LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK

1. **Type of change:** New Interdisciplinary Minor

2. **Program Description:** 16-Credit Interdisciplinary Minor in Quantitative Systems Biology.

Coordinator: Liesl Jones (Associate Professor and Chair Department Biological Sciences)
Steering Committee: Stephen Redenti (Assistant Professor Biological Sciences), Nancy Griffeth (Professor Department Mathematics and Computer Science) Katherine St. John (Professor Mathematics and Computer Science). Liesl Jones (Associate Professor and Chair Department Biological Sciences) and Gustavo Lopez (Professor and acting Chair Department of Chemistry)

The new minor will engage students across several departments within the School of Natural and Social Sciences in the area of Quantitative Systems Biology involving computer modeling. The minor is very focused and will provide valuable training for students in computer and mathematical modeling of complex biological systems. The minor will be jointly housed between the Department of Biological Sciences and the Department of Mathematics and Computer Science.

**Degree Requirements:**

The minor will require the following 16 credits. There are 3 tracks depending upon your major.

If you are a Biology or Biochemistry major you will be required to follow Track 1:

- **CMP 230** Credits: 4
- **CMP 232** Credits: 4
- **CMP 444 Modeling Cellular Networks** Credits: 4
- **CMP 446 Computational Tools for Bioinformatics** Credits: 4

**Total Credits:** 16

If you are a Computer Science Major you will be required to follow Track 2:

- **BIO 166** Credits: 4
- **BIO 238** Credits: 4
- **CMP 444** Credits: 4
- **CMP 446** Credits: 4

**Total Credits:** 16

C. **All other Majors** are required to follow Track 3:

- **BIO 166** Credits: 4
- **BIO 238** Credits: 4
- **CMP 230** Credits: 4
- **CMP 232** Credits: 4
- **CMP 462 Modeling Cellular Networks** Credits: 4
- **CMP 446 Computational Tools for Bioinformatics** Credits: 4

**Total Credits:** 24
NOTES:
1. No course can be used for both the minor and major
2. The level of math needed for successful completion for the minor is either MAT 175 and 176 or MAT 175 and BIO 240.

3. Rationale: The field of Systems Biology is in its nascent stage and holds immense potential. Systems Biology is a powerful tool to organize vast amounts of molecular, biochemical and cellular data into predictive models. Students will gain programming and experimental design skills in quantitative systems biology, which will facilitate continued work in basic research, biomedical science, education and industry. This minor will allow students to be more successful in gaining access to a graduate school as well as make the students more employable.

The current proposal is driven by a grant from the National Science Foundation, which supports yearly winter workshops on a topic in quantitative systems biology at Lehman College. Development of a curriculum based on these workshops can give Lehman additional visibility among partner institutions and nationally.

4. Date of Departmental Approval:
Department of Biological Sciences approval Date 4/16/2011

Department of Mathematics and Computer Science approval date: 4/13/2011