Previously Funded Team-Intensive Courses

1. COLLABORATIVE MANAGEMENT OF HUMAN METABOLIC SYNDROME
PAUL NEALEN (BIOLOGY) AND JOYCE SHANTY (NURSING)
Students enrolled in BIOL 240 (Human Physiology) will collaboratively analyze and explore health and treatment scenarios for human subjects afflicted to varying degrees by metabolic syndrome, a complex and debilitating suite of physical traits that are significant risk factors for several of the primary causes of human mortality and morbidity, including heart disease, diabetes, and stroke. Because metabolic syndrome impacts many different physiological systems (including cardiovascular, endocrine, renal, and nutritive), the best approaches are holistic and may include behavioral, pharmaceutical, and nutritive components. Each student team will be asked to evaluate this disease (and its impact on their subjects) from their own background/expertise. Student teams will also develop a physiological profile for each of these subjects, as well as a health maintenance/improvement plan.

2. CREATION AND SIMULATION OF ORIGINAL SCENARIOS OF FOOD AND NUTRITION DISEASES PAO YING HSIAO (FOOD AND NUTRITION) AND RACHEL DESOTO JACKSON (THEATER AND DANCE)
Students from FDNT 355 Medical Nutrition Therapy I and THTR 281 Special Topics: Applied Theater I will collaborate to create an original scenario based on a specified Food and Nutrition specified disease. Students from FDNT 355 will apply their knowledge of the disease and the circumstances related to this interaction in collaboration with THTR 281 students applying their knowledge of scenario development including character, plot, dialogue, given circumstances, and simulated patient training. Students will conduct and share research, engage in writing contextual content, and enact physical interpersonal role-playing to develop a final scenario which cannot be completed without development from students in each discipline. The final scenario will be presented at a simulation event involving all students from both classes. During this simulation, each interdisciplinary group will perform their final scenario. This will be followed by a Forum Theatre simulation, which involves the larger audience participating and interacting in the scenarios created by other groups, thereby adapting the scenarios within a real-world context using improvisation. The simulation ends with a large group debrief which focuses on the processes used in creating the scenarios, the performance of the final scenario, and the adaption of scenarios using Forum Theatre.

3. DRUG DISCOVERY: ASSESSING THE PHARMACOLOGICAL AND BEHAVIORAL CHARACTERISTICS OF SEROTONERGIC COMPOUNDS
DANIEL WIDZOWSKI (BIOLOGY) AND WILLIAM FARRELL (PSYCHOLOGY)
Pharmacology students will be divided into Pharmacology Sub-Teams. Collectively, these sub-teams will determine the pharmacokinetics (PK) and Pharmacokinetcs (PD) of serotonin (5-HT), several specific agonists or antagonists at various 5-HT receptors, and novel serotonergic analogues obtained from Justin Fair's research team in the Chemistry Department. Each PST will characterize a single compound. Each PST will produce a scientific report which they will present to the sub-team in the Physiological Psychology course that is examining the behavioral effects of the same compound. Each PST will also present their report to their classmates. At the course level, comparisons between the findings obtained with the known compounds and the novel compounds will then be used to further characterize the pharmacology of the unknown compounds. This larger report will be provided to the students in the Physiological Psychology course.

Physiological Psychology students will be divided into Behavioral Testing Sub-Teams. Each BTST will test one of the compounds examined by the PST for behavioral effects in crayfish. As members of the BTST, Physiological Psychology students will first develop in-depth knowledge about the serotonin system, which is believed to play important roles in the regulation of mood, appetite, and locomotion. Students will then learn about crayfish and the behavioral effects of various serotonin agonists and antagonists in this species. Using this knowledge, students will then design a study protocol to assess the behavioral effects of the various compounds in crayfish. Each BTST will then execute this protocol using their assigned compound. Each BTST will produce a scientific report which they will present to the sub-team in the Pharmacology course that is examining the PK/PD of the same compound. Each BTST will also present their report to their classmates. At the course level, comparisons between the findings obtained with the known compounds and
the novel compounds will then be used to create a larger report integrating the behavioral effects of the novel compounds with the psychology literature. This larger report will be provided to the students in the Pharmacology course.

4. THE INTERSECTION OF FOOD SYSTEMS AND WATER QUALITY
HAO TANG (CHEMISTRY) AND IDAMARIE LAQUATRA (FOOD AND NUTRITION)
Sustainable Nutrition students will work with Environmental Chemistry students to carry out water quality testing on samples gathered from streams, lakes, and possibly public water systems and wells that may have water quality issues due to runoff from farming, drainage, waste leakage, or lead pipes for example. The FDNT sub-teams will focus on the food system impacted by the water quality, and the ENVE students will develop the protocol for the appropriate testing. The project will culminate with a written or oral presentation by the interdisciplinary teams on the interrelationship of the food system with the environment, detailing the water quality tests completed, the interpretation of the test results, the source of the contamination, and the impact on the food supply.

5. WATER QUALITY IN SOUTHWESTERN PENNSYLVANIA
NATHAN MCELROY (CHEMISTRY) AND BRIAN OKEY (GEOGRAPHY AND REGIONAL PLANNING)
CHEM 326 students will work with GEOG 440 students to carry out a water quality study from a local watershed area. The interdisciplinary teams will work together to design and implement a water sampling study of a local watershed area (e.g., Blacklick Watershed, Beaver Run Watershed). Teams will choose a study area, define a sampling protocol and sampling schedule, and decide what chemical analyses will be performed on water samples. A successful outcome of these studies will depend on the students’ abilities to apply their own knowledge and experiences in their disciplines, as well as effectively communicating this knowledge to their teammates who do not have that expertise. Sub-teams will produce and share results from field and lab measurements, and share their findings via an oral presentation.

6. WOOD: SEED TO ART
BA HARRINGTON (ART) AND MICHAEL TYREE (BIOLOGY)
This course will be taught as a single, three-credit course using a studio/seminar format, meeting once per week for four hours with an additional one-hour lecture per week. The lecture component will be dedicated to providing the students instruction on how plants grow, respond to their environment, and how this influences wood formation. The bulk of the course will then put this into practice by allowing the students to design and create objects in wood. The culminating class project will be to create both the factual and educational information included in the digital Allegheny Arboretum Kiosk to be installed in the Oak Grove, and to design and fabricate a sculptural piece for the Art in the Arboretum project that will accompany and compliment the kiosk. Each team will be assigned a different aspect of the kiosk/sculpture project, with the biology students providing the factual and educational information to be included in the kiosk and the art students providing the design and fabrication of the sculptural component.

7. LINKING MODERN COASTAL ENVIRONMENTS WITH PALEOENVIRONMENTAL RECONSTRUCTION THROUGH COASTAL GEOLOGY AND ARCHAEOLOGY
WILLIAM CHADWICK (ANTHROPOLOGY) AND KATIE FARNSWORTH (GEOSCIENCE)
The student teamwork project will be planning for, executing, and reporting on a coastal survey to examine current and past environments along the Delaware Coastline. The depositional environment (beach, marsh, upland, etc.) determines how humans interact with the landscape throughout time. Whether it is for the determination of the location of housing, sustenance, or recreation, understanding the processes altering the coastline environments plays a key role. Students will work as interdisciplinary teams to understand and quantify modern coastal processes and environments and apply this to an understanding of both past and future spatial relationships along the coast.