Approved School of Science & Engineering Service Learning Courses

SCEN 101–01 Communicating Science (1)
As the high schools in New Orleans rebuild, one of their many challenges is the uneven level of preparation among students entering the 9th grade. At the New Orleans Charter High School for Science and Math (SciHi), founded by two Tulane professors, the students are motivated but the disparities in their backgrounds are enormous. In this course, we learn how to help high school students who’ve fallen behind, both academically and by understanding the origins of their difficulty. Then we apply that knowledge by working with the students and also fulfilling one of the Tulane Center for Public Service requirements. The service, a minimum of 30 hours over the course of a semester, can take the form of teaching, tutoring, assisting with in-class exercises, and always includes acting as a mentor and role model to the SciHi students.

SCEN 101–02 Communicating Science (1)
Students will learn about communicating science by providing 30 hours of mentoring for a middle-school FIRST Lego League (FLL) team, typically on-site as an after-school program. FLL provides motivation in STEM fields (Science, Technology, Engineering, and Math) by requiring middle-school students to design and build a Lego robot and prepare a 5 minute research presentation on the theme of the challenge. Past themes have included Mission Mars, Oceanography, Nanotechnology, Energy, Climate, and Transportation. The program culminates with a state competition in New Orleans in November or December. Tulane students will also read relevant articles and participate in discussions and reflections with faculty. This course satisfies the first Service Learning graduation requirement.

BMEN 231 Product and Experimental Design Service Learning (1)
This course offers two options which satisfy the first tier service learning graduation requirement. The objective of Option 1, Middle-School or High-School Research Project Partnerships, is to assist students in a local middle or high school with individual science fair projects, which includes helping develop topics, leading research efforts, and acting as a liaison between the students and potential Tulane faculty mentors. Tulane students will be able to directly apply knowledge obtained in the Product and Experimental Design course. The objective of Option 2, Assistive Technology Senior Project Support, is to assist teams of seniors in BMEN403 who take on a client that needs some form of assistive technology. Because the clients have a broad spectrum of disability, it is usual that their needs are not satisfied with off-the-shelf technology, but require a special system to be designed and constructed. This can often be done by modifying or adapting technology already on the market. BMEN289 students help define the specific problem to be solved and the constraints that must be satisfied; review the team's proposal and ensure that the client and the team are having a true meeting of their minds; and identify existing technology that is applicable to the client's situation. The commitment is 20 contact hours in addition to several meetings during the semester for training and reflection. A weekly journal and final 2 page reflection paper are also required. This is a 1 credit Service Learning add on to BEMN 231. This course satisfies the service learning requirement when co-registered for BMEN 289.

BMEN 403-404 Team Design Projects I and II (2,3)
Prerequisite: Senior standing. Techniques and experience in the solution of constrained and open-ended design problems. Lecture topics include all aspects of the design process, including goal setting, idea generation, prototyping, fabrication, and product and evaluation. Also included are technical presentation, project planning and management. Included as needed are other topics such as standards, fastening and joining, motors and control, esthetics and finish. Each team will design and construct a device or system to assist an individual with a disability. These designs are presented in a public show during the second semester. This course satisfies the service learning requirement when co-registered for BMEN 489.
CELL 101 General Biology (3)
A study of phenomenology and fundamental concepts that apply to all living systems. Major topics include: cell biology, physiology, genetics, and development. This course satisfies the service learning requirement when co-registered for CELL 189.

CELL 434 Neurobiology of Disease (3)
Prerequisite: CELL 331. Advanced course on the higher neural functions of the nervous system and neurological diseases resulting from disruption of these functions. An emphasis is placed on the physiology of the nervous system and neural dysfunction caused by inherited and acquired diseases. Topics range from motor control and neuromuscular diseases to high cognitive function and dementia. Same as NSCI 434. This course satisfies the service learning requirement when co-registered for CELL 489.

CELL 457-01 Service Learning Internship (3)
Prerequisites: approval of instructor and Center for Public Service. An experiential learning process coupled with pertinent academic course work. Students will complete 70 volunteer hours with a community partner, attend a weekly seminar, complete reading and writing assignments, and produce a final project related to their community partner site. Open only to juniors and seniors in good standing. Registration is completed in the Cell and Molecular Biology Department after paperwork is completed with the Center for Public Service.

CENG 302 Chemistry and Engineering Science in the Community (2)
Prerequisite: Junior standing. This course satisfies the university’s public-service requirement. Topics include public outreach, application of engineering principles to community issues, and educating the community on scientific and engineering issues.

CHEM 108 - General Chemistry II (3)
Staff. Pre-requisite: CHEM 107 and 117. Co-requisite: CHEM 118. The chemistry of solutions, equilibrium, thermodynamics, electrochemistry, kinetics. Note: Concurrent registration in CHEM 118 required. Credit will not be given for both 108 and H110. Three hours of lecture per week. This course satisfies the service learning requirement when co-registered for CHEM 189 and is restricted to those who attend all the training sessions, participate in performing all the chemistry demonstrations at a local school, and submit a final written report about the experience.

CHEM 391 Special Topics (3)
Special topics in chemistry. For description, consult department. This course satisfies the service learning requirement when co-registered for CHEM 389.

EENS 113 Physical Geology Laboratory (1)
Co-requisite: EENS 111. A hands-on study of rocks, minerals, landforms and geologic structures using topographic maps, aerial photographs, physical models, field examination and independent research projects. One laboratory per week; field trips. This course satisfies the service learning requirement when co-registered for EENS 189.

EENS 310 Geomorphology (3)
Prerequisites: EENS 111/113. The study of processes leading to landform creation and development in response to climate and tectonics. Overview of fundamental and applied activities undertaken by geomorphologists. This course satisfies the service learning requirement when co-registered for EENS 389.
EENS 380 Environmental Analysis Laboratory (3)
Introduction to basic analytical techniques commonly used in environmental science, with a focus on aqueous and sediment matrices. Includes determination of solids, alkalinity and hardness, adsorption isotherms, oxygen content, conductivity, as well as spectrometric and chromatographic techniques and sediment analysis. This course satisfies the service learning requirement when co-registered for EENS 389.

EENS 456, 457 Service Learning Internship (3, 3)
Prerequisites: approval of instructor and Center for Public Service. Open only to juniors and seniors in good standing. An experimental learning process coupled with pertinent academic coursework and supervision. Registration is completed in the department office after approval from the Center for Public Service. Only one internship may be completed per semester.

EBIO 204 Conservation of Biological Diversity (3)
Corequisite or Optional: EBIO 289 (1) Service Learning for a minimum of 40 hours. A consideration of biological diversity and its persistence, threats, human value, conservation efforts, and biological bases. Specific topics include extinction, global change, population viability, habitat loss and degradation, ecosystem management, restoration, agricultural ecosystems, economic and legal considerations, and the human population. This course satisfies the service learning requirement when co-registered for EBIO 289.

EBIO 260 Natural Resource Conservation Theory and Practice (3)
Corequisite: EBIO 289 Service Learning. This course examines the theory and practice of natural resource preservation in the United States, and the agencies and organizations involved in this endeavor. Students may not apply this course and EBIO 360 toward the course requirements for the EE Biology major. This course satisfies the service learning requirement when co-registered for EBIO 289.

EBIO 318 Plants and Human Affairs (3)
Prerequisite: none. Since ancient times, people have relied on plants for food, clothing, shelter, medicines, and more. This course investigates some of the ways in which plants support and shape human life. Topics include: early ideas about plants and the origin of plant lore; plant domestication and the rise of agriculture; plant products in commercial economies; cultural uses of plants; plants and the future of civilization. This course satisfies the service learning requirement when co-registered for EBIO 389.

ENGP 289 Product and Experimental Design Service Learning (1)
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MATH 316 Advanced Perspectives in Elementary Mathematics (3)
Prerequisites Math 309 or Math 305. The course, whose exact subject matter may vary from term to term has as its objective to give a more advanced treatment of some topics in secondary school mathematics. Examples of such topics are: The relationship between group theory in abstract algebra and symmetries of geometric figured in the plane and in space, elementary properties of integers, an introduction to non-Euclidean geometries including spherical and hyperbolic geometries. A successful completion of the course with the service learning component satisfies the second tier of Tulane's public service graduation requirement. This activity will be accomplished by Tulane students' participation in various projects involving selected high schools in New Orleans through New Orleans Outreach and Communities in Schools.

NSCI 330 - Brain and Behavior (3)
Dr. Wee. Pre-requisite: PSYC 100, H101 or 102. Lectures cover the function and structure of the nervous system and the role of brain activity in the regulation of behavior. This course provides Neuroscience majors with a first exposure to the biological bases of behavior and should be taken prior to other Neuroscience courses at the 300 level and above. (Same as PSYC 330.) This satisfies the Service Learning requirement when co-registered with NSCI 389. The optional service learning component, NSCI 389, involves completion of 40 hours of service with the community partner (e.g., working with brain damaged and/or spinal cord injury patients in a local hospital or with elderly in a nursing home) and written and oral communication assignments.

NSCI 411 Brain and Language (3)
The goal of this course is to learn how the brain is organized to produce and comprehend language and to understand linguistic disorders attendant on brain damage. There is an optional service learning component in which students can work with a speech therapist at a local health-care provider. Same as LING 411. This course satisfies the service learning requirement when co-registered for NSCI 489.

NSCI 434 Neurobiology of Disease (3)
Prerequisite: CELL 331. Advanced course on the higher neural functions of the nervous system and neurological diseases resulting from disruption of these functions. An emphasis is placed on the physiology of the nervous system and neural dysfunction caused by inherited and acquired diseases. Topics range from motor control and neuromuscular diseases to high cognitive function and dementia. Same as CELL 434. This course satisfies the service learning requirement when co-registered for NSCI 489.

NSCI 457-01 Neuroscience Internship (3)
Prerequisites: Approval of instructor and Center for Public Service. An experiential learning process coupled with pertinent academic coursework. Open only to juniors and seniors in good standing. Students will complete 70 volunteer hours with a community partner, attend a weekly seminar, complete reading and writing assignments, and produce a final project related to their community partner site. Registration is completed in the Neuroscience Program office after paperwork is completed with the Center for Public Service.

NSCI 600 Methods in Neuroscience (3)
Prerequisite: NSCI/PSYC 330. A lecture course exposing students to contemporary theories and techniques used by Tulane neuroscientists in their own research programs. The course is taught by faculty members representing several departments from both the uptown campus and the Health Sciences Center. This course satisfies the service learning requirement when co-registered for NSCI 689. The optional service learning component, NSCI 689, involves completion of 40 hours of service working with brain damaged and/or spinal cord injury patients at TOURO hospital and written and oral communication assignments.
NSCI 653 Psychopharmacology (3)
Prerequisite: NSCI/PSYC 330 or approval of instructor. An introduction to the effects of psychoactive agents on the nervous system. Lectures emphasize the mechanisms by which drugs regulate neurotransmitter systems to alter psychological and physical states. Same as PSYC 653. This course satisfies the service learning requirement when co-registered for NSCI 689.

NSCI 657 Cognitive Neuroscience (3)
Prerequisites: PSYC 100, NSCI/PSYC 330 An introduction to the study of human behavior and cognition using neuroscience methods. The course will examine the neural basis of perception, attention, memory, language, motor control, and emotions. Same as PSYC 657. This course satisfies the service learning requirement when co-registered for NSCI 689.

NSCI 691 Neuroscience Capstone: Service and Clinical Applications of Neuroscience (3)
This course is designed for senior neuroscience majors who have completed their core course requirements of Brain and Behavior, Cellular Neuroscience and Systems Neuroscience. It is designed to be a culminating experience in which students utilize and apply their skills and knowledge developed over the course of their major. This course will have three versions. One; Service and Application of Neuroscience – will allow students to apply their knowledge of basic neuroscience in approved clinical or educational settings while providing service to the community. Second; Independent Research and Writing in Neuroscience – this is for students to do independent research in the laboratory of a neuroscience faculty member and to complete a written assignment that includes a review of the pertinent neuroscience literature and/or a summary of the completed research. Third; this option is for students to participate in a combination of journal club/seminar series, in which students will present and discuss neuroscience research articles and attend neuroscience seminars presented by researchers from Tulane and other institutions. For all three options each student will complete a final project to be agreed upon by the instructor and student. Only the first option will fulfill the second tier service learning requirement.

PHYS 291 Introduction to Physics Pedagogy (1)
Prerequisites: PHYS 121 and 122 or 131 and 132. Introduction to the theory and practice of teaching physics courses through workshops, observations and assisting teachers at local schools with lectures and/or classroom demonstrations. This course satisfies the service learning requirement when co-registered for PHYS 289.

PSYC 320 Educational Psychology (3)
Prerequisite: PSYC 100, H101 or 102. Examines psychological principles applied to educational practices with special emphasis on cognition. Its purpose is to help adults working with children to understand better the relationship between applied educational practices and psychological principles and research. Includes observational assignments in schools. This course satisfies the service learning requirement when co-registered for PSYC 389.

PSYC 325 The Psychology of Early Childhood (3)
Prerequisite: PSYC 100, H101 or 102. An investigation of educational programs for young children and/or parents of young children based on cognitive developmental theory, learning theory, and others. Curriculum development and the evaluation of program effectiveness are discussed. This course satisfies the service learning requirement when co-registered for PSYC 389.
**PSYC 330 Brain and Behavior (3)**
Dr. Wee. Prerequisite: PSYC 100, H101 or 102. Lectures cover the function and structure of the nervous system and the role of brain activity in the regulation of behavior. This course provides psychology majors with a first exposure to the biological bases of behavior and is not recommended for students who have taken other courses in this area of study. This satisfies the Service Learning requirement when co-registered with PSYC 389. The optional service learning component, PSYC 389, involves completion of 40 hours of service with the community partner (e.g., working with brain damaged and/or spinal cord injury patients in a local hospital or with elderly in a nursing home) and written and oral communication assignments.

**PSYC 339 Adolescent Psychology (3)**
Prof. Cunningham. Prerequisite: PSYC 100, H101 or 102. A study of development through the adolescent years. Emphasis is on cognitive, social, physical, moral, sexual, and political development. This course satisfies the service learning requirement when co-registered for PSYC 389.

**PSYC 343 Introduction to Social Psychology (3)**
Prerequisite: 100, H101 or 102. The individual in a social context: the nature and measurement of attitudes, social perception, interpersonal and intergroup relations. This course satisfies the service learning requirement when co-registered for PSYC 389.

**PSYC 456, 457 Internship in Psychology (3)**
Staff. Prerequisites: psychology major, junior or senior standing, GPA of 3.00 or higher, completed application to Center for Public Service. Students will complete 90 hours of service in a community setting in which they will use the knowledge of psychology to complete a project or paper of benefit to the community site.