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16 May 2016

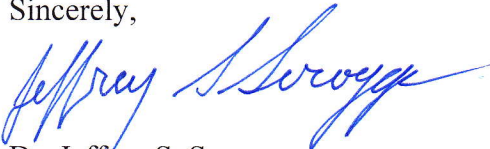
Dr. Duane K Larick  
Senior Vice Provost for Academic Strategy & Resource Management  
NCSU Campus Box 7101

Vice Provost Larick,

I am pleased to submit the attached proposal for a Campus Initiated Tuition Increase. The NC State Masters of Financial Mathematics is ranked in the top 25 of all financial math/financial engineering programs (Quantet and TFE Times). The program is highly visible and help us stand out when compared to our *peer institutions*. The increase will fund investments in critical areas chosen to directly benefit students.

I look forward to working with you and the appropriate bodies within the University and General Administration on this proposal. Let me know if any additional information is required.

Sincerely,



Dr. Jeffrey S. Scroggs  
Director, Masters of Financial Mathematics

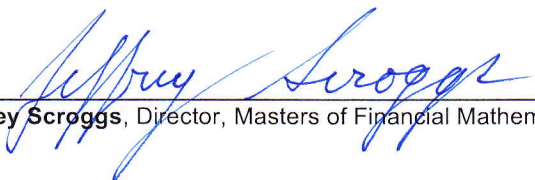
Enclosures: Signatures Page, Proposal, Form A

Cc: Alina Chertok, Paul Cohen, Lee Craig, Montserrat Fuentes, Charles Safley

**Campus Request for Authorization to Increase Tuition for the Masters of Financial Mathematics  
North Carolina State University**

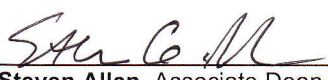
This request has been reviewed and approved by the appropriate campus committees and authorities.

**Proposed By:**


  
\_\_\_\_\_  
Jeffrey Scroggs, Director, Masters of Financial Mathematics Graduate Program  
5/15/16  
Date


**Endorsed By: (Administrative Committee)**

  
\_\_\_\_\_  
Peter Harries, Chair of Administrative Committee & Senior Associate Dean, Graduate School  
5/22/16  
Date

  
\_\_\_\_\_  
Steven Allen, Associate Dean, Poole College of Management  
5/17/16  
Date

  
\_\_\_\_\_  
JoAnn Cohen, Associate Dean, College of Sciences  
5/16/2016  
Date

  
\_\_\_\_\_  
John Dole, Associate Dean, College of Agriculture and Life Sciences  
5/17/16  
Date

  
\_\_\_\_\_  
Douglas Reeves, Associate Dean, College of Engineering  
5-19-2016  
Date

## **Proposal. Campus Request for Authorization to Increase Tuition for the Masters of Financial Mathematics**

Date: March 2016  
Institution: NC State University  
Degree Program CIP: 27.0305  
Level: Graduate  
Type of Degree: Masters

Proposed Date of Implementation  
Semester: Fall  
Year: 2017

### **Introduction**

**Background.** NC State's Financial Mathematics Program is a Professional Science Masters known for rigorous training in the core areas of probability, statistics, modeling, investment theory, stochastic processes, and economics. The tuition premium pays for "plus" services that go beyond academic coursework taught by tenure-track faculty. Specifically, the students need professional skills training and workshops/projects offered by practitioners.

**Need for premium.** Under the original plan, paid for by the initial premium, a single employee was hired to handle career/professional training, external relations, business development, and alumni relations. Given the growing goals and expectations of the program, adequate coverage for these areas requires more than a single full time position. The current staff must be augmented and restructured by creating one position to focus on external and alumni relations as well as business development and a second position to focus on career services. The need for an additional staff to cover non-academic areas is the main driving force for this proposal.

Also driving the request is a need for the program to stand out. An increasing number of similar programs worldwide mean increasing competition for students. The program proposes to respond to this competition by developing two areas that make the program unique. Specifically, we will develop a course targeting professional certification (described in the next section) and we will serve students that wish to work in the actuarial sciences. This is a natural expansion of the program because actuarial science now includes the kind of quantitative risk management covered in the program. There are only two other programs known to have the kind of prep class proposed, only a few that prepare for actuarial careers, and none that have both.

**Uses of premium.** The proposed increase of the tuition premium is \$2,000/sem (full time students will pay a total premium of \$5,000 per semester). The primary driver for this proposal is to create a new career services position. This will permit the Director of External Relations to focus on business development and alumni relations. Funds will also be used to expand exposure of students to practitioners (workshops) and for marketing and recruiting.

The sections suggested in the Guide to Writing appear next. Appendix A provides quotes from employers supporting these changes, and Appendix B provides information collected from the students.

### **A. Anticipated impact on program quality.**

The following improvements will be supported by the increase in tuition premiums

- Improved external relations, business development, and alumni relations
- Improved career development training for students
- Increased exposure to practitioners
- Improved program quality by recruiting students through feeder programs and by marketing

*External relations, business development, and alumni relations.* There is a great **need to improve** our external relations through an expansion of our private-sector contacts. The MFM Program has established connections with many companies that NCSU graduates, but there are still more companies that could be developed. Most of the jobs that our students obtain are in NC. Traditionally, these jobs are in the financial and financial services sector; however, many companies in other sectors utilize quantitative risk management. This area is a critical component of the MFM curriculum. At current staffing levels, we are unable to develop non-traditional business partners, and we **cannot sustain** the contacts we currently have.

A larger contact list will translate into improved opportunities for private-sector internships and jobs for the students. This will cascade into **improved** program rankings and improved program reputation within the private sector. Program quality will improve by strengthening existing connections and expanding our external contacts and alumni. This includes additional companies both in the financial services, and in some non-traditional sectors.

A single staff member, the Director of External Relations (DER), was given the responsibilities for both career services and external relations. It was an exciting time as many new services were established for the program; however, it has become clear that these responsibilities must be split into two positions. The person working as the DER has been covering both areas, rising to the challenge by working 70+ hours/week. She provides high quality services; however, this **cannot be sustained**. If the tuition premium is not approved, there is significant risk that she will leave. This would harm the program because continuity for the person in this position is important. Developing and maintaining an external contact takes 3-4 years. Alumni also respond much better to someone that was working for the program when they were going through the program. Lack of additional funding will require reduction or elimination of services for external relations, business development, and/or alumni relations with a corresponding reduction in employment opportunities for students as well as a significant disruption in the program's continuity.

*Improved career services.* The proposed premium increase will fund a new position that will be dedicated to career development for MFM students (writing resumes and cover letters, interviewing, networking, etc.). As mentioned above, the level of effort of the person currently providing these services **cannot be sustained**. Dedicating a full time position to career services will **improve** the offerings to students, enabling the program to track students better as well as to identify the specific skills needing development required by individual students. A dedicated a full time trainer would also be able to provide timely and effective assistance as students progress through interviews. Moving career services responsibilities to this new position will permit Director of Career Services to focus on external relations.

*Exposure to practitioners.* Students receive excellent academic training from cutting-edge researchers in financial math and related areas; however, their exposure to practitioners is limited and **needs to be improved** by expanding the number of practitioners interacting with the students. For example, the additional funds will enable practitioners to join the program as adjunct professors and professors of the practice. A veteran of the financial services sector offering a 3-hour course on topics such as Capital Markets or Fixed Income Securities exposes students to businesses processes in the area of quantitative financial management. Practitioners will also augment existing classes taught by tenure-track faculty by providing projects and workshops motivated by current topics from industry. This enriches their educational experiences and improves their competitive advantage when interviewing.

*Our network of feeder schools needs be improved.* The primary feeder school is NC State. Candidate schools for being developed include those located in this state (e.g. UNC, ECU, UNCW, and App. State) and regional schools (VA, TN, and GA). There are several benefits to developing feeder schools. Graduates will tend to get jobs in NC, so the state's economy and local alumni network are supported. Domestic students are much easier to place in jobs and internships.

*Marketing needs to be improved.* Prospective students must continually be informed of the high quality of our program. We also expect a rise in worldwide recognition and rankings by advertising the quality of our graduates and program.

## **B. The projected impact of increased tuition on access for North Carolina Residents.<sup>1</sup>**

### **Time to recover cost.**

The average starting salary of graduates is \$78,583. Also, of the students who did not continue their education, all of graduates 100% who cooperated in our survey process were employed within one year of completion.<sup>2</sup>

Entering students' salaries averaged \$24,844. Most students start the program straight from undergraduate studies, but we did not use these students' information when calculating the pre-program salaries. We only used pre-program salaries of the 18 students that reported salaries of career-track jobs before starting the program. The average **increase in annual salary** is **\$53,739** = \$78,583 - \$24,844. Using this increase, this cost/benefit analysis considers how long it takes to pay for the cost of the program. This appears in the tables that follow

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<sup>1</sup> Salary data used in this section is from Spring 2013 - Fall 2015 graduates. Tuition and fees are from Fall 2015 – Spring 2016.

<sup>2</sup> We attempted to track all graduates of the program; however, not all students cooperated. Specifically, of the 56 graduates from Spring 2013-Fall 2015, we lost track of 17 (30%), 11 (20%) continued their graduate education, and 28 (50%) participated in the employment and salary survey. All 28 had jobs within one year, and 16 (57%) provided salary information to us.

**Costs with the Current Premium**

	Tuition & fees only	Years to Earn Cost of Program
in-state	\$24,336	0.45
out-of-state	\$45,484	0.85

Including housing		
	Tuition & fees only	Years to Earn Cost of Program
in-state	\$45,175	0.84
out-of-state	\$66,324	1.23

**Including the Proposed Increase**

	Tuition & fees only	Years to Earn Cost of Program
in-state	\$30,336	0.56
out-of-state	\$51,484	0.96

Including housing		
	Tuition & fees only	Years to Earn Cost of Program
in-state	\$51,175	0.95
out-of-state	\$72,324	1.35

Even with the increase in the premium tuition cost, the Masters of Financial Mathematics will continue to be an excellent investment, and with the added services and academic content it will provide, the ROI should only increase.

A comparison to peer (and other) institutions appears in section F below.

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

**Current tuition remission model.** The program will continue to provide fellowships to students with established need. Fellowships are \$2,500/sem, and have been offered to 100% of the students that qualify. Some fellowships are provided by endowments from Duke Energy and Wells Fargo. The remaining fellowships are funded using receipts from the tuition premium. Enrollment is projected to remain steady, so no increase in funding for fellowships is needed. No changes to this model are anticipated.

**Other sources of support for students.** Some students attend NCSU on a fellowship. These include Fulbright (3 during 2015-2016) and fellowships from foreign governments. Additionally, private-sector support comes in the form of Graduate Industrial Traineeships and paid internships. These are described in §I. Some students are hired as Lecture Assistants in Mathematics Department (\$14/hr, 10 hrs/wk).

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

As indicated in §B, the average starting pay for graduates of this program is \$78,583. This compares favorably with the top salaries compiled by NACE (copied from their website as Figure 2).

Figure 2: Top-paid math and science majors at the master’s level

Major	Average Starting Salary
Geology/geological sciences	\$72,213
Physics	\$67,333
Chemistry	\$66,167
Mathematics/statistics	\$64,867
Construction science	\$59,167
Biology/biological sciences	\$56,375
Environmental science	\$52,675

Source: January 2015 Salary Survey, National Association of Colleges and Employers

Using the time to recover the cost of tuition after employment before and after tuition increase in §B, we also demonstrated that the program is quite affordable.

Average federal student loan indebtedness was calculated for students who finished in Fall 2014 and Spring 2015. For that class, only 3 students or 13% borrowed. For the whole class, the average federal student loan indebtedness was \$5,377. If you calculate the loan indebtedness for only those that borrowed, the average is \$39,434. The numbers are a little tricky for the group of MFM students given the small sample size (a total of 22 MFM students).<sup>3</sup>

More than 70% in the MFM program are foreign nationals. They must demonstrate that existing financial resources will cover the cost of their education, so we calculate the time to pay off an average loan using the average loan of only those that borrowed. The tables use the interest rate charged on loans issued in 2016.

Average Loan	\$39,434
Average Salary	\$78,583
Interest Rate on Loan	5.84%

<sup>3</sup> The Office of Scholarships and Financial Aid provided this information for graduates completing in Fall 2014 – Spring 2015.

Amortization Table for Loan Balance				
Annual Payments are 10% of Starting Salary				
Year	Balance	Interest Accrued	Payment	New Balance
1	\$39,434	\$2,303	\$7,858	\$33,879
2	\$33,879	\$1,979	\$7,858	\$27,999
3	\$27,999	\$1,635	\$7,858	\$21,776
4	\$21,776	\$1,272	\$7,858	\$15,189
5	\$15,189	\$887	\$7,858	\$8,218
6	\$8,218	\$480	\$7,858	\$839
7	\$839	\$49	\$888	\$0

Amortization Table for Loan Balance				
Annual Payments are 15% of Starting Salary				
Year	Balance	Interest Accrued	Payment	New Balance
1	\$39,434	\$2,303	\$11,787	\$29,949
2	\$29,949	\$1,749	\$11,787	\$19,911
3	\$19,911	\$1,163	\$11,787	\$9,286
4	\$9,286	\$542	\$9,829	\$0

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

The revenue generated by this proposal is expected to be \$176,000 annually. Based on the same enrollment figures, the current tuition premium generates \$264,000 annually. The actual revenue streams are \$275,000 (expected) in FY 15/16, \$257,980 in FY 14/15 and \$242,626 in FY 13/14. Revenue generated by premiums has been used exclusively for non-academic *plus* services. These services include external relations and career services mentioned above along with a student seminar, workshops, speakers. Except for the \$35,000 dedicated to practitioner-led classes, all of the additional revenue will support improvements in *plus* services.

Financial Math program funds are not mingled with the budget of any department. Departments cover costs of supplying the academic credit hours. One summer month of administrative support for the DGP is being provided in 2016. This is the first time any department funds have been used to support the program. The Math Department also provides access to staff for purchasing, travel, and human resources.

Students are not offered teaching assistantships through the departments. There are typically three students MFM students that qualify for the GSSP because they are supported on a Graduate Industrial Traineeship (GIT) or as a Fulbright.



**F. Tuition and fees by peer (and other) institutions.** <sup>4</sup>

The data presented in the two tables below show NC State's program with a \$5,000/semester tuition premium to be at or near the least expensive of all programs. Peer institutions that offer programs similar to the MFM are included in Table 1. A more complete comparison appears in Table 2, where data from all similar programs in North America is presented.

**Table 1. Peer institutions with similar programs**

<b>School</b>	<b>Program</b>	<b>in state tuition &amp; fees</b>	<b>out-of-state tuition &amp; fees</b>
Georgia Institute of Technology*	MS Quantitative and Computational Finance	\$28,749	\$59,355
Purdue University*	MBA with CF specialization	\$23,144	\$60,748
Rutgers University	Financial Statistics and Risk Management	\$37,239	\$61,181
Rutgers University*	Master of Quantitative Finance	\$42,032	\$61,991
Rutgers University*	MS in Mathematical Finance	\$37,239	\$61,181
University of Illinois at Urbana-Champaign* <sup>5</sup>	MS Financial Engineering		\$65,106
University of Illinois at Urbana-Champaign*	College of Business, MS, Finance		\$114,000
	average (mean)	\$33,681	\$69,080
	median	\$37,239	\$61,181
	current	<b>\$24,336</b>	<b>\$45,484</b>
	proposed	<b>\$30,336</b>	<b>\$51,484</b>

**Table 2. All similar programs**

<b>School</b>	<b>Program</b>	<b>in state tuition &amp; fees</b>	<b>out-of-state tuition &amp; fees</b>
Boston University	MS of Mathematical Finance		\$72,273
Carnegie Mellon University	MS Computational Finance		\$81,900
Claremont Graduate University	MS Financial Engineering		\$86,064
Columbia University	MS Financial Engineering		\$97,428

<sup>4</sup> Data collected in 2015<sup>5</sup> UIUC does not offer in-state tuition for their programs

Masters of Financial Mathematics

Columbia University	MA, Mathematics of Finance		\$90,498
Cornell University	M. Eng. in Operations Research & Industrial Eng.		\$73,350
Fordham University	MS in Quantitative Finance		\$44,520
Georgia Institute of Technology*	MS Quantitative and Computational Finance	\$28,749	\$59,355
Illinois Institute of Technology	MS Mathematical Finance		\$59,325
Johns Hopkins University	MS Financial Mathematics		\$73,565
MIT	MS of Finance		\$100,350
New York University (Courant)	MS Mathematics in Finance		\$61,476
NYU Polytechnic School of Engineering	MS Financial Engineering		\$56,058
Princeton	MS in Finance		\$68,025
Purdue University*	MBA with CF specialization	\$23,144	\$60,748
Rensselaer Polytechnic Institute	MS Quantitative Finance and Risk Analytics		\$48,000
Rutgers University	Financial Statistics and Risk Management	\$37,239	\$61,181
Rutgers University*	Master of Quantitative Finance	\$42,032	\$61,991
Rutgers University*	MS in Mathematical Finance	\$37,239	\$61,181
Stevens Institute of Technology	MS Financial Engineering		\$48,300
The University of California at Berkeley	MS Financial Engineering		\$66,082
UCLA	MS Financial Engineering		\$58,986
University of Arizona-Eller	MS Management with Concentration in Finance	\$35,343	\$62,826
University of Chicago	MS Financial Mathematics		\$54,144
University of Illinois at Urbana-Champaign*	MS Financial Engineering		\$65,106
University of Illinois at Urbana-Champaign*	College of Business, MS, Finance		\$114,000
University of Michigan	MS in Quantitative Finance and Risk Management	\$30,957	\$62,532
University of Minnesota	MS Financial Mathematics	\$31,140	\$38,820
University of North Carolina, Charlotte	M.S. Mathematical Finance	\$19,548	\$38,555
University of Southern California	MS Financial Engineering		\$54,705
University of Toronto	Master of Mathematical Finance		\$33,604
University of Washington	MS Computational Finance & Risk Management		\$39,000
*peer institution	average (mean)	\$31,710	\$59,709
	median	\$31,140	\$60,052

**G. A plan for the intended use of additional tuition receipts (e.g. needed improvements to the educational program, funding for competitive salary increases, financial aid, etc.).**

\$76,000	New career services position (salary + fringe)
\$24,054	Graduate Services Coordinator increases from half time to full time (salary + fringe)
\$35,000	Practitioner-led classes (including assistants)
\$8,000	Practitioner-led workshops
\$10,000	Competitive Salary Increases
\$9,000	Advertising
\$9,000	Student interns
\$4,946	Operating expenses
<hr/>	
\$176,000	Total

\$76,000 *Career Services Assistant*. This tuition premium will fund a higher level of career development training for MFM students (writing resumes and cover letters, interviewing, networking, etc.).

\$24,054 *Half-time Graduate Services Coordinator*. This is currently a half-time position. The fulltime Graduate Services Coordinator would take on new duties. Examples include coordinating events such as the Executive Board meeting and alumni meetups, providing project management support for workshops, and assisting with recruiting prospective students. This amount covers the current salary. Funds requested for competitive salary increases would cover raises.

\$35,000 *Practitioner-led classes*. Supplements above the Math Department rate of \$5,000 are required to interest practitioners teaching application-driven classes. Lecture Assistants (graders) will be provided to adjunct faculty and lecturers teaching the courses.

\$8,000 *Practitioner-led workshops*. Fees paid to non-faculty practitioners. These are multi-day workshops that involve significant preparation and some evaluations of students' performance.

\$10,000 *Competitive Salary Increases*. This is funding for raises for the Director of the Graduate Program, Director of External Relations, and Graduate Services Coordinator.

\$9,000 *Advertising*. This covers the cost of modern advertising (e.g. boosting our presence in social media and targeted online advertising). We will use web-based ads at websites such as Quantnet.com and TFEtimes.com, ads targeted to potential students using companies such as MaxPoint, and purchasing information on people that take the GRE from ETS.

\$9,000 *Student interns*. Interns help run events, such as Executive Board meetings, career panels and presentations by practitioners in our seminar and classes. They also help with office work and social events internal to the program.

\$4,946. *Operating Expenses.* This covers travel, professional training, books, telephone, web hosting fees, memberships for the program in professional organizations, data for training students (Bloomberg Terminal), etc.

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

This is a professional master's program. Even though some students continue to earn a PhD (at NCSU and other institutions), they are not required to participate in research while in the program, and have not been funded on research grants. Participating departments do not allocate Teaching Assistantships to students in this program. (They generally award TAs to students in a PhD-track in department programs.) The main source of support for students is paid internships.

*Internships.* The Director of External Relations works to establish relationships with employers, so they create paid opportunities (full-time jobs and internships) for our students or select our students to fill their positions. Here is a summary for summer 2016 (90% placement of students seeking internships)

- 32 students
- 21 with internships (or jobs)
- 3 still seeking internships (2 in China, 1 in NYC)
- 7 interested in projects 7 doing projects
- 1 taking the summer off (by choice)

The companies hosting internships in summer 2016 are

- Financial Risk Group
- SAS
- Redhat
- Ernst & Young
- Bank of America
- Genworth
- First Citizens
- Dataphiles
- Yimian
- QMS Capital
- ZM Financial Systems
- Guangta Securities
- Yuyao Rural Commercial Bank

Nearly all of these positions were facilitated by the Director of External Relations; however, her level of effort is not sustainable. The DER needs an assistant to continue with these successes.

**The availability of cost reimbursement by employers.** The primary means of support by employers are Graduate Industrial Traineeships (GIT). Students supported on a GIT receive pay-for-work as a student-employee. Their tuition and fees are covered from GIT grants plus the GSSP. They typically work half-time during Spring and Fall, and full-time during Summer. These positions could be compared to a research assistantship for science/engineering graduate students in a more traditional PhD program. Once a student is supported by a GIT, the entire cost of their education (including living expenses) is covered, so there is no reason for them to incur any additional debt. In Spring 2011, the program had only two GITs; however, the number of companies

supporting students is expected to grow because of the efforts relating to career services. Several NC companies have expressed interest in offering GITs to MFM students. With the efforts of the Director of Career Resources (DCR), we expect several more GITs to be awarded to the program.

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

The information in §D, including indebtedness from the Office of Scholarships and Financial Aid, shows that the increase would not present difficulties for students in this program.

## Appendix A: Quotes from Business Partners

*“NC State’s Masters of Financial Math is a strong program. The rigorous academic training is a base requirement for the field; however, candidates differentiate themselves and are hired on business acumen and soft skills. Access to practitioners is the best source of needed business acumen while career services can polish students’ soft skills for them to interview better.”*

*“Students need access to practitioners to stay abreast of the rapidly evolving banking industry and marketplace.”*

Albert Hopping, Senior Risk Consulting Manager, SAS Institute

*“Career services is a bridge between the classroom experience and corporate world where most of the students aspire to be in upon graduation. Having a dedicated career services team provides a structure & visibility for both students and companies”*

Atul Kapoor, Director, Risk Modeling, Genworth

*“When we search for talent, we find ourselves seeking skills that are as functional as possible from a new hire perspective. As this relates to recent graduates, it is imperative that they have exposure to practical applications in addition to rigorous studies. This includes workshops, practitioner discussions and job shadowing in addition to internships or related projects.”*

Sander Casino, Senior Vice President, Finance, Local Government Federal Credit Union

*“The difference between one (accredited) program and another - particularly in a professional degree - is the level of positive visibility and connection to industry. That is found by creating more solid relationships with industry, placement of graduates, and an enthusiastic alumni base. That is the difference between a good program and a great one that can attract top students.”*

Jeff Rockwell High, Senior Manager of Financial Instruments, AICPA

*“Quantitative Finance and other Analytical Fields are extremely competitive. To successfully launch a career in one of these fields you need a strong support team guiding your decisions and providing advice. Representing yourself well in an interview and on your resume is mandatory for finding a quality position in this industry. The career services team acts as your support system to make sure that you shine to recruiters and hiring managers, and help you land an ideal job for your career goals.”*

Jack Vance, Data Scientist, MaxPoint

*“Given the quantitative nature of this degree it is critical that students are exposed to real word projects and experiences prior to graduation. This is necessary so they can seamlessly integrate into the workforce once the degree is complete.”*

Jonathan Leonardelli, Director, Business Analytics Group, Financial Risk Group

### Appendix B.1: Questionnaire used to survey graduating students

Student:

Date:

Method (live, phone):

With the additional \$2k/sem, a 3-semester program will cost

	Tuition & fees only	
	proposed	current
in-state	\$30,336	\$24, 336
out-of-state	\$51,484	\$46, 484

	Including housing	
in-state	\$51,175	\$45,175
out-of-state	\$72,324	\$67,324

This is a proposal to increase the premium by \$2,000/sem (fulltime students will pay a total premium of \$5,000 per semester). The primary driver for this proposal is to

- a) create a new career services position.
- b) Permit the Director of External Relations to focus on business development and alumni relations.
- c) practitioners (workshops) and
- d) for marketing and recruiting.

If approved, this would be phased in starting Fall 2017.

- 1. How would it impact your decision to choose to attend NCSU?
- 2. Would you still be able to afford the program?
- 3. Are the new services/benefits worth the extra cost?

## Appendix B.2. Summary of Responses to Survey

### Consultation with Students.

Cohort: All May 2016 graduates were surveyed (15 total).

#### Summary

- No graduate reported that the proposed increase would have impacted their decision to attend NCSU
- No graduate reported any financial hardship would be created by the internship
- All graduates reported the additional benefits would be worth the cost. Even students planning to earn a PhD agreed that improved career services, increased access to practitioners, and possible increase in standings would be valuable.

#### Responses (other than simple “yes” or “no”)

- The most important aspect is help getting a job.
- NC State already has one of the lowest tuition rates. This increase would not impact the decision to come to NC State.
- An additional fee would impact the decision, but I would still be able to afford the program. If a student really wants to attend this program, they will pay this extra fee.
- If opportunities increase, cost is not a factor
- Item c (practitioners) is very useful.
- Even though the graduate is planning to get a PhD, career services are still worthwhile.
- Workshops (with practitioners) has been very helpful, especially learning how to speak in public.
- External relations and career services are certainly worthwhile.
- It might have prevented participating in the program. I currently have a good job, so I could afford it now. If placement is 100%, the extra premium would be worth it.
- Ranking is very important to international students. Students are willing to pay more if the school is highly ranked.
- It would probably impact some students; however, I have a Fulbright scholarship that covers 100% of the costs.
- Yes, it would be worth the cost. More recruiters would be good. More workshops would also be good. I remember the workshops from Altrius & Credit Suisse.
- Cost was important when choosing a school. With the increase, NC State is getting a little bit expensive. It's getting to be a bit too much for Chinese students
- I can still afford the program, but more than 2 years is too much
- We need more contacts with companies that offer internships and jobs. Raleigh has fewer opportunities compared to New York (NYU) or Washington D.C.
- When considering a program, the college name is most important, followed by the prestige of the program, followed by cost.
- The changes make a lot of sense.
- External relations need to be stronger. Need to get employers to think about hiring “financial math” students. The changes are definitely needed and worth the cost.
- Definitely worth it, especially if it increases the ranking. Ranking is most important for international students.

Original (scanned) notes are available on request.



**TUITION INCREASE REQUEST FORM  
FOR PROFESSIONAL SCHOOLS  
2017-18 and 2018-19**

**North Carolina State University  
Masters of Financial Mathematics  
Degree Program CIP: 27.3035**

<b>Requested School-Based Tuition Increase</b>	<b>2017-18</b>	<b>2018-19</b>
	<b>Annual Increment</b>	<b>Annual Increment</b>
Graduate Residents	\$4,000.00	\$4,000.00
Graduate Nonresidents	\$4,000.00	\$4,000.00

	<b>FTE</b>	<b>FTE</b>
	Graduate Residents	9.00
Graduate Nonresidents	35.00	35.00
<b>Total</b>	<b>44.00</b>	<b>44.00</b>

<b>Projected Revenues</b>		
Graduate Residents	\$36,000.00	\$36,000.00
Graduate Nonresidents	\$140,000.00	\$140,000.00
<b>Total</b>	<b>\$176,000.00</b>	<b>\$176,000.00</b>

<b>Projected Expenditures</b>		
New Career Services Position (sal+fringe)	\$76,000.00	\$76,000.00
Graduate Services Coordinator 0.5 FTE	\$24,054.00	\$24,054.00
Practitioner-led classes (incl. assistants)	\$35,000.00	\$35,000.00
Practitioner-led workshops	\$8,000.00	\$8,000.00
Competitive Salary Increases	\$10,000.00	\$10,000.00
Advertising	\$9,000.00	\$9,000.00
Student Interns	\$9,000.00	\$9,000.00
Operating Expenses	\$4,946.00	\$4,946.00
<b>Total</b>	<b>\$176,000.00</b>	<b>\$176,000.00</b>

Does your campus intend to charge students in this program the requested graduate CITI plus the SBTI? (respond yes or no in the box)

**No**