**New York City College of Technology**

**Interdisciplinary Committee**

**Criteria for an Interdisciplinary Course**

1. **Interdisciplinary Studies Definition**

Interdisciplinary studies involve two or more academic disciplines or fields of study organized around synthesizing distinct perspectives, knowledge, and skills. Interdisciplinary study focuses on questions, problems, and topics too complex or too broad for a single discipline or field to encompass adequately; such studies thrive on drawing connections between seemingly exclusive domains. Usually theme-based, interdisciplinary courses intentionally address issues that require meaningful engagement of multiple academic disciplines. Pedagogical strategies focus on, but are not limited to, inquiry or problem-based learning.

Although many academic disciplines, such as African American Studies and Engineering, are inherently interdisciplinary, to be considered an interdisciplinary course at City Tech the course must be team-taught[[1]](#footnote-1) by more than one faculty member from two or more departments[[2]](#footnote-2) in the College. An interdisciplinary course, by definition, has an interdisciplinary theme as its nucleus. In its essence, such a course brings the analytic methods of two or more academic disciplines to bear on a specific problem or question. Thus, a course in Music History is not likely to be considered interdisciplinary, but a course in Music History from an economist’s perspective might very well lead to such a course. The application of different methods and concepts is the key to assessing whether a course is or is not interdisciplinary. The term interdisciplinary is occasionally used to identify individual projects or assignments, but these, though possibly commendable, fall short in the necessary scope for learning experiences that demand in-depth exposure to the methodologies of distinct intellectual disciplines, and the creative application of these methodologies to specific problems.

Studies show that interdisciplinary courses improve student learning (Elrod & Roth, 2012; Klein, 2010; Lattuca, 2001; Lattuca, Voigt, & Fath, 2004; Project Kaleidoscope, 2011). To foster interdisciplinary learning, the Interdisciplinary Committee has identified goals and outcomes that students taking interdisciplinary courses should be able to achieve.

**Learning Outcomes of Interdisciplinary Courses**

Students will be able to:

* Purposefully connect and integrate across-discipline knowledge and skills to solve problems
* Synthesize and transfer knowledge across disciplinary boundaries
* Comprehend factors inherent in complex problems
* Apply integrative thinking to problem-solving in ethically and socially responsible ways
* Recognize varied perspectives
* Gain comfort with complexity and uncertainty
* Think critically, communicate effectively, and work collaboratively
* Become flexible thinkers

**New York City College of Technology**

**Interdisciplinary Committee**

**Application for Interdisciplinary Course Designation**

**Date \_\_\_\_\_\_\_\_\_9 – 2- 2020\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Submitted by** \_\_\_\_\_Mr. Abdou Bah\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Department(s) \_\_\_\_\_\_\_\_\_\_\_\_** Physics\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Proposal to Offer an Interdisciplinary Course**

1. Identify the course type and title: PHYS 1002ID, An Introduction to the Physics of Natural Disasters  
     
   **XX** An existing course\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
     
   🞎 A new course \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

🞎 A course under development \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Provide a course description:** *This introductory course for non-science majors focuses on natural disasters and the dynamic Earth processes that control them. The course integrates the principles of geology, meteorology, climatology, oceanography, and astronomy to provide rudimentary understanding of Earth System Science. Students learn about the nature, causes, risks, impacts, and prediction of natural disasters including hurricanes, earthquakes, volcanoes, tsunamis, and climate change. Laboratory exercises are incorporated with class work to illustrate and supplement the lecture material.*
2. How many credits will the course comprise? Three (3) How many hours? Four (4)
3. What prerequisite(s) would students need to complete before registering for the course? Co-requisite(s)?

**Prerequisite:** *MAT 1190*

1. **Explain briefly why this is an interdisciplinary course:** *This geophysics course is inherently interdisciplinary since it involves and connects many disciplines (climatology, meteorology, geology, hydrology, etc.) in a comprehensive, holistic study of natural disasters. Moreover, under the umbrella of the geosciences, the course readily lends itself to the integrative perspectives of expert guest lecturers from different disciplines.*
2. What is the proposed theme of the course? What complex central problem or question will it address? What disciplinary methods will be evoked and applied?

*The overall theme of the course is the dissecting of the nexus and the tension between humans and their physical environment.*

1. Which general learning outcomes of an interdisciplinary course does this course address?   
   Please explain how the course will fulfill the bolded mandatory learning outcome below. In addition, select and explain at least three additional outcomes.

🞎 **Purposefully connect and integrate across-discipline knowledge and skills to solve problems**

*The complexity of cascading, connected, cross-disciplinary physical phenomena that often comprise natural disasters will be taught, explained, and demonstrated in both lecture and labs so that integrative societal solutions may be discussed and explored.*

🞎 **Synthesize and transfer knowledge across disciplinary boundaries**

*Students engage in group work and projects that will guide them to employ a variety of cross-disciplinary perspectives and integrative knowledge in the interpretation of the science, the impacts, and the responses to natural disasters.*

🞎 Comprehend factors inherent in complex problems

🞎 Apply integrative thinking to problem solving in ethically and socially responsible ways

*Many natural disaster case studies (ex. Japan’s 2011 Tsunami, Superstorm Sandy, Hurricane Katrina, etc.) will be studied not only from a physics perspective, but also examined from and via societal and ethical lenses.*

🞎 Recognize varied perspectives

*The ‘hot’ topics of climate change, alternate sources of energy, and greenhouse gas loading of the atmosphere readily lend themselves to a variety of social and political positions that directly affect the lives of the students. Ample time is spent in the class to explore and to debate these varied perspectives.*

🞎 Gain comfort with complexity and uncertainty

🞎 Think critically, communicate effectively, and work collaboratively

*In the course, students volunteer to participate in natural disaster groups. Each group has six or seven members, and each group has a captain and a co-captain. Members of each group work together all semester long on a particular natural disaster and then produce a poster that becomes part of the City Tech bi-annual Honors and Emerging Scholars Poster Session. Each group also has to present a fifteen-minute power-point oral presentation at the end of the semester. This type of group design allows for the development and building of critical thinking and leadership skills, effective communication, coordination, organization, and collaborative work.*

🞎 Become flexible thinkers

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🞎 Other

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**General Education Learning Goals for City Tech Students**

* **Knowledge:** Develop knowledge from a range of disciplinary perspectives, and hone the ability to deepen and continue learning.
* **Skills:** Acquire and use the tools needed for communication, inquiry, creativity, analysis, and productive work.
* **Integration**: Work productively within and across disciplines.
* **Values, Ethics, and Relationships**: Understand and apply values, ethics, and diverse   
  perspectives in personal, professional, civic, and cultural/global domains.

1. How does this course address the general education learning goals for City Tech students?

*General Education learning goals are addressed and achieved in the course by motivating students to view geophysics from its many disciplinary perspectives while stimulating deeper understanding of the environment as part of Earth system science. Moreover, the course equips students with the tools and the skills needed to clearly and correctly communicate and analyze the complexities inherent to the Earth as an integrated system. The course also helps to produce citizen scientists who are capable of understanding and discussing the symbiotic relationships between the environment and the society in terms of impacts, values, ethics, environmental justice, and sustainability.*

1. Which department would house this course[[3]](#footnote-3)? *Physics Department*  
   Would all sections of the course be interdisciplinary? 🞎 No **XX** Yes
   1. Would the course be cross-listed in two or more departments? **XX** No 🞎 Yes   
      Explain.

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* 1. How will the course be team-taught[[4]](#footnote-4)? 🞎 Co-taught **XX** Guest lecturers 🞎 Learning community  
       
     If co-taught, what is the proposed workload hour distribution? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
     🞎 Shared credits 🞎 Trading credits   
     If guest lecturers, for what approximate percentage of the course? **XX** Minimum 20%[[5]](#footnote-5) 🞎 other: \_\_%  
       
     Please attach the evaluation framework used to assess the interdisciplinarity of the course.[[6]](#footnote-6)
  2. What strategies/resources would be implemented to facilitate students’ ability to make connections across the respective academic disciplines?

*Strategies/resources that are implemented for cross disciplinary connections include:*

*- inquiry based learning*

*- problem based learning*

*- place based learning*

*- make curriculum relevant to students’ livelihoods; that is, sustainability from curriculum to community*

*- utilize real time, current scenarios and data*

*- engage students in service learning*

1. Would the course be designated as:

🞎 a College Option requirement[[7]](#footnote-7)? **XX** an elective? 🞎 a Capstone course[[8]](#footnote-8)? 🞎 other? Explain.

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1. See “Application for Interdisciplinary Course Designation” question 9b for team-teaching options. [↑](#footnote-ref-1)
2. Exceptions are made for Departments that provide a home for multiple disciplines, such as Humanities and Social Science. [↑](#footnote-ref-2)
3. An interdisciplinary course for the College Option requirement may be housed in a department that is not liberal arts. [↑](#footnote-ref-3)
4. Attach evidence of consultation with all affected departments. [↑](#footnote-ref-4)
5. While an interdisciplinary course must be team-taught, there is no formal percentage requirement, but this minimum is a guideline. [↑](#footnote-ref-5)
6. In the case that a course is equally taught, include proposed plans for faculty classroom observation and student evaluation of teaching. [↑](#footnote-ref-6)
7. To qualify for the College Option, such a course must also meet the New York State definition of a liberal arts and sciences course.  
   <http://www.nysed.gov/college-university-evaluation/department-expectations-curriculum> [↑](#footnote-ref-7)
8. A course proposed as a Capstone course must be separately approved by the Capstone Experience Committee. [↑](#footnote-ref-8)