

# A Differential Tuition Model for Professional Science Master's Programs

*Jung H. Choi, Associate Professor,  
Director, Professional MS Bioinformatics Program,  
School of Biology, Georgia Institute of Technology*

## **Abstract**

Georgia Tech has four Professional Science Masters programs, initiated 10 years ago in the first round of Sloan Foundation funding for PSM programs. Like many PSM programs at research universities, these programs faced challenges in financing administrative costs, support for students, and faculty acceptance of master's students. Starting in Fall, 2003, the PSM programs in Bioinformatics, Prosthetics & Orthotics, and Quantitative and Computational Finance assessed a tuition surcharge, modeled on the long-standing 33% tuition surcharge for the MBA program. The entirety of the tuition surcharge is returned to the programs, and is used to defray administrative and instructional costs, and to provide student support within the constraints imposed on use of state funds. This tuition surcharge is the major source of operating funds for these programs. This paper focuses on the impact of the tuition surcharge on the Professional MS Bioinformatics program. Judicious use of these funds to pay salaries of the faculty administrator and support staff has helped to gain acceptance and embrace of the PSM programs by departmental administration. Support for student research projects has helped gain support from Biology faculty who would not normally become involved in the PSM program. Contrary to initial fears, neither the numbers of quality applicants nor student enrollment declined after the surcharge was instituted. However, care must be taken to ensure that students see the value added from the tuition surcharge. As enrollment in graduate programs tends to stay level or even increase during economic downturns, the tuition surcharge is proving to be a recession-proof resource to ensure the long-term financial sustainability of PSM programs at Georgia Tech.

In the past 10 years, many colleges and universities have initiated Professional Science Masters degree programs as part of an effort to create a professional graduate degree in the natural sciences to meet anticipated national needs for science-trained professionals in the workforce. Although some PSM programs, especially in masters-focused institutions, enjoy strong faculty and administrative support, many PSM programs at research-intensive universities lack a natural constituency and face considerable

difficulty garnering resources for long-term survival and growth. At research-intensive universities, most resources for graduate education in the natural sciences are devoted to PhD programs. Historically, at the national level, the National Institutes of Health and the National Science Foundation almost exclusively have supported doctoral programs. Individual faculty members at research universities strongly prefer to train doctoral students who can be counted on to stay for several years of work on a research

project, rather than masters students who expect to graduate in two years. Faculty productivity, departmental status and university prestige depend far more on the quality and output of doctoral programs than on masters degrees awarded. Thus PSM programs at research-intensive universities are in constant danger of decline from apathy and neglect.

Georgia Tech initiated what were then called Focused Masters degree programs in 1999, on the premise that these programs would require minimal start-up costs and would become self-sustaining within just a few years. These degrees, subsequently rebranded to PSM degrees in Human-Computer Interactions, Quantitative and Computational Finance, Bioinformatics, and Prosthetics and Orthotics, targeted newly emerging, interdisciplinary fields where current academic programs appeared inadequate to produce enough professionals to meet anticipated workforce demand. In theory, these professional degree programs would attract students willing to pay tuition and employers eager to offer paid internships and to hire graduates into high-salaried jobs. Georgia Tech obtained funding from the Sloan Foundation to defray the startup costs for these programs. The grant funds were used to pay faculty for development of a few keystone courses for each program, to pay summer salary for faculty program administrators, and in some cases to recruit students. Students in the inaugural class for the MS Bioinformatics program were recruited with national publicity (a news story in Science) and an offer of free tuition for the first year. After the Sloan grant expired, Georgia Tech's administration offered no continuing financial support for the programs.

Two of the new programs flourished from the beginning. The Human-Computer Interactions program, hosted by the College of Computing, enjoyed the administrative support of a large college, well-established connections with

industry employers through the College of Computing, and a substantial base of potential employers both locally and nationally. The Quantitative and Computational Finance program, hosted by the School of Mathematics, also had a substantial local employer base in Atlanta, the financial hub of the Southeast. Both programs attained capacity at 40-60 students per year with a mix of in-state, out-of-state, and international students. The Prosthetics and Orthotics program started later than the other programs, had much higher start-up costs because of its clinical component, and focused on training a relatively small number of students each year.

The Bioinformatics program, however, experienced a significant transition when its founding program director resigned the post because he found the workload interfered too much with his research program. Bioinformatics also lacked significant local industry employers for bioinformatics professionals and attracted relatively few applications from US citizens or from the state of Georgia. Most applicants were international or from other states, and had to pay out-of-state tuition. The qualified applicants were predominantly from outside the U.S. and had a strong entrepreneurial bent. They came to the program willing to gamble that they would be able to obtain a research assistantship.

When I took over as the faculty director of the MS Bioinformatics program, I quickly realized that the program was strapped for resources. I had neither the time nor the connections and skills to provide the requisite services for any professional graduate program; namely, career services and alumni relations. The School of Biology could offer only clerical assistance, and had neither history nor expertise at cultivating industry connections. Most critically, the program needed a way to provide financial support to at least some of the students. Most international students cannot pay full tuition without depleting their

family's life savings. Even nonresident US students balked at paying full out-of-state tuition. Finally, efforts to recruit minority students were futile given no prospect of financial support. These needs for career services, alumni relations, and student financial support were also keenly felt by the other programs. At best we could offer a limited number of teaching assistantships.

Starting fall, 2003, the PSM program directors at Georgia Tech were offered the choice to levy differential tuition for their programs. Although this differential tuition would significantly raise the cost to the student, 100% of the differential (the surcharge) would be returned to the program. The Bioinformatics and Quantitative and Computational Finance MS programs decided on a differential of 33%, to match the differential levied by Georgia Tech's MBA program. The Prosthetics and Orthotics program levied the 33% differential plus a mandatory flat fee of \$2,275 for clinical equipment. Next fall (2010), the MS in Human-Computer Interactions program will also levy a 33% differential tuition. Differential tuition is also charged by some other graduate programs at Georgia Tech, such as the MS in Building Construction, the MS in Industrial Design, and the PhD in Biomedical Engineering, as well as a few others (see [www.bursar.gatech.edu/tuiandfee.php](http://www.bursar.gatech.edu/tuiandfee.php)). The differential tuition is charged as a percentage of whatever tuition a regular graduate student would have paid, whether full-time or part-time, in-state or out-of-state, with one important exception. The differential is not subject to waiver. A PSM student that receives a research assistantship or teaching assistantship with tuition waiver must still pay the full amount of the tuition differential based on the tuition of a full-time graduate student. Thus a regular graduate student receiving a tuition waiver through a graduate assistantship pays just \$25 per semester in tuition; an MS Bioinformatics student receiving a graduate assistantship pays \$25 + \$3,575 tuition

differential, or \$3,600 per semester in the 2009-2010 academic year.

The bursar's office collects the tuition and fees, then returns the 33% differential to the program. Because the differential is collected as tuition payments, the funds are designated as state funds with the restrictions of state funds (cannot be used for food, alcohol or entertainment; cannot be used to pay gifts or awards or tuition).

In the 2008-2009 academic year, the MS Bioinformatics program received just over \$135,000 in tuition differential returns. Of this total, \$42,000 went to pay administrative salaries – two months for the faculty program director, and part-time salaries for a graduate coordinator and assistant. Another \$5,000 was set aside for redesigning the program's web pages. The remaining \$88,000 went back to the students in the form of graduate research assistantships and summer internships for research with faculty, and travel to conferences. In other years, some funds were also used to invite speakers and purchase computers and printers for the MS Bioinformatics student cluster.

After careful deliberation, the MS Bioinformatics program faculty advisory committee chose to spend the bulk of the funds to support student research with faculty for several reasons. First, this is a way to strongly leverage the funds. Appointing a PSM student as a Graduate Research Assistant (GRA) means that the funds are used to pay the student's stipend. But more importantly, this appointment means that the student receives a waiver of regular graduate tuition. Although the student must still pay the differential surcharge, the net benefit to the student is 100% of regular tuition + stipend, about a 4:1 benefit:cost ratio. Second, this is a powerful motivator for students to pursue research in a faculty laboratory. Alumni tracking data reveals that our students who have performed research in a faculty laboratory have

had far greater success in landing good internships and jobs, compared to students who have not availed themselves of such research opportunities. Third, these GRA appointments provide our faculty with a strong incentive to accept MS Bioinformatics students for research projects in their laboratories. Their labor and expertise come at no financial cost to the faculty mentor. Now even our experimental science faculty members have a reason to cheer the success of the program and its students. The work of bioinformatics students in experimental science labs also promotes research collaborations between the computational and experimental faculty.

The GRA appointments are awarded on a competitive basis, to MS Bioinformatics students who have paid full tuition for at least one semester. Applicants must submit a short research proposal, supported by a letter of recommendation from the faculty research mentor. These applications are reviewed and ranked by the faculty advisory committee, and as many awards made as the budget allows. Given that this is a professional program, students must show their commitment to their own education by paying full tuition for at least one semester. We were able to fund nearly 2/3 of applicants for GRA awards during the past year. We continue to strongly encourage students to find internships and co-op jobs, especially for the summer but even during an academic semester.

The portion of the tuition differential funds used to pay administrative salaries was calculated to defray the actual costs to the department of maintaining this program. Although one can reasonably argue that such administrative costs should have been provided to the department from the regular tuition that these students pay, the reality is that the department receives no allocation identified as being for support of any particular graduate program. Moreover, with the

continuing recession and cutbacks in state funding, the contribution of the MS Bioinformatics program to administrative salaries has helped to alleviate departmental budget shortfalls. One may regard this expenditure as necessary to gain or maintain the department's administrative commitment to the welfare of the PSM program. If the enrollment in the program expands, or as the administrative structure changes, we will consider hiring dedicated support staff, perhaps jointly with other professional graduate programs in biosciences, to augment career services and alumni relations, needs that have not yet been fully addressed.

Beyond defraying administrative costs and paying for GRA awards for students, the returned funds provide an enormous amount of flexibility for relatively little cost. Less than ten thousands of dollars per year allows many diverse activities to benefit students, such as inviting speakers, purchasing needed equipment and software, or hosting a local retreat or professional meeting.

The differential tuition model has not solved all the needs of the MS Bioinformatics program. We still cannot recruit minority students, who require and expect greater financial assistance. The restrictions on the use of state funds means that we still need to raise private donations to pay for pizza and drinks for student meetings. The pool of qualified and interested applicants in the U.S. is still far too small in computational biology or bioinformatics. However, our worst fear that a sudden steep increase in tuition would dry up our applicant pool, has not occurred. From 2002 to 2003 and since, neither Bioinformatics nor the other PSM programs at Georgia Tech experienced any significant decrease in either the number of applicants, or the rate of acceptance. These data suggest that sticker price is not a decisive factor in what program students choose to attend for professional graduate education. On the other hand, students will almost always choose in favor

of a program that offers financial assistance versus one that does not. Therefore, at least a realistic possibility of financial support is crucial to both recruitment and retention of students.

The differential tuition model has put Georgia Tech's PSM programs on a firm financial footing for the foreseeable future, for as long as the programs can recruit viable numbers of students. It provides much-needed resources for our programs to offer financial support to our

students, at a time when financial support for graduate education in the natural sciences is largely restricted to PhD students. Although we applied some of the funds to defray administrative costs, we urge other programs contemplating this model not to use the majority of the funds for administrative costs. Students will ask why they are paying higher tuition. Each program should carefully consider how best to use the funds to strengthen the program and benefit the students.