Campus Request for Authorization to Increase Premium Tuition

Date: August 25, 2016

Institution: N.C. State University

Degree Program CIPs\*

11.0701 101 000 A M Computer Science

11.0701 123 000 A MS Computer Science

\*At this time, we are not requesting an increase for the Master of Science in Computer Networking program

Level: Masters

Degree Types:

 see above

Proposed Date of Implementation:

 Semester: Fall

 Year: 2017

**Introduction**

The Computer Science (CSC) department is one of the largest departments at N.C. State University by student enrollment and by the number of graduated students. It is also one of the largest computer science departments in the nation[[1]](#footnote-1). We have over 900 undergraduate and over 700 graduate students of which about 200 are PhD students. We graduate well over 400 students per year (about half are graduate students). We are a key department in workforce production relevant to high-technology areas of North Carolina, and we are a top supplier of new university-graduated hires to industry leaders such as IBM, Cisco, SAS, and NetApp. Our students are in great demand and are paid high starting salaries. Many have multiple offers and go to information technology (IT) giants already mentioned, as well as to such household names as Google, Amazon, Twitter, and Facebook, and financial industry leaders such as Credit-Suisse, Fidelity investments, and Deutsche Bank. In fact, for a number of high-technology companies (re)locating to North Carolina adequate access to new computer science workforce is critical and essential. The department has significant economic impact. For every state dollar invested into the department we inject annually into the economy between 4 and 8 times that.

Our graduate program is also highly ranked, and we are one of the top departments at N.C. State by research funding[[2]](#footnote-2) and among other computer science departments nationwide1. Our department is larger in student numbers, and brings in more research funding, than several of the Colleges at N.C. State. In fact, because most of the Masters degree students in our department are non-North Carolina-residents, our program is a considerable source of tuition funds to the State of North Carolina, in the $7M to $9M range annually.

In the Fall of 2014, premium tuition of $2,400 per semester was authorized for each full-time Masters student in our department, and was phased in over the following three academic years in increments of $800 per semester. The department has used the additional funds to enhance the educational experience of our students and improve our operations. Specifically, we have: increased the number of Teaching Assistants by 67.4% from 43 (Fall 2013) to 72 (Fall 2016) as a means to provide consistent student support to instructors and grow our PhD program; raised the stipend for Teaching Assistants by 12.8% (from $1950 per month in Fall 2013 to $2200 per month in Fall 2016 – this was absolutely necessary in order to keep department offers to new PhD students competitive nationwide; offered more sections of popular courses and more special topics courses in emerging areas of Computer Science; provided need-based assistance and recruiting incentives to under-represented groups; supported new marketing and recruiting initiatives; and hired a Director of Graduate Career Services.

However, for our graduate students to remain competitive, they need to stay ahead of the curve as measured by their acquired skills and knowledge. This means that they need to continue to be educated by leading-edge scientists, researchers and educators (our faculty) in leading-edge facilities (which we currently have). In order to continue attracting new students, retain existing cohorts, maintain our current advantage in graduate education, and continue producing outstanding graduates, we need to evolve our facilities, teaching faculty, staff, fellowships, and the services that we offer to our graduate students.

As the department continues to sustain budget cuts, we are facing serious shortfalls as well as opportunity costs in not being able to accommodate strong demand for Computer Science graduate education. We are confronted with potential damage to our capacity and prestige, which in turn may result in a lessened desire of the IT industry to locate to the State of North Carolina.

We request an increase in premium tuition of $800 per semester for each full-time Masters student in the MS CSC and M CSC degrees, phased in over two academic years, 2017-18 and 2018-19. The tuition increase will be prorated for part-time students (including Distance Track degree students). If the request is approved, we plan to submit another request in the Fall of 2018 for a further increase of $400 per semester in 2019-20. We anticipate that this would allow us to remain nationally competitive in both quality and capacity.

**A. The anticipated impact of the proposed tuition premium on program quality and capacity**

The proposed tuition increase will provide an extra advantage in both quality and competitiveness through enhanced education and state-of-the-art facilities. A very important and immediate effect of the requested tuition increase will be to offset and counter-balance ongoing budget cuts which threaten to force a reduction in the size and quality of our graduate program. Without additional funding we will not be able to meet the growing demand for graduate studies in Computer Science. Our program cannot remain on a path towards higher quality and rankings without additional sources of funding.

Our highest priority is to improve the educational experience for our and thus make them nationally competitive. The accessibility, and the quality of instruction and scholarship will be improved by:

1. increasing the Teaching Assistant budget to accommodate the growing program size and improve the TA-to-student ratio;
2. raising the stipends for Teaching Assistants to national averages and to offset the increase in student fees, so as to make our offers competitive;
3. providing need-based financial assistance
4. introducing recruiting incentives, especially for under-represented groups;
5. providing merit-based graduate fellowships, in order to attract and retain the best graduate students;
6. hiring additional teaching faculty so as to offer more sections of more courses to be taught (in Fall 2016 there are several graduate sections in our department with more than 100 students enrolled);
7. hiring additional graduate program staff members to improve advising and support services for our very large number of student; and
8. acquisition of additional equipment, software, and technical support needed for lab-based courses.

Our department has excellent national rankings and close ties with industry, which has resulted in an increased demand for our program. The number of our applicants and students is growing. The downside is that unless we invest in our programs, this growth will lead to larger classes, larger (non-competitive) student to faculty ratios, and reduced services for students. Table 1 compares the enrollment and applications to the two Masters programs targeted by this proposal in Fall 2013, before premium tuition was authorized for our program, and Fall 2016, when premium tuition was fully phased in. Although enrollment increased by 20.2%, demand for our program, as reflected by the number of applications, jumped by 59.3% over the same three-year period. Consequently, both selectivity and the quality of incoming students have increased. These numbers also indicate that our department has the opportunity to slowly grow (e.g., by 2-3% per year) to meet the demand without sacrificing student quality, as long as additional resources become available.

|  |  |  |
| --- | --- | --- |
|  | **Masters Enrollment** | **Applications** |
| **Fall 2013** | 391 | 1287 |
| **Fall 2016** | 470 (estimate) | 2050 |

Table 1. Applications and Enrollment

Our graduates capitalize on enviable employment prospects and currently enjoy post-graduation starting salaries in the $85K to $130K range, and close to 100% placement at graduation. Current employment opportunities in our field in the State of North Carolina and the nation are growing rapidly, as illustrated by the succession of companies establishing large operations in North Carolina, companies that are highly dependent on our contributions to the workforce. As Table 2 illustrates, over the last three years, our students and graduates have seen substantial increases in internship pay (12.9%) and starting salary (12%), respectively, as well as in internship and employment opportunities.

Table 2. Internships and Starting Salaries

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Average starting salary** | **Average internship pay** | **Number of summer internships** |
| **2012/2013** | $91,400 | $31/hour | 163  |
| **2015/2016** | $102,300 | $35/hour | 195 |

**B. The projected impact of increased tuition on access for North Carolina residents**

The percentage of students in our Masters degree program who are residents of North Carolina is 12.9%. Once fully phased in starting with the 2018-19 academic year, the proposed tuition premium will increase the cost of a Masters degree education for full-time students by $2,400. In May 2016, the average starting salary of our Masters degree graduates was $102,300., compared to an average starting salary of our Bachelors degree graduates of $72,400. Assuming that this difference in starting salaries for students with Bachelors degrees and those with Masters degrees in our field does not change substantially, the expected time to break even (recover the cost of tuition *and* fees, listed in Table 3 below) is only 0.82 years without the increase in tuition premium, and 0.90 years with the increase in tuition premium for residents of North Carolina; for non-residents, these figures are 1.55 and 1.63 years without and with the increase in tuition premium, respectively. In other words, the proposed increase in premium tuition will extend the expected break even time by .08 years, or about one month. This represents a fast “return on investment” for students. This analysis does not include the additional positive impacts, such as higher placement rates and quality of career paths.

We will continue to set aside part of the proposed premium tuition increase for financial aid for underrepresented groups, and for U.S. students with documented financial hardships. Our department currently enrolls 470 Masters degree students in the two programs. We do not expect the premium tuition increase to significantly impact that volume.

**C. The availability of student financial aid for students with economic need and of tuition remission**

Students in all degree programs are eligible to apply for need-based subsidized and unsubsidized federal loans (Perkins and Stafford), and the federal PLUS program. As already mentioned, part of the proposed tuition increase will be set aside for the recruitment of, and financial aid for, underrepresented groups, and for U.S. students with documented financial hardships; therefore, affordability will actually improve for those populations.

**D. The extent to which current and prospective students can afford increases in tuition**

Approximately 80% of our on-campus Masters degree students engaged in paid internships during the summer at the end of their first year of study. These internships paid an average of $35/hour in the summer of 2016. The placement rate of our Masters graduates at time of graduation is better than 90%.

The U.S. Bureau of Labor Statistics projections for the period 2014-2024 shows that Computer Science and IT-related occupations will experience a growth of 531,000 jobs (13%). These occupations had median annual wages of $79,420 in 2014.

Major employers who have established or are establishing substantial operations in North Carolina do so because of the readily-available supply of a highly-skilled workforce in science, engineering, and computing. Recent examples include Fidelity Investments, Credit Suisse, Deutsche Bank, MetLife, LexisNexis, and others. The N.C. State Engineering Career Fair each year attracts several hundred employers. The Department of Computer Science ePartners program has 54 corporate members who pay between $5,000 and $25,000 (and more) as a way to improve their recruiting of our students. N.C. State graduates, including many from our department, constitute the largest cohort of recruits world-wide for IBM, with other companies such as SAS and Cisco also hiring large percentages of their workforce from us.

Approximately 80% of the students enrolled in the Engineering Online degree programs have their tuition reimbursed by their employers. This represents roughly 10% of the total Masters degree populations.

**E. The relationship between projected tuition revenue to institutional and/or program costs**

Given current-level enrollments in the Masters program, the expected revenue that would be generated by this proposal is $600K annually. Since FY2014, our department has lost about $300k in budget reductions while the costs of operation have grown by about 12%, so the proposed tuition increase represents a relatively modest net increase. We also note that the department is chronically underfunded and relies on funds from faculty sabbaticals, leaves, release time, F&A, and now premium tuition, to cover a wide range of operating expenses, some staff positions, etc.

**F. Tuition and fees, net of remissions and waivers, charged by peer institutions or programs as compared to tuition and fees, net of remissions, for the program**

One semester of tuition and fees for the CSC Masters degrees, with and without the proposed tuition premium, is shown in Table 3 for the 2016-2017 academic year.

|  |  |  |
| --- | --- | --- |
| **Tuition and fees** | **Resident** | **Nonresident** |
| Present (2016-17) | $8,186 | $15,447 |
| Proposed (2018-19) | $8,986 | $16,247 |

Table 3: Present and proposed tuition and fees

Tuition and fees charged by peer institutions for Computer Science degrees are shown in the appendix. The proposed tuition increase will have little impact on our department’s position relative to other schools.

Tuition and fees for other premium tuition programs at N.C. State in 2016-2017 are shown in Table 4:

|  |  |  |
| --- | --- | --- |
| **Program** | **Resident** | **Nonresident** |
| Master of Business Administration | $11,848 | $19,352 |
| Masters in Global Innovation Management | $11,848 | $19,352 |
| Masters in Supply Chain Engineering & Management | $11,848 | $19,352 |
| Master of Accounting | $11,317 | $18,547 |
| Master of Science in Analytics | $10,286 | $17,547 |
| **CSC - Proposed** | **$8,986** | **$16,247** |
| Master of Financial Mathematics | $8,286 | $15,547 |
| ECE and CSC (current) | $8,186 | $15,447 |

Table 4. Tuition and fees for premium tuition programs at N.C. State in 2016-17

The proposed tuition increase will still leave the cost of Computer Science tuition below the tuitions charged to students for the MSA, MAC, MSCEM, MBA, and MGIM – this comparison does not account for tuition increases being proposed by these programs. Note that:

* our program is larger and in higher demand (based on the number of applications) than these other programs; and
* our graduates' average salaries are higher than the salaries reported for these other programs.

**G. A plan for the intended use of additional tuition receipts**

The proposed tuition increase will be allocated approximately as follows:

* 15% - Fellowships
* 85% - Program support (including, but not limited to: faculty and teaching assistants; graduate program staff; software, equipment, and technical support needed, above and beyond ETF funding; online education initiatives; professional development; employer relations; and career services)

These expenditures will improve the quality, scholarship, and experience of our students as described in Section A above.

**H. Assistantships or grant support for graduate students**

Approximately 18 Masters degree students are supported each year on teaching or research assistantships that include the GSSP; by comparison, the number of PhD students on teaching or research assistantships is 152.

For graduate students (Masters or PhD) appointed on the premium tuition account, the 25% GSSP tuition remission match (for non-residents), in-state tuition award (ISTA), and health insurance (GSHI) required for students supported from non-state sources will be paid from the premium tuition receipts. Therefore, the increase in premium tuition will allow the department to grow the number of supported graduate students without affecting the GSSP costs to the university.

**I. Analysis of student indebtedness levels within the university**

According to the Office of Financial Aid and Scholarships at N.C. State, for students who completed the two degree programs targeted by this proposal between July 1, 2015 and June 30, 2016, 4.6% borrowed through the federal student loan programs for an average of $31,863. The average is based on the students that borrowed rather than the whole class.

**Appendix A**

**Tuition and fees charged by peer institutions for Masters degrees, 1 semester, full-time (9 credits)**

(sorted by decreasing order of resident tuition)

|  |  |
| --- | --- |
| **University** | **Resident** |
| Rutgers U. | $13,543 |
| Penn State | $11,121 |
| UIUC | $10,837 |
| **N.C. State-proposed** | **$8,886** |
| Univ. of Minnesota | $8,667 |
| **N.C. State-present** | **$8,186** |
| Georgia Tech | $7,826 |
| Virginia Tech | $7,791 |
| Michigan State Univ. | $6,995 |
| Univ. of Maryland | $6,628 |
| Ohio State | $6,467 |
| Univ. of Washington | $5,992 |
| Univ. of Wisconsin | $5,971 |
| Purdue | $5,563 |
| UT-Austin | $5,062 |
| Univ. of Florida | $4,776 |
| Texas A&M | $3,512 |

**Appendix B**

**Tuition and fees charged by peer institutions for Masters degrees, 1 semester, full-time (9 credits)**

(sorted by decreasing order of non-resident tuition)

|  |  |
| --- | --- |
| **University** | **Non-resident** |
| Penn State | $18,799 |
| Rutgers U. | $18,559 |
| UIUC | $18,234 |
| Ohio State | $16,691 |
| **N.C. State-proposed** | **$16,247** |
| **N.C. State-present** | **$15,447** |
| Georgia Tech | $15,036 |
| Purdue | $14,964 |
| Virginia Tech | $14,407 |
| Univ. of Maryland | $13,405 |
| Michigan State Univ. | $13,189 |
| Univ. of Minnesota | $13,107 |
| Univ. of Wisconsin | $12,635 |
| Univ. of Florida | $11,299 |
| Univ. of Washington | $10,604 |
| UT-Austin | $9,232 |
| Texas A&M | $7,326 |

1. http://edms.asee.org/ [↑](#footnote-ref-1)
2. N.C. State Report by the Task Force on Review of N.C. State Academic Programs, October 15,2012 [↑](#footnote-ref-2)