their PirateID account, create a unique passphrase and set up their authentication questions. Once activated, users will be able to check ECU e-mail and access ECU's various online systems such as OneStop and Blackboard.

ECU's Password Expiration Policy states that students are required to have a strong passphrase that is resistant to "hacking", and they must reset their passphrase every 90 days and not reuse the account's previous six passphrases. Students are notified via e-mail or system messaging at least three times in the two weeks prior to expiration. When students use their PirateID and passphrase to access information through OneStop and the university's learning management system, Blackboard, their login credentials are encrypted for additional security.

Distance education students must verify their identity with the ID and password to participate in electronic systems at ECU. The delivery of instruction, group activities, individual student materials from faculty and assessment activities require every student to login into the university learning platform (Blackboard) and other systems using their unique secure passphrase.

Faculty may choose to include proctored exams in their courses. To support this effort ECU participated in the establishment of a state-wide proctoring network. A Distance Education Proctoring Center is available to students enrolled in DE courses at East Carolina University and all other universities within the University North Carolina system. This site serves distance education students who need to take exams and faculty members who need to setup proctored exams for their Distance Education courses. This service provides verification of student identify in assessment and evaluation.

Through secure logins and pass codes and the widespread use of proctored examinations, East Carolina University verifies the identity of the student who registers in a distance education course or program.

10. Attachments
    Attachments may include items such as (1) vitae of key faculty; (2) selected letters of support; (3) copies of library and other cooperative agreements, etc.

Name, title, telephone, and e-mail of contact person to respond to questions:

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This request to establish a new distance education degree program (or program site) has been reviewed and approved by the appropriate campus committees and authorities.

Chief Academic Officer _____