SPECIAL REPORT

of the

ACADEMIC MATTERS AND GRADUATE COUNCILS

concerning an

ACCELERATED MASTER’S DEGREE IN BIOSTATISTICS

Presented at the
746th Regular Meeting of the Faculty Senate
March 12, 2015

COUNCIL MEMBERSHIP

ACADEMIC MATTERS COUNCIL


GRADUATE COUNCIL

Background
The Department of Biostatistics and Epidemiology is proposing an Accelerated Master’s Option in Biostatistics. The M.S. in Biostatistics requires 45 credits. In the accelerated option, undergraduates in their senior year will take the courses needed to complete the baccalaureate degree along with an additional four courses (12 credits) at the graduate level, with the additional credits transferred to the M.S. program. This is in accord with the policy on accelerated master’s options, which allows the transfer of up to 12 credits for high-credit (> 36) master’s programs.

AMC Recommendation
At its meeting on February 18, 2015, the Academic Matters Council voted unanimously to recommend Faculty Senate approval of the proposed Accelerated Master’s Option in Biostatistics, submitted as proposal #1582 on the Course and Curriculum Management System.

GRADUATE COUNCIL

The Academic Standards and Curriculum Committee (ASCC) of the Graduate Council met on February 4, 2015 and reviewed the proposal for the Accelerated Master’s Degree in Biostatistics. The ASCC recommended this proposal for approval.

The revision was submitted as proposal #1582 on the Course and Curriculum Management System.

On Wednesday, February 11, 2015, the Graduate Council approved the Accelerated Master’s Degree in Biostatistics.

MOVED: 
That the Faculty Senate approve the Accelerated Masters Degree in Biostatistics, as presented in Sen. Doc. No. 15-034.
PROPOSAL DEVELOPMENT

Briefly describe the proposal.

The undergraduate program in Public Health Sciences is still young, but since its inception, there has been strong interest shown by students in creating a "4+1" accelerated master's degree option in Biostatistics. Meanwhile, the Biostatistics program has had a strong history of preparing quantitatively oriented aspiring public health professionals for careers in biomedicine, public health, and the life sciences. This proposal outlines an accelerated master's degree program that will allow our brightest undergraduate students to receive their masters in one year after receiving their bachelor's degree.

Provide a brief overview of the process for developing the proposal.

The Curriculum Committee for the Biostatistics program was charged with developing this proposal, with unanimous approval of the Biostatistics faculty. The Committee then worked to develop a plan for incorporating graduate course requirements into a typical undergraduate schedule. The final proposal was reviewed by all Biostatistics faculty.

Describe the proposal’s purpose and the particular knowledge and skills to be acquired and provide a rationale for creating this accelerated degree program.

Biostatistics prepares students to unravel complex issues in public health and biomedicine through the careful and systematic analysis of data. With a focus on modern challenges in statistical computing and big data as related to public health, the Biostatistics MS program at UMass trains students in data management, data analysis, and statistical theory. Additionally, students are required to take public health core courses that provide them with the larger context of the data they are analyzing. A recent McKinsey report claims that "by 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions. "Therefore, master's degrees in data- and statistics-oriented fields, with an applied focus, will be a very valuable commodity for students who complete this master's program. By providing an accelerated option, we enable talented undergraduate students to find a niche in this attractive job market sooner than would otherwise be possible for them.

Does the accelerated master’s option apply to all master’s degrees in this field, or only to certain tracks or concentrations?

This accelerated master’s option will apply only to the MS degree in Biostatistics currently offered by the Department of Public Health.

What type of degree program does this accelerated master's option pertain to?

An existing degree. We currently offer an MS in Biostatistics.

Describe the projected course sequence for this degree and the timeline to completion for students.

The projected course sequence is shown in the attached document. The application deadline for admission to this accelerated MS program will be established as November 30 of a student’s junior year. Eligible students would need to take 18 credits per semester in each of their junior and senior years. In order to remain on track for completion of both degrees, students applying to the program must be on track to complete a minimum of 78 credits by the end of the first semester of their junior year. Additionally, in the summer after finishing their undergraduate studies, students in this program would enroll in a 3-credit independent study where they would receive one-on-one mentorship with Biostatistics faculty in conducting biomedical and statistical research. Finally, students would finish MS degree requirements after two semesters of 5 courses. Expected timeline to completion is one year after receiving their bachelor's degree.
What undergraduate degree program is this accelerated masters associated with, if any?

Students from any undergraduate major can apply for this accelerated option. At a future date, we may propose a slightly modified option for undergraduate majors in Public Health.

If this proposal requires no additional resources, say so and briefly explain why. If this proposal requires additional resources, explain how they will be paid for. For proposals involving instruction, indicate how many new enrollments are expected and whether the courses have room to accommodate them.

This program requires no additional resources, as no additional courses need to be taught to accommodate expected enrollment. The Biostatistics MS program is currently small (5-10 students per year) and the required classes could easily accommodate many more degree-seeking students.

Provide the curriculum to the applicable masters degree as it currently appears in the Graduate Bulletin and explain how this curriculum will be scheduled over the student’s undergraduate and graduate careers. Note that total number of credits must be 30 plus the minimum number required for undergraduate degree (generally 120, making total number of credits required 150).

Note: For Master’s programs under 36 credits, a maximum of 9 graduate-level credits taken as an undergraduate may be applied to both degrees. For Master’s programs over 36 credits, a maximum of 12 graduate-level credits taken as an undergraduate may be applied to both degrees.

The requirements for the MS degree in Biostatistics are given in the attachment to this proposal. The MS in Biostatistics is a 45-credit degree program. As explained above (and illustrated in the attachment), undergraduates will be expected to complete 18 credits per semester in their final two years as an undergraduate student. This will ensure that they can complete the 120 credits necessary for their bachelor’s degree plus an additional 12 graduate-level credits above and beyond their bachelor’s degree requirements by the end of their senior year.

Who will apply to pursue this accelerated master’s degree? (UMass students, Five College students, students in specific degree programs, etc.)

Any Five College students, including UMass students.

Are there any admissions exceptions to this degree program, such as a waiver or the GRE requirements?

No.
Supplemental information for Accelerated Master’s Degree (“4+1”) Proposal in Biostatistics at UMass Amherst
Submitted November 2014 by Dr. Nicholas Reich for the Biostatistics Curriculum Committee

45-credit Master’s of Science in Biostatistics at UMass Amherst, Degree Requirements (as of AY 2014-15)

<table>
<thead>
<tr>
<th>Category</th>
<th>Classes</th>
<th>Credits (45 total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biostatistics core</td>
<td>PH 540</td>
<td>18 credits</td>
</tr>
<tr>
<td></td>
<td>PH 690NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PH 690JQ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PH 691F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PH 748</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PH 740</td>
<td></td>
</tr>
<tr>
<td>Other required public health core</td>
<td>PH 630</td>
<td>6 credits</td>
</tr>
<tr>
<td></td>
<td>One of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[PH565, PH601, PH620]</td>
<td></td>
</tr>
<tr>
<td>Required statistics courses</td>
<td>STAT 515</td>
<td>6 credits</td>
</tr>
<tr>
<td></td>
<td>STAT 516</td>
<td></td>
</tr>
<tr>
<td>Elective Biostatistics/Epidemiology/Statistics</td>
<td>5 elective courses</td>
<td>15 total</td>
</tr>
<tr>
<td>Exam</td>
<td>Taken early spring semester of 2nd year.</td>
<td>-</td>
</tr>
</tbody>
</table>

Possible course sequence for the 4 + 1 MS in Biostatistics at UMass Amherst

<table>
<thead>
<tr>
<th>Junior year</th>
<th>Senior, Fall</th>
<th>Senior, Spring</th>
<th>Summer</th>
<th>MS yr 1, Fall</th>
<th>MS yr 1, Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total credits/semester (UG + MS)</td>
<td>18 (18+0)</td>
<td>18 (12+6)</td>
<td>18 (12+6)</td>
<td>3 (0+3)</td>
<td>15 (0+15)</td>
</tr>
<tr>
<td>Cum. G credits*</td>
<td>96</td>
<td>108</td>
<td>120</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MS courses</td>
<td>-</td>
<td>PH 540</td>
<td>PH 690NR</td>
<td>3 credit</td>
<td>PH 690Q +</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STAT 515</td>
<td>STAT 516</td>
<td>indep. study</td>
<td>4 electives**</td>
</tr>
<tr>
<td>Cum. MS credits</td>
<td>0</td>
<td>6</td>
<td>12</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

*Cumulative credits towards undergraduate degree, assuming student has taken 15 credits each semester in Freshman and Sophomore years and 18 credits per semester in Junior year.

**“Electives” here indicate topic-specific courses in the Biostatistics core or other electives from Epidemiology, Biostatistics, Statistics, or other.