LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK

DEPARTMENT OF COMPUTER SCIENCE

CURRICULUM CHANGE

1. **Type of change:** Add crosslisting to existing experimental course

2.

Department(s)	Computer Science; Physics and Astronomy
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	Quantum information science and quantum computing
Course Prefix & Number	PHY (CMP) 320
Course Title	Quantum Computer Science
Description	Quantum information science and quantum computing for majors in computer science, physics, and mathematics, topics include: the linear algebra of quantum mechanics, bits versus qubits, quantum cryptography, quantum teleportation, quantum gates and quantum computing, the Grover search algorithm.
Pre/ Co Requisites	PREREQ: MAT 313
Credits	3
Hours	3
Liberal Arts	[ ] Yes [X] No
Course Attribute (e.g. Writing Intensive, WAC, etc)	NA
General Education Component	__X_ Not Applicable ____ Required ____ English Composition ____ Mathematics ____ Science ____ Flexible ____ World Cultures ____ US Experience in its Diversity ____ Creative Expression ____ Individual and Society ____ Scientific World

3. **Rationale:**
The original PHY experimental course was approved in 2016. It has been found also to be appropriate for students in computer science, so the Computer Science Department would like to cross-list it so that CMP students taking it can earn credit toward the CMP major.

From the original proposal:
Quantum information science and computing is a field that has burgeoned into prominence over the past two decades, an interdisciplinary field combining elements of physics, computer science, and mathematics. There is increasing curiosity about this field among undergraduates in the above mentioned fields, and this course is designed to fulfill and further stimulate that curiosity. Several colleges and universities have already introduced undergraduate courses in this subject, but Lehman would be the first to do so at CUNY.

4. **Learning Outcomes (By the end of the course students will be expected to):**
Students will:

- Understand the unique features and advantages of quantum information processing as compared to what is possible by standard information technology.
- Be able to mathematically describe the operation and outcomes of various processes and be able to solve elementary problems pertaining to these outcomes.

5. **Date of Departmental Approval:** October 17, 2016