**New York City College of Technology**

**Interdisciplinary Committee**

**Course Review Form**

**DATE:** February 14, 2018.

**REVIEWER:** Candido Cabo

**COURSE TITLE & NUMBER:** Physics 2443: Modern Physics

**CREDIT HOURS:** 4 credits / 6 hours (3 lecture, 3 lab)

**PREREQUISITES:** Pre-requisite: PHYS 1442 or departmental permission

**COURSE IS:** 🗹 Existing New In development

**PROPOSED COURSE DESIGNATION**: 🗹 College Option 🗹 elective Capstone 🗹 other:

This course will satisfy the Interdisciplinary course requirement of the College Option component of City Tech’s general education.

**DEPARTMENT HOUSED IN:** Physics

**PROPOSED STRUCTURE (e.g., co-taught, guest lecture, LC, other):**  Guest lecturers.

**CREDIT DISTRIBUTION** (if co-taught): N/A

**CATALOG DESCRIPTION:**

Discoveries of 20th century physics caused numerous paradigm shifts, in science, philosophy, and society. Topics covered include quantum theory, including the wave/particle duality of light and particles and uncertainty principle, and the example of light diffraction and interference, relationship to quantum chemistry, quantum entanglement and relationship to quantum computing, lasers, holography, quantum mechanics of solids and application to electronics, the structure of the atom and the nucleus, including the basis of nuclear energy production, social implications of nuclear power, relativity and the nature of time, and astrophysics and the fate of the universe.

**DESCRIBE & EVALUATE HOW COURSE MEETS INTERDISCIPLINARY CRITERIA?**

The goal of this course is not only to understand fundamental 20th century physics and but also its relationship to different areas of technology, science, and society. For example, how the study of physics has facilitated developments in other fields, how it has informed our approach to observing and analyzing, and how does it has influenced the political and economic balance of power. Throughout the course, students will integrate physics concepts and their application to other disciplines to explain a problem, experiment, or application in that discipline (chemistry, mathematics, computing, and history).

**DESCRIBE & EVALUATE THE INTERDISCIPLINARY STRUCTURE?**

The course will use guest lecturers (approximately 20% of the course lecture hours) from different disciplines including chemistry, mathematics, computer science and history. That is in compliance with the minimum requirement established by the Interdisciplinary Committee., and it seems appropriate for the course.

**DOES COURSE MEET REQUIREMENTS FOR GENERAL EDUCATION?**

Yes. This course emphasizes the understanding of physical concepts and their relationship to other disciplines. This is an area considered by the State of New York as belonging to liberal arts and sciences. Moreover, the course also challenges students to think about the social implications of the application of physics concepts.

**STRENGTHS:**

This is an interdisciplinary course that integrates the learning of physics concepts with their use and application in other disciplines like chemistry, mathematics, computer science and history. Students should be able to establish connections between those different perspectives through the regular lectures, guest lectures and labs.

**WEAKNESSES:**

No weaknesses found.