12th Annual
Poster Session
of Faculty and Student Research and Faculty Publications Exhibit

Faculty Research Recognition Day

Thursday, November 20, 2014
1:00 pm to 3:00 pm
Atrium Ground Floor Gallery
PROGRAM OF POSTER SESSION

Welcome and Greetings

1:30 pm-1:50 pm  Dr. Russell Hotzler, President
Dr. Bonne August, Provost
Dr. Karl Botchway, Dean of the School of Arts and Sciences
Kevin Hom, Dean of the School of Technology and Design
Dr. David Smith, Dean of the School of Professional Studies

The program is organized by topics rather than by departments. Frequently the presentations are cross-disciplinary or difficult to assign to the discipline represented by the department with which the presenter is affiliated.

Architectural and Graphic Arts Technology

1. Phillip Anzalone Aia, Rapidly Deployed and Assembled Tensegrity System.
2. Lloyd Carr, 21st Century Color Matching Across All Media.
5. Paul C. King, The D & H Canal and Roebling Before the Bridge.
9. Anne Leonhardt and Yuliya Zavolunova, Understanding Parametrics through Mathematical Approaches in Architecture.

Biology and Health Sciences

11. Susan Davide and Marilyn Cortell, Dental Hygiene Patients’ Willingness to Undergo HIV Testing.
15. Eugenia G. Giannopoulou, Computational Discovery of Chromatin-Bound Protein Complexes.
17. Kara Rose Pasner, The Integration of the iPAD in Low Vision Care.
19. Virginia Curran, Bridget Maley, and Sharon Shockness, Physical Assessment Tool in an Associate Degree Nursing Program.

20. Fabiola Fontaine, Manhin Lam, Wing Pan Kenny Tsang, and Davida S. Smyth, The Microbiology of the Built Environment: What Constitutes the Microbiome of a Building?

21. Davida S. Smyth and Jeremy Seto, The Microbiology of Urban Mice: Just how risky are those little brown pellets?

22. Fabiola Fontaine, Jeremy Seto, and Davida S. Smyth, The Microbiology of Urban Water Sites: When can water be truly spooky?


24. Liana Tsenova, Patricia Soteropoulos, Dorothy Fallows, Gilla Kaplan, and Selvakumar Subbian, Etanercept Exacerbates Inflammation and Pathology in a Rabbit Model of Active Pulmonary Tuberculosis.

25. Mai Zahran, and Petra Imhof, Dynamics of Spontaneous Flipping of a Mismatched Base in DNA Duplex.

Business


Chemistry

28. Alberto Martínez, Tanzeen Rahman, and Ismaila Sanogo, Novel Cu\textsuperscript{II} Chelating Polyphenols Display Potent Antioxidant Properties and Inhibit Cu\textsuperscript{II}-Induced and Self-Induced A\textbeta{}\textsubscript{(1-40)} Aggregation.


Computer Engineering and Information Systems Technology

30. Ricardo Ferro and Aparicio Carranza, File Server Realization Using the Raspberry Pi.

31. Julio Tax, Aparicio Carranza, and Jose Reyes Alamo, Building a Future in SDN with One Controller.

32. Jain Wu and Aparicio Carranza, Authentication Penetration Testing with Kali Linux.

33. Sundas Zafar and Aparicio Carranza, Penetration Testing Using Kali Linux within VMware Virtual Networks.

34. José M. Reyes Álamo, Aparicio Carranza, and Benito Mendoza, A Combined Model Checking Approach for Extended and Baseline Services.

35. Raffi Khatchadourian, Phil Greenwood, Awais Rashid, Takuya Watanabe, and Hidehiko Masuhara, Fraglight: Shedding Light on Broken Pointcuts in Aspect-Oriented Software.


39. Yu Wang, Farrukh Zia Ohbong Kwon, and Xiaohai Li, Collaborative Teaching - an Effective Strategy in Technology Education.

Engineering Technology

41. Navid Allahverdi, Mahmoud Sepehrmanesh, and Verya Nasri, Tunnel Construction in Urban Settings.

Hospitality

44. Patrick O'Halloran, Technology that Students Find Most Effective in the Classroom, Recommendations for Bridging the Gap and Increasing Student Engagement.

Humanities, Social Sciences and English

45. Jane Mushabac, The Things They Carried.
52. Margaret Rafferty and Michelle Gellar, An Innovative Environmental Clinical Experience in an RN-BS Program.
53. Sean P. MacDonald, From Local to Global: Employing Interdisciplinary and Place-based Research in Teaching Environmental Economics.
54. Suzanne Miller, Frederick (A Musical Adaptation for the Stage).
55. Mary Nilles, Saving Our History, Saving the Klitgord Mosaic.
57. Parvaneh Pourshariati, A Millennium of Coexistence: Diasporic Jewish Communities in Ancient Iran.

Education

58. Alyssa Dana Adomaitis and Diana Saiki, Using Experiential Learning Theory to Teach Textiles in the Age of Fast Fashion.
60. Jill Bouratoglou, Susan Davide, Aida Egues, Jeannette Espinoza, Anne Leonard, Sean MacDonald, Susan Phillip, and Christopher Swift, A Living Lab in Action: Faculty Fellows Promoting Place-Based Learning and High Impact Educational Practices at City Tech.
62. Lisa Pope Fischer, Living Lab Community Based Learning: Looking at the Fulton Mall Gentrification as a Study of Change, Revitalization, and/or Hegemony.
63. Karen Goodlad, “Living Lab” Associate Fellows: Developing Faculty Member’s Connection with General Education Initiatives.
64. Mary Sue Donsky and Students, Our Places: How We Commemorate.
66. Lisette Santisteban and Aida Egues, Strategies beyond Adjunct Faculty Orientation: A Mentoring Toolkit.
67. Loukia Tsafoulia and Severino Alfonso, The Class as a Micrography of the Professional Space: Teamwork and Professional Portfolio Curation.
68. M. Genevieve Hitchings, Kathryn Weinstein, and Dan Wong, Rethinking Design Research: Design Incubation.
69. Maen Caka, Julia Jordan, and Kevin Rajaram, The Improvement of Faculty Commons Website: How Will It Impact User Experience?
70. Maria-Elena Bilello and Anna Matthews, READ Initiative: Assessing Strategies to Improve Reading in Dental Hygiene.
71. Fangyang Shen, Andrew Douglas, and Estela Rojas, NEST: STEM Teacher Education and Research at NYC.
72. Davida S. Smyth and Juanita But, READ: It’s not Just for Biology Students, Let’s Get Microbiology Students Reading Too!
73. Juanita But, READ: A Strategy to Promote Student Success.
74. Lubie G. Alatriste, Teaching Composition through Community-based Learning.

Mathematics

75. Andrew Douglas, D. Kahrobaei, and J. Repka, Classification of Embeddings of Abelian Extensions of Dn into En+1.
76. Thomas A. Johnstone, A Natural Strengthening of Kelley-Morse Set Theory.
77. Delaram Kahrobaei, Conjugacy Problem in Polycyclic Groups and Applications in Information Security.
78. Boyan Kostadinov, Simulations of Electoral College: Predicting the Next President.
79. Ariane Masuda, Luciane Quoos, and Benjamin Steinberg, Character Theory of Monoids Over an Arbitrary Field.
80. K. Andrew Parker, Improving Engagement in an Era of High-Stakes Testing.
81. Hans Schoutens, Hochster’s Small MCM Conjecture for Toric Local Rings.
83. Simon M. Smith, A New Product for Permutation Groups.
84. Johann Thiel, Conway’s RATS Sequences.
85. Thomas Tradler, Tensor Products of A-infinity Algebras with Homotopy Inner Products.
86. Lin Zhou, Mesoscopic Modeling and Simulation of Transiently Networked Fluids.

Physics

87. Viviana Acquaviva, Distant Galaxies and Big Data.
89. Andrea Ferroglia, Tops and Stops at the Large Hadron Collider.
90. Boris Gelman, Nucleon-Nucleon Cross Sections in Large Nc QCD.
93. Darya Krym and John Estes, Near Horizon Geometry of Intersection M2-M5.
94. Lufeng Leng, A Fiber Figure of Merit for Uncompensated Nyquist-WDM Links Employing EDFA and/or Distributed Raman Amplification.
95. Ariyeh Maller, Jacob Hammer, and Nicholas Miller, Comparison of Simulated Galaxies with Enzo and Ramses.
96. Giovanni Ossola, Higgs Boson Production at the Large Hadron Collider with GoSam2.0.
97. Justin Vázquez-Poritz and Zhibai Zhang, Black Rings in Supergravity.
98. Vasily S. Znamenskiy, What are Basic Physics Ideas, Which Can Be Interpreted Non-Mathematically?
ABSTRACTS
Architectural and Graphic Arts Technology

Rapidly Deployed and Assembled Tensegrity System
Phillip Anzalone AIA
Department of Architectural Technology

The Rapidly Deployed and Assembled Tensegrity (RDAT) project enables the rapid design and deployment of differential-geometry tensegrity structures through computation-driven design-to-installation workflow. The project involves the integration of parametric and solid-modeling methods to enable computer numerically controlled (CNC) manufacturing of components, and the efficient assembly of this complex system in the field through innovative design detailing and production methods. Currently, the RDAT is used for full-scale production of tensegrity masts and planes with variable geometric configurations, including the necessary design, analysis and production workflow, with plans for development in form-finding and analysis improvements, actuated components and building-integrated energy collection and storage solutions.

21st Century Color Matching Across All Media
Lloyd Carr
Advertising Design and Graphic Arts

This research explores how you can match brand color in all media channels. This research explains how different color modes (fundamental formulas that media use to describe color) work together (five compatible models) using a system to coordinate color. This research demonstrates how all media can have matching color. This research shows:

- How color works in all media.
- How to target your brand color for all media.
- Why new and evolving technologies fit the matching process.
- How to convert brand colors into different modes for all media.
- How clean and predictable matching colors are created in transmitted light (online) and printed (offline) media.

SARA/NY Special Design Awards
Lia Dikigoropoulou, Tim Maldonado, and Ken Conzelmann
Department of Architectural Technology

The Society of American Registered Architects/New York Council conducts an annual juried Design Awards program where architects, designers and students from around the world submit projects for consideration. Apart from this event is the Special Awards where the design committee selects outstanding newly completed works, or organizations, within the 5 boroughs of NYC, to be recognized for excellence. This poster illustrates several of these Special Awards recipients over the past few years, with images and narratives as published in the annual Design Awards Journal.

Designing the Waterfront: Community Engagement and Implementation
Michael Duddy and Jason Montgomery
Department of Architectural Technology

This project, coordinated through the Living Lab, introduces high-impact place-based learning experiences into our fourth-year design studio project. The studio focuses on preparing a master plan for a waterfront site adjacent to Industry City in Sunset Park, Brooklyn. Student groups work with “constituents” – community stakeholders who act as clients – in fashioning a needs program to be incorporated into the students’ master plans. Students will design buildings that:

- Accommodate a program of space needs they develop together with their client.
- Fulfill the stated mission of their client and the community they serve.
- Integrate their building design into their master plan.

The D & H Canal and Roebling Before the Bridge
Paul C. King
Department of Architectural Technology

The Delaware & Hudson (D & H) Canal a private venture of the Wurts brothers consisted of a 108 mile long route that included 108 locks and four aqueducts, and operated from 1828 until 1898. Getting his start by providing wire cable to the canal owners to pull their barges, John A. Roebling designed and built four aqueducts to raise the barges above the Delaware River and allow logging rafts to pass below un-impeded. This presentation will focus on the construction and history of the canal and the work of Roebling "before the Brooklyn Bridge".
Innovation and Collaboration: Solar Decathlon 2015
Alexander Aptekar and Barbara Smith Mishara
Department of Architectural Technology
City Tech is a finalist in the prestigious, international Solar Decathlon competition sponsored by the Department of Energy. The challenge is to research, design, document and build a sustainable, energy efficient house within a limited budget. Innovative technologies are needed to meet stringent energy constraints. The complex scope of the competition requires students and faculty to collaborate extensively with one another and with students from other disciplines to complete a real world project.

Endangered Architecture: High Status Courtyard Houses of 19th Century Ottoman Syria
Jason Montgomery, Jeffrey Burden, and Elizabeth Macaulay Lewis
1Department of Architectural Technology
2The Building History Project
3The Graduate Center, CUNY
Historic architecture often experiences periods of cultural neglect that threatens the preservation of significant cultural heritage. After long neglect throughout the 20th century, Ottoman Houses in Syria recently emerged as assets with renewed cultural capital. But now warfare again threatens them. This project is the architectural/analytical component of the historical and archaeological examination lead by Dr. Elizabeth McCauley Lewis. Jeffrey Burden, PhD and Professor Montgomery have compiled and developed a collection of plans, reconstructions, and analytic diagrams to explore the nature of this rich typology of urban residence that contributes to the scholarly documentation and investigation of these threatened structures.

Mosquitos and Materials: Building Construction in Developing Regions
Sanjive Vaidya and Tasnuva Ahmed
Department of Architectural Technology
The focus of this project is to research building materials which have inherent or modified properties to resist and discourage the proliferation of mosquitoes in developing regions. Mosquitoes are a significant transmitter of disease and are most common in areas of dense habitat with poor sanitation and drainage. The building materials used in these areas are simple and when assembled have no ability to resist the inflow of mosquitoes. If a simple modification to the common building materials can be made, the dwellings may resist mosquitos without additional action from the occupants. The goal is to create a passively mosquito-resistant dwelling.

Understanding Parametrics through Mathematical Approaches in Architecture
Anne Leonhardt and Yuliya Zavolunova
Department of Architectural Technology
The project consists of an investigation into the mathematical underpinnings of 3D modeling in contemporary NURBS-based architectural form, and how an understanding of these concepts feeds into the learning of these modeling tools. The research will begin with a look at the evolution of geometry and linear algebra, and come to focus on the evolution of these software tools 15 years ago.
Black corals are cosmopolitan in the world’s oceans (4-8,900m). Recently, the first black coral, *Stauropathes arctica*, was discovered off eastern Canada. To elucidate additional unrecorded and undescribed species in Canadian and bordering waters, we screened 40 individuals of *S. arctica* for cryptic species using mtDNA and ITS2. Three mitochondrial intergenic regions were analyzed, one of which revealed five haplotypes. ITS2 was unable to partition specimens into as many haplotypes and failed to reveal additional cryptic species. To examine genetic diversity within each haplotype, we sequenced a 384bp intron within SRP54, which revealed the first record of population-level variation in antipatharians.

**Dental Hygiene Patients’ Willingness to Undergo HIV Testing**

Susan Davide, Marilyn Cortell,
Dental Hygiene Department

Expanding rapid HIV testing (RHT) in the dental setting may increase the number of individuals’ awareness of their HIV status. There is evidence that dental hygienists can effectively conduct RHT. This study aimed to determine knowledge and willingness to accept HIV testing in a dental setting. The study targeted patients in three NYC dental hygiene school clinics. A cross-sectional survey was administered from November 2013 – February 2014. Patients are willing to undergo oral RHT HIV testing with dental hygienists. Further research is needed to evaluate the public health benefits and logistical challenges facing the provision of HIV testing in the dental environment.

**Understanding the Impact of the Affordable Care Act: Facilitating Access to Healthcare for Low-Income Elderly Minority Women**

Mery Diaz, Soyeon Cho, and Christine Thorpe
Health and Human Services

As the US elderly minority population grows, more studies on health care issues focus on the participation of the elderly in health care programs. Further, demographic shifts within the elderly minority population point to the need for study of their access to health care. The recent rollout of Patient Protection and Affordable Care Act (PPACA), which impacts Medicare and Medicaid programs that deliver health coverage for the elderly and particularly for elderly minority women, provides a key moment for assessing perceptions of health care access.

**Shaping Community Health: Bundling High-Impact Educational Practices**

Aida L Egues, Elaine Z. Leinung, and Lisette Santisteaban
Nursing Department

Nursing faculty may want to consider the richness brought to baccalaureate programs when field-based experiential learning with community partners is bundled with other high-impact learning practices. This presentation reveals shaping digital platform sharing, evaluation, and self-reflection tools that capture nursing student attainment of practice competencies, general education course objectives, and clinical objectives. Highlights include tips for faculty and community partners and tangible community health outcomes.
Appreciative Leadership to Transform Nursing Care for Children with Incarcerated Parents
Kathleen Falk
Nursing Department
A Nurse-Mentoring Program based on theorists Peplau (1952) and Erickson et al. (1983) was implemented to promote optimum health outcomes among children at high risk for incarceration. The aim was to generate best practice knowledge in working with children of incarcerated parents. Through the methodology of Appreciative Inquiry, nurse-mentors discovered what was effective and created a collective vision for future practice. An action plan was implemented and evaluated, and conclusions were drawn. Data from this study suggest that nurse-mentoring can be used with other vulnerable populations. Nurses should use Appreciative Inquiry to transform healthcare, particularly in situations with seemingly intransigent solutions.

Computational Discovery of Chromatin-Bound Protein Complexes
Eugenia G. Giannopoulou
Biological Sciences Department
Transcription factors rarely bind chromatin alone, but instead frequently bind to cis-regulatory elements (CREs) together with other factors, forming protein complexes. We developed a computational methodology to systematically capture protein complexes and infer their impact on gene expression. We applied our method to three human cell types, inferred known and undescribed complexes recruited to CREs, determined the role of the complexes as activators or repressors, and found that the predicted complexes have more physical interactions between their members than expected by chance. Our work provides a mechanism for deciphering the interplay between combinatorial binding and gene expression.

Anti-Rotavirus Activity of Soluble Flavonoids (Glycosyl Hesperitin And Epigallocatechin Gallate) in Cell-Free Suspension and Cell Culture
G. L. Sullivan, S. Louis, F. Ozen, L. Karthikeyan, R.E. Gordon, and S. M. Lipson
1St. Francis College, Brooklyn, NY
2Celsuk Univ., Konya, Turkey
3Biological Sciences Department
4Mount Sinai Med. Center, New York, NY
A number of secondary plant metabolites (e.g., flavonoids) possess antiviral/antimicrobial activity. The relatively new semi-synthetic glucosyl hesperitin (GH), and the green tea extract epigallocatechin gallate (EGCG) are unique among most flavonoids, as these phenolics are highly soluble. The antiviral activity of these metabolites were investigated using the rotavirus (RTV) as a model enteric virus system. Loss of RTV infectivity occurred following simultaneous viral treatment by both EGCG and GH with the former, markedly more effective. Unique chemical structures displayed by EGCG and GH, rather than each phenolic’s inherent solubility, may be ascribed to those marked differences in each molecule’s antiviral (anti-RTV) activities.

The Integration of the iPAD in Low Vision Care
Kara Rose Pasner
Vision Care Technology Department
Innovative technologies, devices, and adaptive techniques can help individuals with all levels of vision loss ranging from mild visual impairment to legal blindness. The iPAD itself and certain apps have been developed specifically for people with low vision. Utilizing the potential of Apple’s iDevices, these apps are intended to maximize remaining functional vision, assist with everyday tasks and maintain independence in daily living.

Network Analysis of Gene Expression Changes in Maternal Immune Activation Models of Schizophrenia
Jeremy Seto, Jose Moreno, Brittiny Dhital, James-David Brown and Javier Gonzalez-Maeso
1Biological Sciences Department
2Department of Psychiatry, Icahn School of Medicine of Mount Sinai
Maternal Immune Activation (MIA) is an animal model of Schizophrenia where in utero rodents are subjected to immunological stressors. MIA animals display a hypersensitivity to psychotropic stimuli that induce hallucinations. Cytokine panels and RNA-Seq analysis illustrate profiles of activation conserved between two models of MIA, influenza and stress. Biomarkers identified in these screens define a distinct alteration resulting in a latent phenotype. Utilizing the known biomarkers as a mechanism underlying neurodevelopmental alterations can be illustrated through the use of network analysis to understand the etiology of the human disease.
Physical Assessment Tool in an Associate Degree Nursing Program
Virginia Curran, Bridget Maley, and Sharon Shockness
Department of Nursing

Many associate degree Nursing (ADN) programs lack formal instruction in physical assessment skills due to time and curriculum constraints. Necessary physical assessment skills are typically interwoven throughout the program, largely in the clinical setting. This leads to lack of uniform instruction and varying levels of assessment skills of the students. Supplemental instruction would decrease student anxiety, and improve knowledge, skills, and confidence as they prepare for the clinical component of the program.

The Microbiology of the Built Environment: What Constitutes the Microbiome of a Building?
Fabiola Fontaine, Manhin Lam, Wing Pan Kenny Tsang and Davida S. Smyth
Biological Sciences Department

In recent years the role of the built environment in the dissemination and transmission of bacteria has received interest. In particular, the role that buildings play in transmission of bacteria is being investigated. Our poster will introduce our ongoing experiment to determine the prevalence of antibiotic resistant bacteria in the NYCC campus, looking at Staphylococci on the elevator buttons in Naam and our current study to determine the microbiome of a new academic building. This project will reveal insights into the dynamics and abundance of bacteria on surfaces and how the microbiome of the new NYCC building will be established.

The Microbiology of Urban Mice: Just how risky are those little brown pellets?
Davida S. Smyth and Jeremy Seto
Biological Sciences Department

Recent studies of urban rats have shown just how diverse a range of pathogens can inhabit rodents. Like rats, urban mice are found in proximity to humans, in apartments, offices and restaurant kitchens. We have initiated a collaboration with rodentologists in NYC to look at the risk to humans from mouse pellets that are often found in kitchens to establish what kinds of pathogens can be isolated. This study will utilize next-generation sequencing to identify what risk, if any, is to humans from these pesky little contaminants and what could potentially be done to limit potential for pathogen dispersal.

The Microbiology of Urban Water Sites: When can water be truly spooky?
Fabiola Fontaine, Jeremy Seto, and Davida S. Smyth
Biological Sciences Department

Water harbors a variety of life from large predators to small vertebrates and even smaller eukaryotes, bacteria and viruses. Most studies of water to date used culturing methods to determine the prevalence of organisms. In recent years, metagenomics and next-generation sequencing have provided new vehicles for examining diversity. Our poster shall demonstrate how we are using metagenomics to examine and compare organismal diversity of two sites in Brooklyn, Newtown Creek, both polluted and highly contaminated by humans and Greenwood cemetery, showing little to no human activity. This work will generate great insights into the impact of humans on ecological sites.

Facilitating Clinical Decision Making Skills Using Concept Maps
Carol Thomas
Nursing Department

Nursing educators are challenged to implement teaching strategies that promote the learner’s clinical competency and decision making skills. Concept maps are used to plan and organize nursing care. In spring 2013 concept maps were introduced as a pilot project with one clinical group in the nursing program. A convenience sample of students (n 8) were instructed in the use of concept mapping and met weekly to plan care for their assigned clients. An informal evaluation of the students’ perception was conducted. Students demonstrated making connections between clinical and theoretical content.
Etanercept Exacerbates Inflammation and Pathology in a Rabbit Model of Active Pulmonary Tuberculosis

Liana Tsenova¹, Patricia Soteropoulos³, Dorothy Fallows³, Gilla Kaplan², and Selvakumar Subbian²,

¹Biological Sciences Department
²Laboratory of Mycobacterial Immunity and Pathogenesis, The Public Health Research Institute, New Jersey Medical School, Rutgers Biomedical and Health Sciences, Rutgers, The State University of New Jersey, Newark, NJ
³The Center for Applied Genomics, PHRI New Jersey Medical School, Rutgers Biomedical and Health Sciences, Rutgers The State University of New Jersey, Newark, NJ

Treatment of chronic inflammatory diseases with tumor necrosis factor alpha (TNF-α) antagonists is associated with increased risk of tuberculosis (TB). We examined the usefulness of the rabbit model of active pulmonary TB for studying the impact of the human immune modulatory protein etanercept on the host immune response. Etanercept treatment exacerbated disease pathology, increased bacillary load in the lungs and reduced collagen and fibrin deposition in the granulomas. This was associated with significant down-regulation of the collagen metabolism and fibrosis network genes and upregulation of genes in the inflammatory response and cell recruitment networks in the lungs of etanercept-treated rabbits.

Dynamics of Spontaneous Flipping of a Mismatched Base in DNA Duplex

Mai Zahran¹ and Petra Imhof²

¹Department of Biological Sciences
²Institute of Theoretical Physics, Frei Universität Berlin, Germany

Spontaneous flipping of a DNA base to an extrahelical position is of fundamental importance in maintaining genome integrity in organisms. It occurs in damaged (mismatched), but not canonical (Watson–Crick) DNA base pairs. Repair enzymes thus recognize damaged DNA by the presence of a flipped base. However, a detailed description of how mispairing of bases affects the structure and dynamics of DNA was lacking. We performed molecular dynamics simulations of mispaired DNA and found it to be less stable and locally more distorted compared to canonical DNA. These differences could facilitate damaged DNA recognition by repair enzymes.

Business

A Methodology for Assessing Grade Inflation in Accounting Courses

Jierong Cheng¹ and Yaw M. Mensah²

¹Department of Business
Department of Accounting and Information System, Rutgers Business School

Grade inflation is an important topic since it impacts universities, students’ job placement, and the society. The main concern with grade inflation is that it undermines the perceived quality and credibility of higher education because employers and other parties rely on the reported grade point averages (GPAs) for the degree of mastery of the subject matter that the grades purport to indicate. However, grade inflation has been difficult to measure since it is difficult to measure independently the actual student learning that has taken place. The research is to present a methodology for assessing the degree of grade inflation in accounting courses beyond the introductory course.

Green Targets: People Who Buy Organic Food – a Customer Acquisition Challenge

Paul Salisbury

Department of Business

The key issue in this paper is customer acquisition for organizations that sell organic food or promote the purchase of organic food. Who should these organizations target for more cost-effective marketing acquisition campaigns? The analysis focuses on who tries to buy organic food regularly, and the type of consumers who do not do so. The paper is based on a secondary analysis of The Millennial Survey, January 2010, sponsored by the Pew Foundation. Consumers with higher educational levels who practice recycling at home, and have household incomes above $50,000 are most likely to be regular customers for organic food. Published: International Journal of Sustainable Strategic Management, 4, (2), 127–136, 2013.
**Chemistry**

**Novel Cu**\(^{II}\) Chelating Polyphenols Display Potent Antioxidant Properties and Inhibit Cu**\(^{II}\)-Induced and Self-Induced A\(\beta\)(1-40) Aggregation**

Alberto Martinez, Tanzeen Rahman, and Ismaila Sanogo  
*Department of Chemistry*

Alzheimer’s disease (AD) affects more than 24 million people in the world and continues to be the most prominent and untreatable form of dementia. We have synthesized a family of five chelating polyphenols analogues to resveratrol, a natural substance found in plants with strong chemopreventive properties. The new polyphenols display the added ability to selectively bind Cu**\(^{II}\)**, a metal ion linked to the progression of the disease. Our results show that these compounds inhibit the Cu**\(^{II}\)**-catalyzed production of reactive oxygen species, as well as the Cu**\(^{II}\)**-induced and self-induced A\(\beta\)(1-40) aggregation, and constitute a promising alternative for the treatment of AD.

**Dextran–Polyallylamine Antibacterial Hydrogels**

D. Samaroo\(^1\), and N. A. O’Connor\(^2\), A. Abugharbieh\(^3\), F. Yasmeen\(^2\),  
E. Buabeng\(^2\), S. Mathew\(^2\), H.-P. Cheng\(^2\)  
\(^1\) *Chemistry Department, NYC College of Technology*  
\(^2\) *Chemistry Department, Lehman College*

A facile modular approach to rapidly prepare pH-responsive hydrogels by crosslinking polysaccharides with polyamines is demonstrated. Hydrogels are prepared by first reacting the less reactive polysaccharides with the cross-linker epichlorohydrin and completed by the addition of polyamines. The crosslinking of polysaccharides with polyamines provides a facile method for incorporating functionality into polysaccharide based hydrogels. This process is demonstrated with the polysaccharides dextran, pullulan and carboxymethyl cellulose and with the polyamines polyallylamine and polyethylene imine. The hydrogels were characterized by FTIR and swelling studies, which showed pH-dependent swelling due to the presence of the polyamine. The hydrogels can also be tailored by varying the mass ratio between the polysaccharide and polyamine. Absorption studies of organic analytes showed the polyamine content affecting the uptake of a charged substrate (methylene blue) and no effect on a neutral substrate (6-methyl coumarin). This synthetic method was also used to prepare hydrogels with antibacterial activity against E. coli and S. aureus by utilizing an amphiphilic polyallylamine.

**Computer Engineering and Information Systems Technology**

**File Server Realization Using the Raspberry Pi**

Ricardo Ferro and Aparicio Carranza  
*Computer Engineering Technology Department*

A file server is a computer responsible for the central storage and management of data files where other computers on the same network can access the files. A file server allows users to share information over a network without having to physically transfer files using some external storage device. Any computer can be configured to be a host and act as a file server. In its simplest form, a file server may be an ordinary PC that handles requests for files and sends them over the network. We present the realization of a file server on the Raspberry Pi.

**Building a Future in SDN with One Controller**

Julio Tax, Aparicio Carranza, and Jose Reyes Alamo  
*Computer Engineering Technology Department*

Software Defined Networking (SDN) is a new approach to networking, complementing traditional network architectures. SDN aims to give the network operator granular programmatic control over network hardware in order to rapidly react to changes in policy, environment, costs, network conditions and other parameters. There are several differences between traditional and SDN networks such as being Symmetric vs Asymmetric, Floodless vs Flood-Based, Host-based vs Network - Centric. Here, we explain how these differences are when applied to our work building an SDN Lab in Virtual Machines using a POX or Floodlight Controller to manage the networks faster without using OpenFlow Hardware.
Authentication Penetration Testing with Kali Linux
Jain Wu and Aparicio Carranza
Computer Engineering Technology Department
Authentication is the process of identifying a person or thing and confirming that said person or thing is who or what it claims to be. Authentication is a serious issue in a networked environment where there are private data stored in the system. It is important to prevent unauthorized access to the system or else intruders can tamper with the system. Precautionary steps are necessary for proper protection against attacks. Understanding techniques used by hackers is fundamental for defense against these attacks. Various penetration test results were performed using CentOS and Kali Linux within VirtualBox and we present our key findings.

Penetration Testing Using Kali Linux within VMware Virtual Networks
Sundas Zafar and Aparicio Carranza
Computer Engineering Technology Department
Virtualization is an increasingly popular topic today due to the possibilities an individual can have with minimal physical resources. Penetration testing is more feasible in a virtual environment. Our task is to create a virtual network with five different Operating Systems to perform Penetration Testing using Kali Linux. Then, determine which operating system is more secure. Armitage will be used to perform all possible exploits, Zenmap will be used to access attacking information and John the Ripper will be used to crack user passwords.

A Combined Model Checking Approach for Extended and Baseline Services
José M. Reyes Álamo, Aparicio Carranza, and Benito Mendoza
Computer Engineering Technology Department
Pervasive computing environments often rely on composite services to provide their different functionalities. These services are often complex, and may handle sensitive data, control physical devices, and perform critical operations. Several safety issues arise especially when these services interact with others. In this poster we present a framework to categorize services based on their characteristics. We categorize services as baseline or extended and propose a combined model checking mechanism to ensure that services and their interactions meet the adopted safety criteria.

Fraglight: Shedding Light on Broken Pointcuts in Aspect-Oriented Software
Raffi Khatchadourian\textsuperscript{1}, Phil Greenwood\textsuperscript{2}, Awais Rashid\textsuperscript{3}, Takuya Watanabe\textsuperscript{4}, and Hidehiko Masuhara\textsuperscript{5}
\textsuperscript{1}Computer Systems Technology
\textsuperscript{2}Relative Insight, Infolab21, Lancaster UK
\textsuperscript{3}Computing, Lancaster University, Lancaster UK
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Pointcut fragility is a well-documented problem in Aspect-Oriented Programming; changes to the base-code can lead to join points incorrectly falling in or out of the scope of pointcuts. Deciding which pointcuts have broken is a daunting venture. We present a tool called Fraglight that recommends pointcuts that are likely to require modification by harnessing structural commonality between program elements corresponding to join points selected by a pointcut in a particular software version. Patterns are then used to recommend pointcuts that have potentially broken with a degree of confidence as the developer is typing.

Implementation of Web Hosting on a Virtual Machine and Introduction to Tomcat and Glassfish Application Server and Their Comparison
Preeti Gurung
Department of Computer System Technology
Our research focuses on the use of a virtual machine that runs on the Windows 2008 server which acts as a host. Linux and Windows 7 operating systems are installed and configured as guest operating systems. The three operating systems are bridge-networked. We then configure multiple websites hosting on Windows and Linux based operating systems, utilizing domain name service (DNS) to support web developers. In addition, we explore open source software such as WordPress, MySQL, and comparison of Tomcat and Glassfish Application Server. We screen print our comparison and explore the interoperability of portable platforms. The result of this project is to expand our knowledge in building a web infrastructure, physically and virtually on portable developmental laptop.
Mobile Diagnostic Expert System
M. Pinto and M. Hasan
Computer Systems Technology Department

We propose a mobile diagnostic expert system (mDES) on bacterial infections such as common cold or flu. The expert system will be designed using a rules-based method to indicate the most likely diagnosis. The user will be able to view the suspected disorders related to the input observations according to the knowledge of the expert system. Depending on personal information related to age, gender, region, and medical history, the system will present the user with a list of possible diagnoses and their corresponding explanations. It is for the use by the general public and/or clinicians.

Intelligent Sampling for Big Data
Ashwin Satyanarayana
Computer Systems Technology

The amount of data being generated and stored is growing exponentially, owed in part to continuing advances in computer technology. These data present tremendous opportunities in data mining. In many real world problems, these data mining algorithms have access to massive amounts of data. Mining all the available data is prohibitive due to computational (time and memory) constraints. Thus, determining a smallest sufficient training set size that obtains the same accuracy as the entire available dataset remains an important research question. This research focuses on selecting how many (sampling) instances to present to the data mining algorithm.

Collaborative Teaching - An Effective Strategy in Technology Education
Yu Wang, Farrukh Zia Oblong Kwon, Xiaohai Li
Computer Engineering Technology

Collaborative instruction integrates the strengths of multiple viewpoints and shared interests of faculty members with different background and research focus. We will present successful faculty collaborative efforts in the aspects of mentoring students in selecting independent projects in the area of embedded digital systems, providing adequate guidance, and encouraging originality and independent effort. The students gain first-hand in-depth knowledge and practical experience about engineering project design and development. Both our approach and the results we have obtained will be presented. The independent project, “Elderly Independence,” was designed and implemented based on a novel FPGA educational paradigm using the next generation programming languages. It won the Third Place in the USA 2014 Digilent Design Competition.

Wireless Sensor Network (WiSeNet) Development Framework
Farrukh Zia and Maria Vanegas
Computer Engineering Technology Department

A Wireless Sensor Network is a combination of hardware modules and software components and services to allow bidirectional wireless communication between master and slave nodes for monitoring and control of remote sensors and devices. These nodes transmit and receive sensor data across Local Area Networks (LANs) and the Internet. A wireless sensor network is a key component in several emerging technologies such as Cyber Physical Systems, Intelligent Transportation Systems, Smart Homes, Internet of Things (IoT), and Machine to Machine (M2M) communication etc. WiSeNet development framework is an attempt to create a wireless sensor network by using very low cost, open source hardware and software components.

Engineering Technology

Tunnel Construction in Urban Settings
Navid Allahverdi\(^1\), Mahmoud Sepehrmanesh\(^2\), and Verya Nasri\(^2\)
\(^1\)Department of Construction Management and Civil Engineering Technology,
\(^2\)Tunneling and Underground Structures Department, AECOM, New York.

As demand for building underground spaces in congested urban settings increases, it is likely that designers will choose to set tunnel alignment in close proximity to existing structures or utilities to meet other competing constraints involved in tunnel alignment design. In these conditions, a comprehensive risk assessment of tunneling impact on existing structures is warranted. As a particular case, this poster presents the impact of tunneling on pile foundations located in the influence zone of tunneling operation. In this work, finite element modeling was performed. The results are of practical importance in risk evaluation of tunneling in close proximity to pile foundations.
Multidisciplinary Decision Making Methods in an Information-Driven Product Development Framework

Angran Xiao
Department of Mechanical Engineering Technology

An information driven product development framework has been developed to integrate system level design and discipline level analysis activities. The product information model can represent the associativities among design requirements, product models and design parameters into design problems. Three different solution methods, Genetic Algorithm, Game Based Decision Making method, and Collaborative Decision Making method, are compared by the numbers of calls to discipline level analysis models. It was shown that the collaborative decision making method is capable of finding satisfactory solutions with the least number of calls to computing expensive analysis models.

Hospitality

Hospitality Students’ Preparedness for 21st Century Careers
Lynda Dias, Glenylis Pineda and Susan Phillip
Department of Hospitality Management

The World Travel and Tourism Council (WTTC) forecasts that the travel and tourism industry will contribute $US 10.4 trillion to worldwide GDP and generate 72 million jobs by 2023. With projected growth and high demand for industry professionals, City Tech’s hospitality management curricula supports the career development of students entering the fields of hotel and restaurant management, pastry and culinary arts and tourism. This study assesses students enrolled in the Professional Alliances course on perceptions of their preparedness for entering the hospitality field.

Technology that Students Find Most Effective in the Classroom, Recommendations for Bridging the Gap and Increasing Student Engagement
Patrick O’Halloran
Department of Hospitality Department

Although many institutions encourage a technology-based approach to teaching, some instructors report that they feel limited by the lack of resources made available to them and by their own learning curve for adoption. Instructors must create digital course materials in a style that improves learner engagement and outcomes and that are simple to use. I will research what students expect when it comes to their instructors’ use of digital materials. Digital content in the classroom may encompass from online homework, to online libraries and ebooks, and even presentation programs. The report will conclude with recommendations for bridging the gap between what students want and what instructors can deliver, while presenting a number of ideas to help increase student engagement.

Humanities, Social Sciences and English

The Things They Carried
Jane Mushabac
English Department

Inspired by Timothy O’Brien’s 1990 collection of short stories about the Vietnam War, we in Creative Writing (English 1141) have written about what people carry, and how it defines who they are and shapes what they will become. Objects, symbols, failures, and dreams comfort people and weigh them down. What are you carrying?

The Art of Food: A Learning Community between Hospitality and Humanities
Kylie Garcelon,¹ Joanne Jacus,¹ and Sandra Cheng²
¹Department of Hospitality Management
²Department of Humanities

The Art of Food is a unique learning community that combines aesthetic theory and culinary practice by bringing together students enrolled in culinary arts, baking and pastry arts, and the history of photography. The learning community breaks new ground as it allows first-year Hospitality Management students to explore beyond the intense skill application and vocational focus that is traditionally practiced. Through experiential and reflective pedagogy inspired by the Living Lab, students express and share ideas and experiences on an OpenLab website. Faculty and students meet for a group lunch to discuss a shared reading by the food writer M.F.K. Fisher.
Love in the Time of Cholera: A Reading of Contagion Through García Márquez’s Novel
Roxana Delbene
Department of Humanities
Drawing on theories of contagion, the paper is a narrative medicine analysis that shows how cholera and love, and love and cholera are intertwined in the novel as poles of the same equation: contagion. By means of the close-reading technique, the associations between love and cholera as forms of contagion are identified in the novel. Cholera is analyzed as: (a) a love illness, (b) a social contagion, and (c) a social resistance — to conclude that the novel is about love and social bonds as much as it is about the social forms of organizations (rational or irrational) that inform epidemics.

Grassroots Aerial Mapping in Social and Environmental Research
Bronwen Densmore
Ursula C. Schwerin Library
Aerial mapping is a data-gathering technique that can be employed by grassroots researchers to collect real-time information about sites of interest. This poster will provide an overview of how grassroots aerial mapping techniques are being employed in different kinds of environments and in different disciplines, address some of the technical, legal, and ethical issues aerial mappers must navigate, and discuss how open source tools, open access data, emerging technologies and DIY approaches to research and peer review (particularly in place-based inquiry) have led to emerging forms of scholarship and new kinds of collaborations.

Transformations of ‘Cyberspace’ Across Media: Print, Video Game, and Early eBook
Dr. Jason W. Ellis
English Department
In this research project, I explore how the concept of cyberspace transforms based upon the medium in which it is expressed. Specifically, I focus on the term’s explication in William Gibson’s Neuromancer as a printed artifact (1984), video game developed by Interplay (1988) for multiple personal computing platforms, and eBook produced by the Voyager Company for the Apple PowerBook platform (1992). I examine the term’s transformation as originating in typewritten text, developing in an interactive game, and finally, joining print and computing in one of the first mass-marketed eBooks.

“GLUTENY”: A Narrative Art Film Exploring Contemporary Social Food Movements and Behavior
Kylie Garcelon
Hospitality Management
This creative short film gathers socio-food issues into an art piece that links them to the world of a chef and considers the industries that lie beyond the paradigm. The project explores, through a satirical lens, food ‘fads’ and seeks to provoke discussion and curiosity, and to provide opportunity to contemplate the willingness with which people may adopt a new food trend movement. It can be argued that social groups may adopt these trends with a swiftness that does not allow for sufficient contemplation or cognizance. Popular food literature reflects the effects of large scale food movements such as ‘gluten-free’ and the consequences that stem from mass cultural shifts in food ideology.

Ebola Outbreak and African Leaders’ Responses to Ebola Crisis following President Obama’s address to the African Heads of States at the United Nations in September 2014
Annie Ngana-Mundeke
Social Science
Ebola claimed lives in West Africa: Liberia, Sierra Leon and Guinea. President Obama: “Mr. Secretary-General, thank you for bringing us together today to address an urgent threat to the people of West Africa, but also a potential threat to the world. Dr. Chan, heads of state and government, especially our African partners, ladies and gentlemen: As we gather here today, the people of Liberia and Sierra Leone and Guinea are in crisis.
An Innovative Environmental Clinical Experience in an RN-BS Program
Margaret Rafferty and Michelle Gellar
Nursing Department
The impact of the environment on health is increasingly recognized, yet few nursing curricula offer more than a cursory coverage of this content. In this clinical, students participate in a meeting of the pediatric environmental health specialty unit at the Icahn School of Medicine at Mount Sinai; a field trip to Via Verde in the South Bronx which helps students understand the principles of designing healthy sustainable communities; and a not-for-profit environmental organization offering hands-on political advocacy experience.

From Local to Global: Employing Interdisciplinary and Place-based Research in Teaching Environmental Economics
Sean P. MacDonald
Department of Social Science
This paper examines the value of teaching undergraduate Environmental Economics from an interdisciplinary perspective. It also discusses the benefits of place-based research – drawing upon the local community as a laboratory where student research can serve as a valuable source in developing a meaningful understanding of both local and global environmental issues. This process is designed to encourage students to make direct connections between the theoretical study of environmental problems and the experience of these challenges in the real world. At the same time, the interdisciplinary approach – considering and incorporating the perspectives offered by other disciplines – can facilitate a comprehensive understanding.

Frederick (A Musical Adaptation for the Stage)
Suzanne Miller
English Department
Working with composers Sarah Durkee and Paul Jacobs (formerly of Sesame Workshop), I have adapted Leo Lionni’s Caldecott Award-winning children’s book—Frederick— for the stage. Frederick tells the story of five mice who are preparing for the winter. Four of the mice prepare in the traditional way (collecting food and water to store in a stone wall). But Frederick, a productive dreamer, gathers poetry and song and warmth and light. While the other mice are skeptical, Frederick is convinced that his “supplies” are just as vital as food and shelter. Eventually, Frederick’s fellow mice come to learn that the power of the imagination is essential to their survival. Frederick was developed at Omaha’s Rose Theater in the fall of 2013 and spring of 2014. It will have its world premiere opening at Chicago Children’s Theater on October 17, 2014 and run through November 16, 2014. Several regional children’s theaters have expressed interest in producing the piece after its Chicago debut.

Saving Our History, Saving the Klitgord Mosaic
Mary Nilles
English Department
This multi-media interdisciplinary project, including a photo exhibition, examines how building the mid-century modern Klitgord Center (1962) fulfilled the aims of Project Big X, a plan for campus growth announced by President Otto Klitogrd in 1956; and provided a venue for the display of the building’s “blue mosaics.” Internationally-renowned designer Nathaniel Choate and ceramic tile artist Joseph Von Tury collaborated with architect Francis Keally to produce this public art. While the Klitgord building has been razed, the historically invaluable mosaics have been saved, for later reconstruction and display in an appropriate campus site. Colleagues and students have helped create related study guides, posters, brochures, and a photo archive.

City of Print: New York and the Periodical Press from the Antebellum Era to the Digital Age
Mark J. Noonan
English Department
Across eras, New York disseminated news and produced creative content in a plethora of publications. To study this archive and explore both the influence of place on publications and the influence of these publications on place, institute participants will take part in discussions led by cultural historians, archivists, and experts in the fields of American literature and periodical studies; participate in hands-on sessions in the periodicals collection of the New York Historical Society; visit iconic sites important to the rise of New York’s periodical press, such as Newspaper Row, Gramercy Park, and the Algonquin Hotel; and attend archival and Digital Humanities workshops.
A Millennium of Coexistence: Diasporic Jewish Communities in Ancient Iran
Parvaneh Pourshariati
Social Sciences Department
Outside of Babylonia, Iran boasted one of the most ancient Jewish communities in the post-Exilic period, Biblical evidence giving testimony to this history, while highlighting the liberal policies of ancient Iranian Empires vis-à-vis Jewish communities. Tracing the general contours of the history of Iranian Jewry through the early medieval period, this poster will underline the significance of this history to the respective currents of Iranian and Jewish histories.

Education

Using Experiential Learning Theory to Teach Textiles in the Age of Fast Fashion
Alyssa Dana Adomaitis\(^1\) and Diana Saiki\(^2\)
\(^1\)Department of Business
\(^2\)Ball State University, Indiana
This presentation assists college students in understanding quality of apparel and textiles. These students were born in the generation of fast-fashion, ultra-cheap, and domestic luxury apparel. As a result, many students may not readily understand what a high quality garment consists of (e.g., silk lining, tight stitching, padding), and the implications for the fashion industry. Domestic luxury is a term coined by Rose Marie Bravo, CBE Retail Consultant, former CEO and Vice Chairman of Burberry Group, to describe designer labels made in conjunction with fast-fashion retailers such as H &M, Target, and Top Shop, bringing so-called luxury to the masses (Mayer, 2011). The purpose of this teaching strategy was to assist students in understanding quality features in textiles by stimulating comparison and contrast between a garment made prior to the fast-fashion era and a fast-fashion garment. The dichotomy of quality between luxury labels and fast-fashion produce different product quality yet both are viewed as fashion.

The Digital Poem Initiative: Co-curricular Learning, Experiential and Service
Severino Alfonso and Loukia Tsafoulia
Department of Architectural Technology
The proposal emphasizes the importance of Co-Curricular Learning as a practice towards educating the “whole student”, connecting language, digital art and design. The presentation addresses learning practices that promote academic success and encourage students to pursue careers that require collaboration between the Liberal Arts and STEM fields. The outcomes are interactive, highly technological, digitally generated visual poems. We will use as a case study a combination of two research activities: a workshop proposal titled The Digital Poem Initiative: An Interdisciplinary Collaboration between Digital Technologies and the Liberal Arts and an elective course titled The Beauty and Beast.
A Living Lab in Action: Faculty Fellows Promoting Place-Based Learning & High Impact Educational Practices at City Tech

Jill Bouratoglou, 1 Susan Davide, 2 Aida Egués, 3 Jeannette Espinoza, 4 Anne Leonard, 5 Sean MacDonald, 6 Susan Phillip, 7 and Christopher Swift. 8

1Department of Architectural Technology
2Department of Dental Hygiene
3Department of Nursing
4Department of Law and Paralegal Studies
5Library
6Department of Social Science
7Department of Hospitality Management
8Department of Humanities

Faculty Fellows of the Living Lab Grant are implementing innovative strategies to engage our students. Faculty-led visits to Brooklyn waterfront locations have demonstrated the many possibilities of place-based learning. Living Lab Fellows have embraced our community as our classroom in support of creating an engaging atmosphere for students to achieve the learning outcomes of courses across a wide range of disciplines. Utilizing George Kuh’s research of High Impact Educational Practices, Faculty Fellows have enhanced assignments by creating collaborative assignments and projects, participating in learning communities, and shaping first-year and capstone experiences.

Creating a Living Laboratory: Revitalizing High Impact General Education at a 21st Century College of Technology

Karen Goodlad, 1 Jonas Reitz, 2 Mary Sue Donsky, 3 Alexander Aptekar, 4 Sandra Cheng, 5 Charlie Edwards, 6 and Maura Smale. 7

1Department of Hospitality Management
2Department of Mathematics
3Department of Law and Paralegal Studies
4Department of Architecture
5Department of Humanities
6Program Manager
7Library

Encouraging faculty to participate in general education reform requires the use of innovative measures to evolve existing structures and to cultivate new ways for faculty to develop their teaching and learning practices. The Grant’s leadership has developed a dynamic series of programs to explore strategies for engaging our students and inspiring faculty to experiment with different pedagogical approaches. Through the use of high-impact practices and place-based learning that highlights our Brooklyn location, faculty have created a living laboratory to revitalize general education at City Tech.

Living Lab Community Based Learning: Looking at the Fulton Mall Gentrification as a Study of Change, Revitalization, and/or Hegemony

Lisa Pope Fischer
Social Science Department

Encouraged by the Living Lab workshops, I introduced a fieldwork research activity to observe, document, and record the businesses and people who occupy and use the Brooklyn Fulton Mall area. Applying theory to real world contexts can help students gain a practical understanding of their application to their everyday lives. This assignment incorporates George Kuh’s high impact educational practices that encourage student retention, and addresses General Education Student Learning Outcomes. This project will be part of a longitudinal study, as each subsequent class will build on the prior classes’ work to document progressive changes and their impact on the community.
“Living Lab” Associate Fellows: Developing Faculty Member’s Connection with General Education Initiatives
Karen Goodlad
Hospitality Management

The “Living Lab” Associate Fellow development program brings together an interdisciplinary group of full-time and part-time faculty members to re-envision general education through high-impact practices, place-based learning, open pedagogy and assessment. The poster will express how faculty members participated in workshops, trips, and activities. Faculty explored new teaching and learning strategies and worked to incorporate them into their courses. The methods included facilitation by full-time faculty members who shared their best practices for making general education learning outcomes explicit to our students.

Our Places: How We Commemorate
Mary Sue Donsky and Students
Law and Paralegal Studies Department

This on-going OpenLab voluntary project features a blog containing the research of students and faculty in all sections of LAW 2301, Estates, Trusts and Wills. Our work entails photographing, researching and writing about the varied ways in which decedents have been honored in “our places” – where we live, work, study and visit. The project was created to incorporate the lessons of the Living Lab General Education Seminar in an effort to reinforce General Education Student Learning Outcomes using place-based student research and active learning techniques. Please visit our project at https://openlab.citytech.cuny.edu/our-places/

A Community of Thought: Research and the OpenLab
Jill Belli¹, Charlie Edwards², M. Genevieve Hitchings³, Jonas Reitz⁴, Jody R. Rosen¹, and Jenna Spevack³
¹English Department
²A Living Laboratory
³Communication Design
⁴Mathematics Department

In only three years, the OpenLab has become a vital hub of intellectual activity at City Tech. Over 11,000 students, faculty, and staff throughout the college have used the site not only for teaching and learning, but also collaboration and research. The OpenLab continues to offer a rich potential subject for research in a wide range of disciplines, and is an important intellectual argument in itself. This poster highlights several milestones the OpenLab has reached that demonstrate the value of openness and experimentation in educational technology and that put City Tech at the forefront of innovation in this field.

Strategies beyond Adjunct Faculty Orientation: A Mentoring Toolkit
Lisette Santisteban and Aida Egues
Nursing Department

Employing adjunct faculty is critically important to the survival of nursing programs due to the concerning and dire shortage of full-time nursing faculty members. Although skilled as clinicians, the needs of adjunct faculty in transitioning to the educator role are many, and go beyond just a few days of orientation. A potential solution to a successful transition, as well as an increase in recruitment and retention of adjunct nursing faculty may be the development and use of a comprehensive program “toolkit” that goes beyond orientation and includes dedicated mentorship.

The Class as a Micrography of the Professional Space: Teamwork and Professional Portfolio Curation
Loukia Tsafoulia and Severino Alfonso
Department of Architectural Technology

The proposal emphasizes the importance of Capstone Courses and Career Preparation as high impact educational practices and presents ways of connecting our students to the outside world. We will use as a case study an elective course at the Department of Architectural Technology titled Integrated Software in the Architectural Office. We will go through the significance of applying in class learning practices such as collaborative work, portfolio creation and online exhibition of the students’ work. These components will be analyzed with text, visuals as well as students’ outcomes. Main focus is to analyze ways of integrating and exhibiting academic knowledge.
Rethinking Design Research: Design Incubation
M. Genevieve Hitchings, Kathryn Weinstein, Dan Wong
1 Communication Design
2 Graphic Design, Queens College, CUNY

In this poster presentation, we will present the Design Incubation model and provide outcomes to date. 10 research projects have been presented at 3 colloquia. Researchers come from a cross section of NYC design programs housed in public, private not-for-profit, and private for profit colleges – and represent community colleges, four-year college, and graduate programs. Design Incubation is a think-tank created to facilitate the development of research in the field of communication design. The organization works with academics and practitioners to create scholarly discourse and publications focused on creative projects, critical analysis, historical perspectives, technological advances and other topics relevant to design studies.

The Improvement of Faculty Commons Website: How Will It Impact User Experience?
Maen Caka, Julia Jordan, and Kevin Rajaram
Faculty Commons

The changes to the website are made to enhance user experience. They include accessibility, ease of use, and a wide array of new features. The site is now easier to read and navigate through pages with the ability to search and find information. Its engine has been updated, making it a fully functioning web application. Calendar events can be searched and users now have the ability to add them to their personal eCalendars. The Faculty Commons website is now mobile optimized to allow a better experience on desktops, laptops, and handheld devices.

READ Initiative: Assessing Strategies to Improve Reading in Dental Hygiene
María-Elena Bilello and Anna Matthews
Dental Hygiene

In Fall 2014, we began a pilot study assessing evidence-based reading strategies aimed at enhancing reading skills and achieving higher SLOs in the Dental Hygiene program within the READ initiative. Two first-semester courses - DEN1112 and DEN1114 - introducing students to the fundamental science of oral anatomy and histology are essential to the discipline-specific knowledge in dental hygiene. Strategies, designed to promote reading, are being administered to the same student population in both courses. We will evaluate the effectiveness of these approaches at the end of Fall 2014 to determine their value and future adoption in our courses and beyond.

NEST: STEM Teacher Education and Research at NYC
Fangyang Shen, Andrew Douglas, Estela Rojas
1 Computer Systems Technology
2 Mathematics Department
New York City College of Technology (City Tech) and Borough of Manhattan Community College (BMCC) are implementing a Noyce Phase I scholarship program that will increase the number of highly qualified STEM teachers in high need school districts in Brooklyn and the New York metropolitan area. The five-year program will produce a total of 20 new STEM teachers, over 500 Noyce Interns and summer program training opportunities, and will create a new STEM teacher preparation pathway for the critically underpowered STEM teaching force in New York City. We will also conduct STEM teacher education research based on the program activities.

READ: It's not Just for Biology Students, Lets Get Microbiology Students Reading Too!
Davida S. Smyth and Juanita But
Biological Sciences Department

Reading Effectively Across the Disciplines, established in Spring 2013, has made a great impact on student reading in multiple disciplines. In the Biological Sciences Department, Introductory Biology was the first course to receive our attention and in the current semester, we are expanding our focus to include Microbiology. Our poster shall present the work being accomplished by faculty and students involved in the project, introduce some of the strategies and techniques that we are using and highlight the activities of peer led team leaders in the project as well. We shall also introduce our future goals.
READ: A Strategy to Promote Student Success
Juanita But
English Department
The results of the 2012 General Education Reading Assessment showed that only less than 30% of NYCCT students were college ready in reading, much lower than the national average of 50%. Reading Effectively Across the Disciplines (READ) is a project that focuses specifically on improving students' disciplinary literacy and higher order thinking skills. READ accomplishes its goals through course redesign, pedagogical development, and active reading strategies implemented by classroom instruction and Peer-led Team Learning. This presentation features the project's structure and implementation, assessment results of READ sections in Biology, Marketing, and Electromechanical Engineering Technology, current focus on STEM disciplines, and future directions.

Teaching Composition through Community-based Learning
Lubie G. Alatriste
Department of English
This poster shows steps to engaging students in the world of real activities, such as urban farming. Using a place-based learning framework, first year writers explore their neighborhood and identify places where students can both gather information, write about experiences and make a difference. From the text-based unit on urban farming, to the final writing project, students collaborate to achieve high levels of writing and learning.

Mathematics
Classification of Embeddings of Abelian Extensions of $D_n$ into $E_{n+1}$
Andrew Douglas, D. Kahrobaei, and J. Repka
Mathematics Department
An abelian extension of the special orthogonal Lie algebra $D_n$ is a nonsemisimple Lie algebra $D_n + V$, where $V$ is a finite-dimensional representation of $D_n$, with the understanding that $[V,V]=0$. We determine all abelian extensions of $D_n$ that may be embedded into the exceptional Lie algebra $E_{n+1}$, $n=5$, 6, and 7. We then classify these embeddings, up to inner automorphism. As an application, we also consider the restrictions of irreducible representations of $E_{n+1}$ to $D_n + V$, and discuss which of these restrictions are or are not indecomposable. The results are published in Journal of Pure and Applied Algebra, 217, 1942-1954 (2013).

A Natural Strengthening of Kelley-Morse Set Theory
Thomas A. Johnstone
Mathematics Department
We consider a natural strengthening of Kelley-Morse set theory by adding a class collection principle asserting for every second-order formula $\phi$ that, if for every set $x$ there is a class $Y$ such that $\phi(x,Y)$ holds, then there is a single class that codes a collection of classes having a witnessing class for every $x$. This principle holds in all models usually provided for KM, but it is not provable in KM alone, and its failure in some KM models reveals what can be regarded as fundamental weakness of KM. This is joint work with Victoria Gitman and Joel Hamkins.

Conjugacy Problem in Polycyclic Groups and Applications in Information Security
Delaram Kahrobaei
Mathematics Department
My poster is related to the conjugacy problem in polycyclic groups and some applications in Information Security. Together with my PhD student Bren Cavallo I recently showed that there are families of polycyclic groups in which the conjugacy problem is NP-complete (published in International Journal of Algebra and Computation, World Scientific 2014). Polycyclic groups has been proposed for cryptography by Eick and Kahrobaei a couple of years ago, based on computational experiments which conjectured the conjugacy problem for polycyclic groups is in exponential time. Recently, together with my former PhD student Ha Lam and Israeli collaborator David Garber, I showed the heuristic algorithm known as Length Based Attack, can not break the cryptosystem using the right parameters (accepted in Journal of Mathematical Cryptology 2014). With my postdoc Ha Lam we also did experiments with Heisenberg groups of higher dimensions and notices the same result happens. This research has been supported by a generous research grant, Office of Naval Research.
Simulations of Electoral College: Predicting the Next President
Boyan Kostadinov
Mathematics Department
We develop a simulation model for predicting the outcome of a Presidential election based on simulating a universe of scenarios for the distribution of the Electoral College votes. The simulation model has two parts: estimating the probabilities for a given candidate to win each state (and D.C.) based on polls of data, and then estimating the probability for a given candidate to win at least 270 Electoral College votes and thus win the White House.

Character Theory of Monoids Over an Arbitrary Field
Ariane Masuda,1 Luciane Quoos,2 and Benjamin Steinberg3
1Mathematics Department
2Instituto de Matemática, Universidade Federal do Rio de Janeiro
3Department of Mathematics, City College of New York
The basic character theory of finite monoids over the complex numbers was developed over the 1960s and 1970s. This includes McAlister's work in determining the space of functions spanned by the irreducible characters of a finite monoid over the complex numbers and the ring of virtual characters. We extend his results to an arbitrary field.

Improving Engagement in an Era of High-Stakes Testing
K. Andrew Parker
Mathematics Department
Incoming freshmen face many challenges in their first math classes at City Tech. One of the most ubiquitous is the challenge of homework. Students' high school experience often teaches them that math homework is about completion instead of accuracy, and that the focus of a math course should be on the limited set of problems that will appear on the final exam. Using iPads and WeBWorK, students begin their assignments during class, receiving automatic feedback, freeing instructors to circulate. Data collection is in progress; both quantitative and qualitative comparisons will be made with traditional textbook homework and past experiences.

Hochster's Small MCM Conjecture for Toric Local Rings
Hans Schoutens
Mathematics Department
A long outstanding problem in Commutative Algebra, posed by Hochster in the wake of his solution of various homological conjectures, is the question whether any complete local ring $R$ can be realized as a subalgebra of a matrix ring over a power series ring. To answer this question, one must construct a so-called maximal Cohen-Macaulay module (MCM) over $R$, which we will do when $R$ is defined by binomials (aka a toric local ring). The proof reduces to positive characteristic and constructs an explicit MCM as a submodule of the Frobenius transform of $R$.

An Evaluation of “Skewed Integrals” via Substitution
Satyanand Singh
Mathematics Department
We present a nice application of a seemingly inapplicable substitution to evaluate a family of skewed integrals that are usually evaluated via partial fractions. It can be presented to students in a second semester calculus course, and illustrates the versatility of the substitution method.

A New Product for Permutation Groups
Simon M. Smith
Mathematics Department
Group theory is the study of symmetry, and the oldest area of group theory concerns permutations. One of the most important products in permutation group theory is the wreath product in product action. The reason for this is that, unlike other products, it preserves something called primitivity in a very natural way. Primitive permutation groups are groups that can’t be decomposed further: they are like atoms. Groups of wreath product type form an entire class in the classification of the finite primitive permutation groups. My poster is about a new product I have discovered. It is fundamentally different to the wreath product in product action; nevertheless, it preserves primitivity under astonishingly similar conditions. It is a “missing” fundamental product for permutation groups. As an example of the product’s importance, I’ve used it to solve a large open problem from topological group theory.
Conway’s RATS Sequences
Johann Thiel
Mathematics Department
Conway’s RATS sequences are generated by repeating the following process: begin with a positive integer, reverse the order of the digits, add the two integers together, then sort the sum’s digits in increasing order from left to right. We consider this process for integers written in bases other than 10 and study the long-term behavior of such sequences. Our main results include: an independent proof that all RATS sequences in base 3 are ultimately periodic, some Erdős-Kac and Hardy-Ramanujan type results for the periods of base 3 sequences, and a proof of the existence quasiperiodic sequences for certain choices of base.

Tensor Products of A-infinity Algebras with Homotopy Inner Products
Thomas Tradler
Mathematics Department
The notion of an associative algebra has a homotopic generalization, commonly known as an A-infinity algebra. Generalizing the concept of an associative algebra with inner product to an A-infinity algebra with inner product (called cyclic A-infinity algebra) is not invariant under homotopy equivalences. To achieve this the concept of an A-infinity algebra with homotopy inner product is required. An important property of A-infinity algebras is that they are closed under tensor products. While cyclic A-infinity algebras are not closed under tensor products, A-infinity algebras with homotopy inner products are.

Mesoscopic Modeling and Simulation of Transiently Networked Fluids
Lin Zhou
Mathematics Department
To understand the viscoelastic fluids in both exponential and power-law relaxation regimes, we consider the mesoscopic simulation of transient networks in which the connecting chains can break and reconnect to the network through randomly distributed sticky nodes with given life times. The motion of the beads and junctions (nodes and beads) are governed by a Langevin equation. We explore the effect of the attachment/detachment rate of the sticky nodes and the effect of the number of beads that are allowed to connect to the sticky node have on the shear stress response of the network system.

Physics

Distant Galaxies and Big Data
Viviana Acquaviva
Physics Department
My research aims to improve our understanding of galaxy evolution by answering questions such as: How far away are galaxies? How do galaxies form their stars? How can we make the best use of the data that will be taken in the next decade? I develop new computational techniques for data modeling and analysis that can help investigate these issues efficiently and accurately. These tools are key instruments to be a part of the "big data" revolution happening in Astronomy.

Graphene Nanoribbon Based Spaser
Oleg L. Berman¹, Roman Ya. Kezerashvili¹, and Yuri E. Lozovik²
¹Physics Department
²Institute of Spectroscopy, Russian Academy of Sciences
A novel type of spaser with the net amplification of surface plasmons (SPs) in a doped graphene nanoribbon is proposed. The plasmons in the THz region can be generated in a doped graphene nanoribbon due to nonradiative excitation by emitters like two level quantum dots located along a graphene nanoribbon. The minimal population inversion per unit area, needed for the net amplification of SPs in a doped graphene nanoribbon, is obtained.
**Tops and Stops at the Large Hadron Collider**

Andrea Ferroglia  
Physics Department

We present methods to calculate the production cross section of heavy particle pairs at hadron colliders, such as the Large Hadron Collider (LHC) at CERN in Geneva. In particular, we apply effective field theory methods in order to carry out the resummation of large logarithms which appear in the perturbative expansion of the differential cross section. We focus our attention on the production of pairs of heavy particles carrying color charge. We consider both particles which were discovered long ago, such as top quarks, as well as their supersymmetric partners, the top squarks, which have not (yet) been discovered.

**Nucleon-Nucleon Cross Sections in Large Nc QCD**

Boris Gelman  
Physics Department

An emergent symmetry of Quantum Chromodynamics (QCD) in the limit of a large number of colors is used to derive model-independent relations for the proton-neutron and proton-proton interactions. The emergent symmetry is the contracted SU(4) spin-flavor symmetry. In the large Nc limit protons and neutrons can be described as quantized states of soliton-like solutions. The spectrum of these states exhibit the contracted SU(4) spin-flavor symmetry. This symmetry, combined with the time-dependent mean-field framework valid in the large Nc limit of QCD leads to the model-independent relations between proton-proton and proton-neutron cross sections.

**On the Existence of Superfluidity between Two Critical Temperatures**

Ilya Grigorenko, Roman Ya. Kezerashvili  
Physics Department

The existence of the superfluid state between two critical temperatures is predicted. Superfluidity on a finite temperature interval can be observed in a system of electrons and holes in two spatially separated parallel planes in the case of electron-hole asymmetry caused by the difference in the carriers masses and their chemical potentials. It is found that the superfluid state is possible in a wide range of the asymmetry parameters, when they satisfy a simple linear equation. We also predict that at zero temperature with the change of the asymmetry parameters the system will undergo a quantum phase transition of the first order.

**New Nanophotonic Devices for Optical and Quantum Computing**

German V. Kolmakov, Oleg L. Berman and Roman Ya. Kezerashvili  
Physics Department

We design new types of electrically controlled optical switches based on an exciton-polariton condensate in a patterned optical microcavity with an embedded quantum well or a graphene layer. The polaritons are driven by a time-independent force due to the microcavity wedge shape and by a time-dependent drag force owing to the interaction of excitons in a quantum well and the electric current running in a neighboring quantum well. It is demonstrated that by applying the drag force the polaritons can be directed toward the desired branch of the polariton circuit with no hysteresis. Our simulations also show that the energy gap in the quasiparticle spectrum in graphene can be utilized as an additional parameter that controls the propagation of the signals in the switch.

**Near Horizon Geometry of Intersection M2-M5**

Darya Krym$^1$ and John Estes$^2$  
$^1$Physics Department  
$^2$Imperial College London

M-theory or 11-dimensional supergravity is the low energy (i.e. small string tension) and large string coupling limit of string theory. The interacting objects in this theory are M2 branes and M5 branes which are infinite hyperplaces (extending in (2 space + 1 time) dimensions and (5 space + 1 time) dimension respectively). M2 and M5 branes are massive, carry a generalized type of charge, and therefore warp spacetime or “backreact”. We look for solutions of this theory corresponding to various ways of zooming in close to intersecting M2/M5 branes.
A Fiber Figure of Merit for Uncompensated Nyquist-WDM Links Employing EDFA and/or Distributed Raman Amplification
Lufeng Leng
Physics Department

The Gaussian noise model is applied to the analysis of the nonlinear power generation in uncompensated Nyquist-WDM links. The effective optical signal-to-noise ratio, incorporating both the amplified spontaneous emission noise and nonlinear interference, is computed to evaluate the system performance of such links. The effects of fiber parameters including attenuation, effective area and dispersion on the system performance are quantified. A new fiber figure-of-merit is proposed for systems employing Erbium doped fiber and/or distributed Raman amplification. Good agreement between its predictions and analytical results is achieved.

Comparison of Simulated Galaxies with Enzo and Ramses
Ariyeh Maller¹, Jacob Hammer², and Nicholas Miller³
¹Physics Department
²Maclauy Honors College, Hunter
³Mariette College

We explore the differences in two simulated galaxies that start with the same initial conditions and only differ in the code that was used to evolve them. The two codes used are Enzo and Ramses, both of which use the Adaptive Mesh Refinement technique to treat hydrodynamics. Differences do exist in the way supernova feedback and gas cooling are implemented. While overall the galaxies look quite similar, we find interesting differences that may allow future observations to distinguish the ‘correct’ feedback model.

Higgs Boson Production at the Large Hadron Collider with GoSam2.0
Giovanni Ossola
Physics Department

GoSam2.0 is a public program package to compute one-loop QCD and/or electroweak corrections to multi-particle processes within and beyond the Standard Model. When interfaced with Monte Carlo event generators, GoSam2.0 allows for the production of differential cross-sections at Next-to-Leading-Order accuracy, which are of phenomenological interest for the experimental collaboration at the LHC. In this poster, we present a selection of results obtained recently with GoSam2.0 related to the production of a Higgs boson in association with jets and heavy quarks.

Black Rings in Supergravity
Justin Vázquez-Poritz and Zhibai Zhang
Physics Department

Black rings are black holes with non-spherical event horizons in five-dimensional spacetime. Their existence demonstrates that black hole uniqueness theorems are violated in higher dimensions. Using solution-generating techniques involving dimensional reduction, we construct black ring solutions in five-dimensional supergravity whose physical parameters include mass, three electric charges, three dipole charges, three background magnetic fields and angular momentum. We study the global structure and thermodynamics of these solutions, and find that the first law of thermodynamics only works in the absence of Dirac string singularities.

What are Basic Physics Ideas, Which Can Be Interpreted Non-Mathematically?
Vasilyi S. Znamenskiy
Physics Department

Each Science has its specific language. For hundreds of years, physics has used the language of mathematical formulae. Basic phenomena of nature have simple mathematical relationships. Nature without mathematics was studied by Natural Philosophy. Physics as a separate science was born for studying quantitative relationships in nature. Is it possible to interpret the quantitative relations non-mathematically? Do we remain in Physics or come back to Philosophy when we try to examine and interpret Physics non-mathematically? These questions are highly theoretical. However millions of people have to have the simplest physics knowledge. And these millions think they don’t know Math; however they visit stores and banks, use cars, make payments. They use their Intuitive Math Knowledge (IMK). This IMK gives us a key to teach Physics. What does IMK include and how to use IMK in the introductory non-mathematical Physics course? This and other questions are discussed in the article.
Bose Einstein Condensate in a Cavity: Phase transitions and non-Hermiticity
Manas Kulkarni
Physics Department
Recent results on a system of a quantum gas placed in a leaky cavity and driven by a laser will be presented. I will describe the non-trivial dissipative properties near the critical point of an open quantum phase transition, which explained recent mysterious experimental findings. I will also describe the rich dynamics of this driven-dissipative quantum gas and show this to be deeply rooted in the theory of non-Hermitian physics and the pseudo-spectrum of this open quantum system.

Few Body Kaonic Nuclei
Roman Ya. Kezerashvili\textsuperscript{1} and Shalva Tsiklauri\textsuperscript{2}
\textsuperscript{1}Physics Department
\textsuperscript{2}Borough of Manhattan Community College, CUNY
We address the hottest topic in nuclear physics – lightest kaonic nuclei that consist of kaons and a few protons and/or neutrons. The study of kaonic nuclear states is an important topic in hadron physics, because their existence is related to kaon condensation in the core of neutron stars. We present our results for kaonic three-body $K^{-}NN$, $KKN$ and $K^{-}K$ and four-body $KNNN$, $KK^{-}NN$ and $KKKKN$ kaonic nuclei within the method of hyperspherical functions in momentum representation, using realistic local and separable potential models for the nucleon-nucleon and kaon-nucleon interactions, as well as for the kaon-kaon interaction.
The 12th Annual City Tech Poster Session exhibits the research of faculty and students. The Poster Session creates a spirit of College community, honors its intellectual achievements, and inspires its members. Over the past decade the Poster Session has grown, diversified, and evolved into a well-known and cherished tradition at the College. By promoting faculty and student research, the Poster Session initiative has added a new dimension to life at our College. This dimension has continued to grow as the success and popularity of the original Poster Session spurred the creation of the Honors and Emerging Scholars Poster Presentation by students which focuses on student research.

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