VITAL MINIGRANT AWARDS 2007 - 2012

Project Title and Description
BUSINESS
Integrating Interactive Teaching and Cooperative Learning into the Economics Classroom – Most economists still use "chalk and talk" to teach economics. This project will integrate cases, small-group writing, and structured discussions in an upper-level, cross-discipline economics elective in order to enhance students' retention of the material and increase their ability to apply the theories to real life situations, to more critically analyze situations, and develop well-thought-out solutions. 2012
Developing Cultural Intelligence and Cross-Cultural Leadership Competencies Through a Live Case-Based Approach – The project will feature the application and critique of theory on cross-cultural leadership issues through guest speakers. The course will feature 3-4 weeks of study on "old" paradigms for studying culture and leadership, 1-2 weeks on recent paradigms, and 6-8 weeks on focusing on leadership in different regions of the world. Guest speakers with cultural and leadership expertise will speak with the class during the final 6-8 weeks as part of a "live case" series. 2010
ENGINEERING
An On-Line Preparatory Course for ME 7000 – Advanced Engineering Analysis (ME 7000) is a required math class for all mechanical engineering graduate students. A significant fraction of the students in the class are part-time students whose math skills are rusty. This proposal seeks to remedy this by developing a preparatory on-line course, which will address the common deficiencies seen. Students will refresh their skills in this self-paced course and assess their level of readiness for ME 7000 through on-line tests. 2012
Reinforcing Fundamental Concepts in Environmental Engineering Through Interactive Teaching Approaches – This project seeks to reinforce fundamental concepts in environmental engineering by using interactive class demonstrations, laboratory exercises, and computer animated tools. These interactive tools will be incorporated into the sophomore CEE 2311 course (Environmental Engineering Science). The goal of this interactive teaching approach is to make students more actively involved in the learning process, which is projected to translate to a better understanding of the fundamental concepts in environmental engineering. 2012
An FPGA-Based Hands-On and Remotely Accessible Platform for Learning Processor Design – Conventional computer architecture education employs software simulators to allow students to observe how a processor works. This project aims to develop an FPGA-based hands-on hardware implementation platform for students to actually practice processor design and develop design skills. The platform makes it possible for students to implement their own multi-core processor designs. This project will also investigate and experiment technical, functional, and pedagogical aspects of remote access to conventional laboratories for teaching computing hardware design. 2011
Creating a Virtual Bone Testing Laboratory Through Advanced Image Processing and Finite Element Software – The aim of this project is to develop a virtual bone testing laboratory using advanced image processing and finite element modeling software to reinforce the theoretical concepts that will be covered in a graduate level biomechanics course. The virtual laboratory will create a hands-on learning environment while bridging the gap between theory and real life behavior and will help to develop a deep understanding of the underlying fundamental principles of complex mechanics concepts. 2011
Enhancing the Design Experience in the Chemical Engineering Experience – The current one-semester capstone design class includes instruction on the use of simulation software that is then applied to the design and optimization of a chemical process. This project will investigate opportunities to incorporate instruction and use of simulation software during the junior year for equipment design, so that a more complex or broad capstone experience can be presented in the senior year. 2011
Overarching Problems for Reinforcement of Learning Outcomes and Incorporation of Professional Practice Concepts in Structural Design – This project seeks to use overarching problems (a problem-based-learning strategy) in the junior civil engineering course CEE 3412 – Structural Design to: (1) provide real-world context for design calculations of structural members such as beams and columns and show how these calculations are interrelated; (2) reinforce specific learning outcomes from class lecturers; and (3) introduce elements of professional practice such as preliminary design, design teams, proper presentation of calculations, and checking of colleagues' calculations. 2011

Transportation Engineering: Beyond the Classroom – Upper level transportation-focused courses have been traditionally taught as theory-based cases. Although this form of teaching is valid, feedback from industry indicated that it isn't the most effective in preparing senior students for successful transition to the workforce. This proposal presents a plan for integrating key skills such as information literacy, software literacy, and project management. Teaching tools to foster active and applied learning with help the Department and College graduate proficient and confident engineers. 2011

Computational Fluid Dynamics (CFD) Software to Supplement the Core Mechanical Engineering Undergraduate Curriculum – CFD software is widely used by career mechanical engineers to analyze engineering problems featuring fluid flows, but the current core ME undergraduate curriculum does not expose students to CFD. A set of 10 educational CFD licenses will be purchased to introduce students to CFD and to supplement the existing curriculum with specific relevant problems. 2010

Green Construction Materials – The aim of the proposal is to develop a new course focused on Green Construction Materials. There has been a paradigm shift in the past decade for "green" technologies in the construction industry, creating a need for engineers with the ability to deliver these technologies. This course will expose students to the topic of structural durability and prepare them with the skills to design the nation's infrastructure for the needs of present and future generations. 2010

Reinvigorating Geology Through Hands-On and Case-Based Learning – GLY 2805 Geology for Engineers is a required sophomore level course for Civil Engineering students. In the past, this course has been delivered in a conventional fashion. This proposal describes a plan to build upon the existing strengths of this course by creating additional hands-on laboratories and three over-arching case studies to place the content into context. By using active learning techniques, the foundation for deeper learning experiences will be laid within and outside of our department. 2009

Development of an Integrated Mechanics Sequence in Civil Engineering – The project relates to the development of four new three-credit courses to replace the existing 12 credit mechanics sequence in the CEE curriculum. The new courses will be problem-centered and will treat mechanics as a continuum by integrating topics currently treated as isolated principles in separate courses. 2007

LIBERAL ARTS

Memorable Days: Reconstructing Emilie Davis' Civil War Diary – Involving undergraduate and graduate students in primary source research, transcription, and annotation, this project will allow students to experience the U.S. Civil War in real time, reading diary entries written by a young woman of color 150 years ago. The research will be used to construct a website featuring the diary and student annotations that will be used as a teaching tool in at least two regularly offered VU undergraduate classes. 2012

A Literary Workshop in the Classroom – Learning a language is a beautiful adventure. This project proposes to recreate the process of native language learning by developing materials and pedagogical models centered around active, creative manipulation of the language. For students who have completed four semesters of Spanish language study, this creative Spanish workshop fosters linguistic development in an enjoyable and natural way that will address significant methodological and structural challenges common to this level of Spanish. 2012

The Text as Object, from Manuscript to E-book – Through active, hands-on engagement with a range of artifacts from manuscripts and early printed books to digital devices, this student-faculty research project proposes to arm students with practical skills and knowledge for reading and understanding the text as a physical object. Key scholarly skills in archival research and textual editing will support the primary objective of the project: to collaboratively produce an electronic edition of a rare manuscript held in Special Collections at the Falvey Library. 2012

Using Technology to Demonstrate Archaeological Field Methods to the Classical Art and Archaeology Classroom – This project provides a crucial component in the experience of students in Villanova's classical art and archaeology courses through a series of learning segments I will develop on archaeological field methods based on data recorded by two Villanova students at an archaeological dig. Computer tablets will be used in the field to collect data and record various stages of the excavation process and also to present material in the Villanova courses. 2012

Growing Into Justice Through Agriculture: How New 20th and 21st Century Agricultural Practices Support Human and Ecological Flourishing – This project involves the design and implementation of an active learning course (and separate learning module for a second course) that together examine food production as it relates to human well-being, poverty, and environmental issues. The project develops team-teaching approaches and fieldwork experiences for students, integrating classroom learning with experiential learning on local farms. The outcome for students is a deep understanding of the science, beliefs, and practices that enable food cultivation to benefit people and ecosystems. 2012

Divided Attention and the College Classroom – This project seeks to determine whether, in light of recent empirical work regarding divided-attention effects, traditional note-taking behavior by students may have unanticipated adverse effects on student performance by requiring multitasking in the classroom. In a capstone psychology course, traditional note-taking will be discouraged and replaced with detailed handouts with the goal of enlivening course delivery, fostering greater student in-class participation, enhancing integration of course concepts, and increasing student satisfaction. 2011

An Urban Politics Challenge – The project will revise my undergraduate "City & Suburb" class to develop a project that students will work on throughout the semester, culminating in a major research paper and presentation. Students will design "America's Next Top City" using what is known about the good and bad of urban politics. 2010

Building Bridges in the Classroom: Talking Middle East Gender Through Cultural Encounters of a Different Kind – The project seeks to create a history course based on experiential learning by drawing on technology to connect students at Villanova with their peers in the Middle East. Villanovans will learn by interacting with Arab students, with the aim of uncovering how different subjectivities produce diverse, even contesting interpretations of history. The larger objective is to afford students a cultural encounter they would not normally have that also tests their preconceived ideas of difference. 2010

Clicker-Based System for Instructional Laboratories in Psychology – This is a proposal to develop a new approach to laboratory exercises for psychology students, using the Turning Technologies Student Response system and to implement that approach by producing a series of laboratories to replace some of those currently used in *Research Methods in Psychology*, one of the four upper-level courses required of all psychology majors at Villanova. 2010

Honors-English Senior Thesis Seminar – This project aims to provide a better structure for students' sustained, independent research in English literary studies. The development and implementation of a one-semester course will ensure a senior capstone experience for Honors English students, offer a thesis-writing opportunity for non-Honors English majors, and support and assess their efforts from the formulation of research questions through the completion of a first thesis chapter. 2010

Psychology to the Rescue: Harnessing Cognitive Biases to Improve Teaching of Critical Thinking Skills and Social Science Methodology – Students generally think they already know how to write effective research papers and think critically and therefore are usually not receptive to research/methodology courses that seek to improve either. This project will demonstrate to students their cognitive limitations and biases of human decision-making by drawing on the work of cognitive psychologists. This new awareness should make it easier for them to value the occasionally dry material dealing with methodology and how to conduct research. 2010

Digital Philadelphia – This project will create an active-learning, technology-enhanced approach for History of Philadelphia, a course that draws students from across the university. It will be transformed from a 300-year survey to a thematic inquiry into Philadelphia's past and present by modifying WebQuest teaching methods to guide students (using laptop computers in and out of class) in investigations of new digitized sources and scholarly publications and historic sites. Portions of the project will also be adapted for an additional history course, Cities and Suburbs. 2009

Judaism, Christianity and Islam in Dialogue: A Multimedia Enhancement – The project would enhance the current course by developing multimedia presentations that detail the intermingling of the three Abrahamic faiths through art and architecture. The multimedia presentations will reinforce the interdisciplinary nature of the course and allow for new ways to engage the students with the course content. 2009

An Interdisciplinary Approach to the Teaching of Colonialism and its Consequences in the Globalized World – The project seeks to develop an inter-disciplinary approach to the teaching of colonialism by integrating knowledge from different disciplines (ethics, history, literature, law, anthropology, etc). Students in this graduate course will learn by examining the different perspectives relevant to colonization with the support of the pertinent cultural theories. The aim is to familiarize students with the ethical predicaments and the complexities of the postcolonial world, and motivate them to develop not only an interdisciplinary, but also a global way of thinking about specific issues that relate to the consequences of colonialism. 2008

Building a Better Capstone: Improving the Research Experience for Communication Majors – I propose to research best practices relevant to the capstone research course. I will review the literature and identify and survey bench-mark departments to guide the development and implementation of a capstone course responsive to the Department, College, and University missions. Outcome includes a faculty workshop on capstone research courses and revision of Communication's capstone, as well as sharing the fruits of this process with the College and University community. 2008

Speaking of Scripture: Interfaith Conversations on Teaching Sacred Texts – This project proposes to offer a series of workshops on teaching sacred texts (specifically the Hebrew Bible, the New Testament, and the Koran) throughout the academic year of 2008-2009. These workshops will feature distinguished Jewish, Muslim, and Christian scholars who will lead our ACS faculty and all other interested Villanova faculty in conversations designed to help them contextualize these texts within their religious and cultural contexts. 2008

Transforming Teaching and Learning Through the Learning Communities – Through the financial assistance of this VITAL Grant, as well as the significant financial support of VOLE and the Office of Student Life, this project seeks to engage six ACS faculty who teach in four Learning Communities, two research librarians, an educational technologist and four senior Honors students in intensive year long resource teams which focus on examining and transforming the pedagogy and the curriculum of these first year seminars. 2008

Approaches to Teaching Shakespeare in the Augustine and Culture Seminar – The primary aim of this proposal is to assist faculty in and out of the ACS program in teaching Shakespeare and integrating his work into their courses. With a series of four faculty development workshops, we can familiarize instructors with the most contemporary and relevant scholarship on Shakespeare and his place in Western and global culture. In particular, we will explore recent work on Shakespeare's religious context and his engagement with Christian ideas and practices. 2007

NURSING

What's Wrong With This Patient: Integrating Quality and Safety Through Simulation – There is a substantial body of evidence that clinical simulation offers learning opportunities to promote safe practice that reduces errors and supports positive patient outcomes. This proposed What's Wrong With This Patient project is a simulated experience that will provide undergraduate nursing students with the opportunity to develop competency in medication safety, patient identification, prevention of infection, and communication. 2012

Incorporating Physical Diversity and Variations of Aging into the Physical Assessment Lab Utilizing Standardized Patient Models and Physical Exam Photo Training Guides – Nurse Practitioners (NPs) must be prepared to manage a wide variety of patients in their primary care practitioner role. Currently, NP students practice physical assessment skills in the lab using only their peers who are generally healthy young adults. The goal of this project is introduce a variety of diverse individuals into the lab portion of the physical assessment class. These "patients" will exhibit normal variations of aging and abnormal physical exam findings. 2012

Developing Empathy With Undergraduate Psychiatric Nursing Students Through A Simulation Of Hearing Voices That Are Distressing (HVTAD) Program – "Hearing Voices That Are Distressing" is a training/curriculum package recently purchased by the College of Nursing to provide a simulation experience for undergraduate psychiatric nursing students. Students use headphones for listening to a specially designed recording which simulates auditory hallucinations. The simulation experience is followed by a debriefing and discussion period. Through the simulation experience students will increase their understanding of the lived experience of psychiatric disability. 2010

Incorporation of Standardized Patients into the Nurse Practitioner Curriculum Using Communication Performance Students as Standardized Patients – Nurse Practitioners must be prepared to manage a wide variety of patient clinical problems and situations in the primary care practitioner role. One mechanism to achieve this goal is utilizing standardized patients, individuals trained to portray patients. The goal of this project is to enhance nurse practitioner education by incorporating standardized patient into the curriculum through collaboration with the Communication Department, utilizing Communication students to act out the role of patients. 2007

The Use of Standardized Patients (via Communication Performance Students) to Enhance Learning of Principles of Effective Communication With Patients With Psychiatric Problems for Undergraduate Nursing Students – Develop a program using Standardized Patients to teach and valuate nursing students regarding the use of effective communication skills and therapeutic use of self in the care of psychiatric patients. Communication Performance students will learn how to assume the role of a standardized patient and act out the nuances of a patient with psychiatric problem(s). 2007

SCIENCES

Developing an Inverted Classroom Experience in Statistics (DEVICES) – The landscape of teaching in higher education has begun to shift in recent years and is predicted to undergo major transitions in the near future. The inverted classroom is one pedagogical innovation in which students learn material in advance of class-time, demonstrate proficiency through just-in-time teaching methods, and spend class-time on active learning experiences and discussions with immediate feedback. This project creates such a class and evaluates its effectiveness in student learning, engagement, and attitudes. 2012

Development of a Laboratory for the Proposed MSE Course *Alchemy, Artisanship, Healing, and Chemistry* – The proposed MSE course *Alchemy, Artisanship, Healing, and Chemistry* will examine topics typically taught in introductory chemistry courses from both a modern and historical perspective. The focus of the VITAL proposal is the ground-up development of instructive, accessible, and safe experiments for the accompanying laboratory that will recreate chemistry-related activities of the past, such as soap-making or distillation, as well as mimic pivotal experiments of chemistry's founders, such as Black or Lavoisier. 2012

Problem-Based, Lab Science Strategies in a New Environmental Geography Course – The goal for this project is to modify an existing class for future offering as a Mendel Science Experience (MSE) course in the College of Arts and Sciences. In order to qualify as an MSE, the class must include laboratory, field, and quantitative experiences. The project will create active, problem-based exercises and laboratories to teach students about climate variations and their impacts. This type of a laboratory/field approach is distinctly different from my other classes. 2011

An Upper-Level Course on Monte Carlo Methods – The project will develop a course on Monte Carlo methods, which have become increasingly important in mathematics, statistics, finance, and other fields over the past few decades .The course, which will be team-taught and will use the statistical software package R, will combine lecture with project-like homework assignments and a major project unique to each student. Many of the projects and the applications will come from financial mathematics. 2010

Development of an Interdisciplinary Course on Computing and the Environment – The goal is to develop interdisciplinary computer laboratory projects and supporting lectures that combine topics from computer science and the environmental sciences for a new course called "Computing and the Environment." Students in the course will investigate the environmental issues of green computing and the computing methods for exploring and simulating the environment in a number of hands-on labs and field research projects. 2010

Mastering Physics for Engineers – To incorporate the Mastering Physics online learning tool into the Physics for Engineers course. This tool provides an enhancement to the learning experience of Physics students by rapidly identifying problems of particular difficulty to students and allowing the teacher to develop appropriate tutorials. 2010

Using Computer Simulations as a Transition To New Lab Experiments – This project aims to develop Flash computer simulations, which will be designed to mimic lab experiments. Students will use the mouse to manipulate virtual instruments in the simulations, and display and analyze computer generated signals on a virtual computer screen. The simulations will be presented as pre-lab assignments, so that students will perform many of the tasks they will encounter in lab. In this way, the simulations will facilitate student transition into the lab environment. 2008

A Course on Service-Oriented Architecture Design and Analysis – We propose to develop a course for upper-division and graduate level Computing Sciences students in the rapidly expanding field of Service-Oriented Architecture (SOA), an area immediately applicable and vital to the careers of many of our graduates. Students will examine the fundamental computer science issues of SOA, as well as related engineering and business components, apply this knowledge in software laboratory design projects and explore its boundaries using industry-standard modeling and simulation tools. 2007

Mathematics of Medical Imaging: An Applied Mathematics Course – This new course will explore one of the most significant areas of mathematical application of the past 40 years: medical imaging. The course, which will combine lecture with laboratory projects, group assignments, and presentations, would be of interest to mathematical sciences majors and minors, many of whom come from engineering, physics, astronomy, and computing science. The course will fulfill a requirement for the major and contribute to earning a minor. 2007

INTERDISCIPLINARY

Development of a Hybrid Human Anatomy and Physiology Course – We seek to create a hybrid course in Human Anatomy and Physiology (Bio 1205) to increase access by students outside the Nursing major. Enrollment is blossoming because Human A&P is a pre-requisite for physical therapy and physician assistant programs, and the new core curriculum will also make it easier for pre-medical majors to add it as an elective. This hybrid course will allow us to accommodate these students without compromising the needs of Nursing. 2012

Approaching Masculinity from a Global Interdisciplinary and Experiential Perspective – This project develops a global and experiential approach to the study of masculinity. Co-taught by two experts trained in gender studies, the course integrates knowledge and methodologies from different disciplines (history, literature, law, cultural studies, performance studies, gender studies) and encourages students to explore from scholarly and personal perspectives how ideas about masculinity and pressures placed on men to confirm to certain social expectations shape the lives of people in the modern world. 2012

Developing a Cross-Disciplinary Approach: People and Computers, Writing and Translating – This project will develop a cross-disciplinary approach to teaching language translation to Computing Sciences and French and Francophone Studies students. Class meetings will be held together and apart, as students explore their respective disciplines and investigate the nuances of human language, and the computational manipulation of that language, through lectures, activities, and team-based projects. Students will collaborate to develop computer-based language analysis and translation tools, and learn to critically examine algorithms and their resulting translations. 2012

Human Trafficking: Interdisciplinary and Experiential Learning – This project seeks to develop an interdisciplinary and experiential course among the College of Nursing, College of Liberal arts and Sciences' Department of Communication, and School of Law addressing human trafficking from various academic perspectives. Strategies will focus on students working in interdisciplinary teams to address the complexities of this global problem via education and advocacy. Student-centered cooperative team work and experiential learning methods will be used to accomplish the course goals. 2012

Development of Impromptu Design Exercises: A Pedagogical Tool in Engineering Design Education – To address the issues associated with integrating engineering design education across engineering curricula, we propose the use of impromptu design exercises – these are simple design tasks (often posed as competitions) capable of being completed in a short amount of time. In order to support the use of these exercises at Villanova we propose to develop and test impromptu design materials and assessment strategies over Summer 2011 and implement and assess these materials in a broad range of College of Engineering classes during the 2011-2012 school year. 2011

Pro Seminar in Sustainability Studies – We propose to develop new teaching and learning strategies for the gateway course of Villanova's new Minor in Sustainability Studies, which will employ interdisciplinary teaching methods that facilitate cross-campus partnerships; leverage the expertise of faculty on environmental issues of global importance; education the campus community about local and global sustainability; incorporate technological tools such as Geographic Information Systems; and further Villanova's commitment to green practices and policies. 2011

Development of a New Inter-College (VCOE-VSB) Undergraduate Course: "The Global Pharmaceutical Industry" – Given the importance of the pharmaceutical industry both nationally and regionally, this proposal outlines a new, interdisciplinary cross-college course focusing on this sector. The course would involve collaboration among a faculty member from VCOE, one from VSB and their respective colleges, leading to a unique, innovative educational experience for both business and engineering students. The course will include involvement of VU faculty, industry experts and will incorporate interactive and innovative teaching and learning approaches. 2009

Living Dangerously: An Interdisciplinary and Experiential Approach to Teaching Poverty – The project seeks to develop a new interdisciplinary approach for teaching poverty. It incorporates materials, learning strategies and theoretical perspectives from the humanities and social sciences. Specifically, it will apply economic and sociological theories to European and Latin American literary texts with the theme of poverty. The aim is to create a new type of experiential learning in which social science theory and literature combine to deepen our understanding of important social problems. 2007