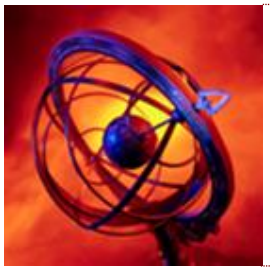


The Jess and Mildred Fisher College of Science and Mathematics

Towson University ▪ 8000 York Road ▪ Towson, MD 21252
Phone: 410-704-2121▪ Website: http://www.towson.edu/fcsm

ELECTRONIC NEWSLETTER **October/November 2011**

OFFICE OF THE DEAN

The Fisher College – Inspiring Student Exploration in Science and Mathematics for the 21st Century©

Dear Friends,

It has been an eventful fall so far in the Fisher College! We've officially begun two important new initiatives. The School of Emerging Technologies, directed by Professor Mike O'Leary, and located in the 7800 York Road building, will help us in encouraging fresh interdisciplinary research and education programs that depend on emerging technologies. The first academic program underpinning the SET is the MS in Applied Information Technology – not a new program, but a new home for that program. The other new initiative is the formation of the Glen Arboretum Board of Directors, led by the Arboretum Director, Professor Emeritus Jim Hull. We hope to see significant new improvements in the Glen as a result, using in part the Glen Arboretum Fund that results from the generous donations of interested alumni and friends.

Fall has also been a time of celebration and recognition of faculty, staff and alumni. In October the university announced its annual Alumni Volunteer Recognition Awards, and Fisher College folks won two of the five awards. Alumnus Al Henneman, owner of the large tract of land in Monkton that we now operate as the Towson University Field Station, was recognized with the Spirit of the University award. And our own Don Forester, Professor Emeritus of Biology and Director of the TU Field Station, received the Faculty Award. Congratulations to Don and Al!

October also saw TU and the Fisher College winning another undergraduate cybersecurity competition. This time, the student team of Andrea Mobley (Captain), Brian Cather, Jonathan Fragale, Dustin Hanks, Dennis Hayden, and Roberto Melendez won the Maryland Cyber Challenge at the Baltimore Convention Center. Second place went to UMCP and third place went to host UMBC. Each of the students win a $5,000 scholarship from the National Security Agency for their efforts, and will be offered a summer internship position with SAIC. Of the last four major area cyber defense competitions, the Towson Cybersecurity program has won three: the 2010 CCDC Mid-Atlantic Regionals, the 2010 CSC Cyb3rBattl3ground, and the 2011 MDC3!

Finally, we recently held our annual Fall Forum where faculty and staff receive college-wide awards. You can see the results of the Fall Forum and read my speech to the faculty and staff at http://www.towson.edu/FCSM/ .

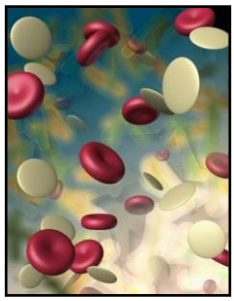
Oh, and let's not forget the Towson Tigers football team who went from worst to first to win the Colonial Athletic Conference! Good luck to the Tigers as they enjoy their automatic bid to the NCAA playoffs in the Football Championship Series! Here's wishing everyone a wonderful winter holiday season.

Sincerely,

David A. Vanko
Dean

Gifts… from the Development Office

Covering the true cost of a student's education takes more than tuition and state assistance. To experience the enriching activities that define the best colleges and universities, our students must rely on your generosity. It is only through the combined resources of tuition, state support and private contributions that Towson University can help its students develop their full potential. Please consider a gift in support of the Jess and Mildred Fisher College of Science and Mathematics. To make your gift now go to www.Towson.edu/supportTU



DEPARTMENT OF BIOLOGICAL SCIENCES

Student Research

Students from Barry Margulies' lab received internal grant funding for their research:

> Karla Feeser, "Development of a High-Throughput, Quantitative Assay for Unlabeled Acyclovir in Clinical Samples," $500 from TU Undergraduate Research Committee
>
> Nickie Johnson, "Determining Drug Output in Two Types of Silicone Implant," $360 from TU Undergraduate Research Committee
>
> Ashley Nelson, "Development of a Biodegradable Subcutaneous Implant Containing Acyclovir for the Long-term Suppression of HSV-1 Reoccurrences," $500 for travel to the Annual Biomedical Research Conference for Minority Students in St. Louis, MO (11/10-11/13)

Publications

Sarah Haines wrote book reviews for a series of children's trade books for the National Science Teacher's Association book review service, NSTA Recommends.

Sarah Haines had a book review appear in the October 2011 issues of both Science & Children and Science Scope.

Joel Snodgrass co-authored two papers with students and faculty from FCSM:

> Van Meter, R. J., C. M. Swan, J. Leips, and J. W. Snodgrass. 2011. "Road Salt Stress Induces Novel Food Web Structure and Interactions." Wetlands 31:843-851.
>
> Gallagher, M. T., J. W. Snodgrass, D. R. Ownby, Adrianne B. Brand, Ryan E. Casey, and S. M. Lev. 2011. "Watershed-scale analysis of pollutant distributions in stormwater management ponds." Urban Ecosystems 14:469-484.

Presentations

Anne Estes gave an invited poster at the National Evolutionary Synthesis Center, Durham, North Carolina titled "Women Evolving Biological Sciences."

Anne Estes gave an invited talk at The Institute for Genome Sciences, University of Maryland School of Medicine titled "Bugs in bugs: Polyphagous, holometabolous insects as endosymbiotic environments."

Sarah Haines, along with Bess Caplan and Alan Berkowitz from the Baltimore Ecosystem Study, presented a paper at the BES Annual Meeting held at Cylburn Arboretum titled "From Professional Development to Effective Teaching of Environmental Science." The authors also presented a poster at the meeting titled "Baltimore Partnership for Environmental Science Literacy."

Sarah Haines conducted a presentation at the Global Water Education Conference in Bozeman, MT titled "Examining Properties of Water in the Classroom and the Field."

Sarah Haines presented a paper at the Northeast Regional Association for Science Teacher Education conference titled "Learning Progressions for Environmental Science Literacy."

Sarah Haines made the following presentations at the North American Association for Environmental Education's annual conference in Raleigh, NC:

Addressing Student Misconceptions About the Carbon Cycle
Evaluating Project Learning Tree's Forests of the World Module
How to Get Your Local Environmental Educator Certification Program Accredited by NAAEE
Certification 102: Learning From Experienced Programs
Planning for Assessment of Environmental Education Certification Candidates
Certification 101: Developing an Environmental Education Certification Program
Planning Finances for an Environmental Education Certification Program

Megan May gave two talks at the United States Mycoplasmology Working Group Congress in July 2011, Fort Worth, TX, titled "Mycoplasma Evolution and Disease Emergence" and "Rates, Prevalence, and Diagnosis of Human Mycoplasmosis."

Megan May gave a talk at the House Finch Working Group Meeting October 2011, Arlington, VA, titled "Quantifiable Virulence Determinants as Proxies for Pathogenicity."

Richard Seigel presented a poster at the Northeast Partners in Amphibian and Reptile Conservation meetings in Annapolis, Maryland entitled "Simultaneous Effects of a Ranavirus Outbreak on Amphibians and Box Turtles." The paper was co-authored with TU graduate student Scott D. Farnsworth.

Journal and Reviewing Activity

Harald Beck reviewed a manuscript for "Ecological Modeling."

Anne Estes reviewed manuscripts for Symbiosis, Journal of Pest Science, and Folia Microbiologica.

Sarah Haines reviewed manuscripts for the Journal of College Science Teaching, The American Biology Teacher, and The Science Teacher.

Richard Seigel reviewed manuscripts for the journals Copeia, Herpetologica, Journal of Herpetology (two), and Journal of Zoology. He also reviewed a proposal for NSF.

Vonnie Shields reviewed a manuscript for the journal Arthropod Plant Interactions.

Joel Snodgrass reviewed papers for Environmental Pollution, Landscape Ecology, Environmental Toxicology and Chemistry, and Journal of Risk Research.

Community Outreach

Richard Seigel conducted an evening Campfire Presentation for Susquehanna State Park on Amphibians and Reptiles.

Other Activities

John Lapolla hosted three visiting scientists to the TU Biodiversity Center insect collection in October: Sam Droege (USGS), Jen Frye (MD DNR), Jon Gelhaus (Academy of Natural Sciences in Philadelphia).

DEPARTMENT OF CHEMISTRY

New Staff Member

The Department is pleased to welcome our new half-time administrative assistant, Ms. Georgianna Cover. Georgianna is a Baltimore native and has extensive prior administrative experience in a marina rental company. She is working with Valerie Smith in the Department Office.

Publications

Ana-Maria Soto has had two papers accepted:

> Smith AL*, Kassman J, Srour KJ* and Soto AM. "Effect of Salt Concentration on the Conformation of TAR RNA and Its Association with Aminoglycoside Antibiotics" Biochemistry, 2011, In Press.
> (Amy Smith and Khalid Srour were Towson undergraduate students)
>
> Soto, A.M., Draper, D.E. "White Gels: An Easy Way to Preserve Methylene Blue Stained Gels" Analytical Biochem. 2011, In Press.

Grants

Tim Brunker was awarded an American Chemical Society – Petroleum Research Fund (ACS-PRF) grant:

> Brunker, T.J. "Investigation of the Stabilization of Boron-containing cations by Azametallocene donors: Applications to Reduction, Hydroboration and Borylation reactions." ACS-PRF Undergraduate New Investigator Award, Oct. 2011, $50,000.

Awards

Ryan Casey received the George L. Braude Award of the American Chemical Society, Maryland Section. The Braude Award recognizes a Maryland chemist who has an outstanding record of mentorship of undergraduates in research. At the Braude Award ceremony on November 2, Ryan gave a research seminar entitled "Salt in Stormwater: Multiple Impacts on Retention Pond Soils."

Research Presentations

Ana-Maria Soto gave a platform presentation in a symposium organized by the Biophysical Society on "Cutting Edge Research in the Actions of RNA and the Role of Water in Biological Systems" at the annual meeting of the Society of the Advancement of Chicanos/Hispanics and Native Americans in Science, San Jose, CA, October 27-30:

> Soto, A.M. "Effect of Helix Stability on the Conformation of Bulges and Loops"

Three of Ana-Maria's undergraduate research students presented posters at the 25th Gibbs Conference on Biothermodynamics, Carbondale, IL, September 17-20:

> Crews, G* and Soto, A.M. "On the Stability and Conformation of RNA Hairpins Containing Bulges."
>
> Choi, B.-E.*, Li, Y* and Soto, A.M. "Effect of Base Substitutions on the Conformation of *M. tuberculosis* rRNA Hairpins."

Research students mentored by Tim Brunker and Clare Muhoro presented posters at the UMBC Undergraduate Research Symposium in the Chemical and Biological Sciences, October 22:

> Moradi, N.*, Christensen, C. M., Brunker, T. J. "Synthesis and Coordination Chemistry of Chiral beta-Iminosulfoxides." (1st place prize in category).
>
> Jiang, A.* and Muhoro, C. N. "Synthesis of Phosphanyl(Organyl)Boranes and their uses as Ligands in Transition Metal Complexes." (1st place prize in category).
>
> Atolagbe, P.*, Brunker, T.J. "Investigation of the Synthesis of Ru(II) dichloride Complexes of a Tetradentate Amino-Sulfoxide Ligand," (2nd place prize in category).
>
> Abdulafeez A. Oluyadi, A. A.* and Muhoro, C.N. "Titanium (II)-Catalyzed Hydroborations of Unsaturated Heteroatomic Substrates." (2nd place prize in category).

David Ownby gave an invited seminar at the Center for Urban Environmental Research and Education at UMBC titled "Geochemical influences on copper toxicity."

Faculty Professional Development

David Ownby reviewed an article for Environmental Pollution.

Department Seminars

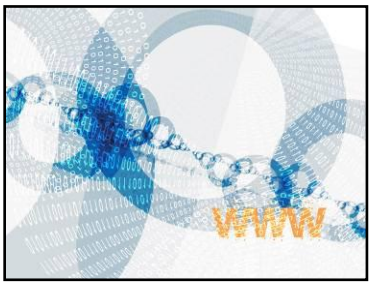
Desmond Kaplan, a 2001 Chemistry graduate, gave a seminar entitled "Analytical Chemist, Biochemist or Physicist?" on October 14. Dr. Kaplan, who received his Ph.D. in analytical chemistry from North Carolina State University is a research scientist at Bruker Daltonics.

Three candidates for the Analytical Chemistry faculty position gave interview seminars in October and November:

> Dr. Katherine Mullaugh, University of North Carolina Wilmington, "Nanoparticles in the Aquatic Environment," October 28.
>
> Dr. John Sivey, Yale University, "Redox Transformations of Emerging Organic Contaminants: From Farm To Faucet," October 31.
>
> Dr. Leonard Demoranville, National Institute of Standards and Technology, "Can Ion Mobility Spectrometry Aid the Investigation of Drug-Facilitated Sexual Assault," November 4.

Campus and Community Outreach

Dr. Alan J. Pribula and Liina Ladon performed the "The Magic of Chemistry" for the Hackerman Academy's Saturday Science program on November 5. The event was well attended by over 500 individuals for the two presentations. The demonstrations included novel color changes, phase changes, temperature changes and, of course, a poof at the end!



DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

Publications and Presentations

Josh Dehlinger and doctorate student Fredrick Brundick's paper "A Nested Set Approach for Building Recursive XML Tree Structures From Relational Databases" was accepted and presented at the 2011 IEEE International Workshop on Network Science, held on June 22-24, in West Point, NY.

Josh Dehlinger and doctorate student Dominic Mezzanotte Sr.'s paper "Applying the Theory of Structuration in Enterprise Architecture Design" was accepted and presented at the 11th International Conference on Software Engineering Research and Practice, held on July 18-21, in Las Vegas, NV.

Josh Dehlinger and doctorate student Fredrick Brundick's paper "IChart: A Tool for Visualizing and Managing Organizational and Force Structure Data" was accepted and presented at the 16th International Command and Control Research and Technology Symposium in Quebec City, Quebec, Canada, June 21-23.

Josh Dehlinger and his doctorate student Jeremy Dixon had their paper "Mobile Application Software Engineering: Challenges and Research Directions" accepted and presented at the Second International Workshop on Mobile Software Engineering held in conjunction with the International Conference on Mobile Computing, Applications and Services on October 27 in Santa Monica, CA.

Robert Hammell and two co-authors from the US Army Research Laboratory had their paper entitled "A Fuzzy-Based Approach to the Value of Information in Complex Military Environments" accepted for publication and presentation at the Fifth International Conference on Scalable Uncertainty Management (SUM 2011) in Dayton, OH from October 10-12.

Robert Hammell and doctoral student Charlie Fowler had their paper entitled "A Hybrid Intelligence/Multi-Agent System Approach for Mining Information Assurance Data" published and presented as part of the 9th ACIS International Conference on Software Engineering, Research, Management & Applications (SERA 2011) held in Baltimore from August 10-12.

Robert Hammell and doctoral student Max McQuighan had their paper entitled "Scope as a Leading Indicator for Managing Software Development," published and presented as part of the 9th ACIS International Conference on Software Engineering, Research, Management, & Applications (SERA 2011) held in Baltimore from August 10-12.

Giovanni Vincenti and Robert Hammell had their paper entitled "Analyzing the Learning Performance of Agents Based on the Wang-Mendel Algorithm" published and presented as part of the IADIS Intelligent Systems and Agents Conference (ISA 2011) held in Rome, Italy from July 20-26.

Yeong-Tae Song will present a book chapter (co-authored by Dr. Yoon at Sookmyung Uuniversity) for the publication titled E-Learning Quality Assurance: A Multi-perspective Approach at GUIDE conference at Rome, Italy from November 18-19. The book will be published right after the conference.

Alfreda Dudley was an invited panelist at the Teaching @ Towson: Online Teaching Faculty Panel on October 28. Dr. Dudley spoke on the topic: "Online Time Management Techniques."

Alfreda Dudley was an invited guest at the National Society of Black Engineers (NSBE) Professional Development Conference held in Baltimore on November 11-13. Dr. Dudley attended the IT Security Forum and the NSBE STEM Forum: Meeting Tomorrow's Challenges.

Chuck Dierbach gave two presentations on October 14 (with colleagues Tina Kelleher of the Department of English, Sam Collins of the Department of Sociology, Anthropology and Criminal Justice, and Gerald Jerome of the Department of Kinesiology). The first presentation, "Interdisciplinary Perspectives on Incorporating Computational Thinking in the Curriculum," was presented at the 33rd Annual Humanities and Technology Association Conference at Bowie State (at 8:30 a.m.). The second presentation, "Interdisciplinary Experiments in and Perspectives on Computational Thinking," was presented at the Consortium for Computing Sciences in Colleges (CCSC) at Marymount University in Arlington, Virginia (at 4:30 p.m.).

Zhen Ling, Junzhou Luo, Wei Yu, Xinwen Fu, Dong Xuan, and Weijia Jia, "A New Cell Counting Based Attack against Tor," accepted to appear in IEEE/ACM Transactions on Networking (ToN), November 2011.

Xiaojing Fan, Xinyu Yang, Wei Yu, Xinwen Fu, and Shusen Yang, "HLLS: A History information based Light Location Service for MANETs," accepted to appear in Computer Networks - Elsevier, October 2011.

Jonathan Lazar, Brian Wentz (former doctoral student and now Frostburg State University professor), and Paul Jaeger (professor at University of Maryland) published a paper titled "Retrofitting Accessibility: The Inequality of After-the-Fact Access for Persons with Disabilities in the United States" in First Monday: Peer Reviewed Journal on Internet Research.

Jonathan Lazar, Heidi Feng, and Libby Kumin (professor at Loyola University Maryland) presented a paper titled "Understanding the computer skills of adult expert users with down syndrome: an exploratory study" at the ACM 2011 Conference on Accessible Technology (ASSETS) in Dundee, Scotland.

Jonathan Lazar also gave presentations about accessibility at:

> Panelist about accessibility at the "More than Words: NIH Celebrates Accessibility" event at the National Institutes of Health, October 31.
>
> "Online Employment Applications and Website Accessibility" presented as a national webinar for the Southeast ADA Center and Burton Blatt Institute of Syracuse University Law School, September 27.
>
> "Best Practices in IT Accessibility from Federal Government and Higher Education" presented at the National Federation of the Blind Web Accessibility Training Day, September 19.

Jonathan Lazar and doctoral student Abiodun Olalere gave a presentation titled "Examining the Accessibility of Online Job Application Processes by Blind Users" at the Maryland Rehabilitation Association and the Division of Rehabilitation Services Training Conference held in Ocean City, Maryland, October 18.

Suranjan Chakraborty's paper with S. Chatterjee and S. Sarker "The Strategic Relevance of IT-enabled Organizational Virtues," has been accepted for the 32nd International Conference on Information Systems , Shanghai, China.

Siddharth Kaza's journal paper (along with P. Hu, H. Hu, and H. Chen) "Designing, Implementing, and Evaluating Information Systems for Law Enforcement – A Long-term Design-science Research Project," was accepted for publication in the Communications of the Association of Information Systems (CAIS)

Jason Koepke (doctoral student) and Siddharth Kaza's work (along with Ahmed Abbasi) "Cyber-security in the Health 2.0 Era: Identifying Fake Medical Websites Using the Network Stack" was accepted for presentation at the INFORMS (Institute for Operational Research and Management Sciences) Annual Meeting in Charlotte, NC.

Services to the Discipline

Robert Hammell reviewed a paper for the IEEE Transactions on Software Engineering, plus papers for the 4th Annual Conference on Information Systems Applied Research (CONISAR 2011), the 15th Colloquium for Information Systems Security Education (CISSE 2011)and the 9th ACIS International Conference on Software Engineering, Research, Management, and Applications (SERA 2011).

Blair Taylor, with Matt Bishop (UC Davis), Diana Burley (George Washington University), Steve Cooper (Stanford University), Ron Dodge (USMA) and Robert Seacord of (Carnegie Mellon/CERT), will be leading a Special Session at SICGSE 2012 entitled "Teaching Secure Coding - Report from Summit on Education in Secure Software."

Wei Yu served as Publicity Chair of Cyber Physical System (CPS) Week 2012, which is a joined forum of four international conferences, including IEEE Hybrid Systems: Computation and Control (HSCC), ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS), ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN), and IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS).

Siddharth Kaza served as an Ad-hoc Associate Editor for the ACM Transactions on Management Information Systems and served on the program committee of the Pacific Asia Workshop on Intelligence and Security Informatics (2012) and the Colloquium for Information Systems Security Education (2011).

MoDev@TU Seminars

Shiva Azadegan, Josh Dehlinger, and Siddharth Kaza along with Zeeshan Aslam (OTS and TU CIS Alumni) started the MoDev@TU seminars and hosted two successful events sponsored by the Department of Computer and Information Sciences. MoDev@TU (http://triton.towson.edu/~smart/modevtu) is focused on software development for mobile devices and is part of a larger effort to bridge Towson University students and the IT industry and to increase opportunities for both groups.

The first event titled "JumpStart your Mobile Development Idea" on September 22, was attended by 55 (with approximately 15 from the industry). The second titled "Mobile Security – The balance between usability and time to market" on October 20, was attended by 63 participants (with approximately 20 from the industry and several former students). The third event on Windows Phone 7 is scheduled on December 5 in YR 459.

MoDev@TU Seminar

Grant & Awards

Robert Hammell is PI for a cooperative agreement (CA) between Towson University and the US Army Research Laboratory that was recently awarded in September 2011. The CA consists of five, one-year tasks aimed at addressing the Value of Information (VOI) problem and other battlefield situation awareness challenges. Funding in the amount of $50k has been received for AY2012; total funding for the proposed five-year project could reach $500k

Wei Yu and Chao Lu submitted a research contract proposal "A Network Sensor-Based Defense Framework for Active Network Security Situation Awareness and Impact Mitigation" of $40,000 to Intelligent Fusion Technology, Inc. as part of a federal SBIR contract. The contract will support two graduate student assistantships.

Announcements

Jonathan Lazar was interviewed on the Brian Lehrer TV show (City University of New York TV) about web accessibility, November 9.

DEPARTMENT OF MATHEMATICS

Grants Awarded

Honi Bamberger has been awarded a $24,000 Baltimore County/Towson University Race to the Top (RTTT) Grant to coordinate on-site mathematics support for teachers at Colgate and Hawthorne Elementary Schools, two schools in northeast Baltimore County. Conducting the support will be Laura Joseph and Rebecca Kinney, two full-time instructors in the mathematics department. Work has begun on this project and will continue throughout the school system's academic year.

Papers Published or Accepted for Publication

Sergiy Borodachov's paper "Optimal cubature formulas related to tomography for certain classes of functions defined on a cube" (joint with V.F. Babenko and D.S. Skorokhodov) was accepted for publication in Jaen Journal on Approximation.

Diana Cheng's paper "Figure Skating," which describes the sport of figure skating in light of the mathematical connections inherent in the activity, was published by Salem Press in both print and CD form in October, in the Encyclopedia of Mathematics and Society.

Michael Krach's paper "Estimation Using Whole Numbers" was published in the 2011 Fall issue (Number 64) of The Ohio Journal of School Mathematics.

Lawrence Shirley is the author of eight entries in the newly-published Encyclopedia of Mathematics and Society, Sarah Greenwald and Jill Thomley(editors), Salem Press (2011).

Mircea Voisei's paper "Counter-Examples in Bi-duality, Triality and Tri-duality" (joint with C. Zalinescu and R. Strugariu) was published in Discrete and Continuous Dynamical Systems, Vol. 31, No. 4 (2011), pp. 1453--1468.

Mircea Voisei's paper "A counter-example to minimal distance between two non-convex surfaces" (joint with C. Zalinescu) was published in Optimization, Volume 60, Number 5 (2011), pp. 593—602.

Mircea Voisei's paper "Some remarks concerning Gao-Strang's complementary gap function" (joint with C. Zalinescu) was published in Applicable Analysis, Volume 90, Number 6 (2011), pp. 1111—1121.

Mircea Voisei's paper "Counterexamples to some triality and tri-duality results" (joint with C. Zalinescu) was published in the Journal of Global Optimization, Volume 49, Number 1 (2011), pp. 173–183.

Presentations and Talks

The 2011 Annual Conference of the Maryland Council of Teachers of Mathematics (MCTM) was held on October 21.

- Honi Bamberger's session, "Common Misconceptions about Mathematics in Elementary School: Some Causes and Cures" showcased the books that she co-authored last year. The MCTM, in an effort to continue the dialogue about mathematics misconceptions, gave everyone in attendance a copy of the resource book. Two webinars will be shared, one in November and one in January, where additional misconceptions will be discussed.
- Linda Cooper presented activities that integrated mathematics with other STEM disciplines in "Put on Your Boots and Take Mathematics Outside."
- Mike Krach presented "It's Problem Solving Time!" featuring classroom-tested activities that could be used to enhance problem-solving abilities. Problems were geared toward grades 3-8.
- Todd Moyer presented a session on the van Hiele Model for Geometric Thought. His session included student misconceptions of geometry content, an outline of the model, and examples of lessons.
- Ming Tomayko presided over the session "Discussion of Elementary Math Methods" attended by methods instructors who shared their course experiences.

On October 24, Honi Bamberger delivered a keynote address to the entire faculty at Prospect Mill Elementary School, in Harford County. This Professional Development School (PDS) has as one of its goals for the year to improve mathematics instruction throughout the school. Dr. Bamberger's topic, "Building Conceptual Understanding Before Procedural Understanding" kicked off the professional development that these teachers will participate in throughout the year.

Diana Cheng presented her research, "Maintaining Cognitive Demands of Tasks through Small Group Discussions in Preservice Elementary Mathematics Classrooms," at the 33rd Annual Conference of the North American Chapter of the International Group Conference in Reno, NV on October 23. She also presented this talk at a mathematics education research seminar on September 16 at St. Joseph's University in Philadelphia, PA.

Gail Kaplan organized a panel discussion on "Building Programs to Increase Student Success in Secondary Mathematics and Life" at the annual College Forum in New York City on October 25. The panelists included Dr. Michael Krach and Dr. Todd Moyer as well as Brian Dulay from the Maryland State Department of Education, and Matt Estelle, a mathematics teacher at Dundalk High School. All panelists shared their unique perspectives on the series of grants led by the Towson University faculty to enhance student performance and teacher knowledge in mathematics over more than six years.

Angel Kumchev gave an invited talk on "Sums of almost equal squares of primes" at the Third Montreal-Toronto Workshop on Number Theory, held at the Fields Institute in Toronto, Canada, October 7-9.

Workshops

Honi Bamberger conducted the workshop, “Activities That Build Number Sense” for members of the Tutoring Network of Baltimore (October 26).

Diana Cheng presented a series of middle-school level mathematics activities to in-service teachers at the National Council of Teachers of Mathematics conference in Atlantic City, NJ on October 19. The activities were jointly presented with Johanna Bunn of Boston University and was entitled, “The Mathematics Behind Sports.”

Diana Cheng, with Boston University’s Johanna Bunn, presented proportional reasoning problems which middle school teachers can use with their students. The presentation was entitled, “Proportional Reasoning: Building Understanding Beyond Cross Products,” and was given at the National Council of Teachers of Mathematics regional conference in St. Louis, MO on October 27.

Gail Kaplan led a professional development session at Don Bosco Cristo Rey High School in Takoma Park on how to effectively implement student centered classrooms in secondary mathematics - November 5.

Gail Kaplan led a one day AP Calculus workshop for teachers in the Middle States Region in Salisbury, Maryland - October 21.

Maureen Yarnevich presented a workshop called “Problems Students Want to Solve: Getting beyond ‘Two Trains Leave’ ..." at the National Council of Teachers of Mathematics Regional Conference , Atlantic City - October 21.

Refereeing, Reviewing, and Panel Service

Diana Cheng reviewed research reports submitted for consideration at the 33rd Annual Conference of the North American Chapter of the International Group Conference that took place on October 20-23.

Miscellaneous Professional Activities

Diana Cheng was appointed to the United States Figure Skating Association’s Collegiate Committee; thus far, she has been analyzing mathematical issues that arise at the intercollegiate team national level of competition, which previously were unresolved -- such as uneven distribution of placement points available to collegiate skaters in certain events, and proposing possible solutions. This work is relevant to universities like Towson which have figure skating clubs who actively compete on the intercollegiate circuit.

As a member of the Advisory Council for the College Board Middle States Region, Gail Kaplan attended the fall meeting in New York City on October 25–26.

Student Clubs

On October 12, the Mathematics Education Club (MEC) had its monthly meeting with guest speaker, Ms. Laura Joseph, a lecturer in the department of mathematics. Ms. Joseph’s topic, “It Makes Sense to Reinforce Number Sense with Games” had 20 TU students interacting with one another as they played a variety of games for elementary students. Faculty advisor, Honi Bamberger, had students on a waiting list to attend this meeting.

Mathematics Department Colloquia Seminars and Talks

The Approximation Theory/Financial Mathematics (ATFM) seminar continued its work in October. A series of talks was given by graduate student Leopold Nguetgnia.

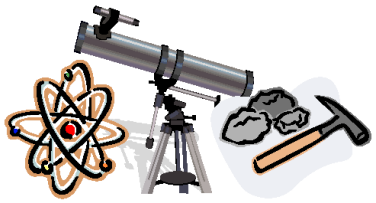
On October 19, Dr. Mattias Gobbert from the University of Maryland, Baltimore County presented a colloquium lecture entitled “Efficient Parallel Computing of Finite Element Methods for Long-Time Simulations of Calcium Waves in a Heart Cell.”

On November 9, Ms. Bette Kundert, Educational Specialist with the Maryland State Department of Education, presented a colloquium on “The road ahead and the tools to navigate it: The Common Core and PARCC assessments & their impact on all of us.”

Upcoming colloquium talks:

On November 17, Dr. Christian Altomare (adjunct faculty member of the Towson University Mathematics Department) will present a colloquium entitled “Proving Infinitely Many Structure Theorems at Once.”

On December 1, Dr. Amanda Jansen of the University of Delaware will present a colloquium discussing her research on middle school mathematics classrooms.



DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Grants and Grant Proposals

Dr. Asli Sezen and Dr. Joel Moore submitted a proposal to the TU FDRC: Sezen, A., & Moore, J., “Novice Teachers' Learning to Teach Plate Tectonics in Data Rich Environments.”

Dr. Jia-An Yan received start-up computer time from the National Institute for Computational Sciences (NICS) (50000 SUs in total) and Texas Advanced Computing Center (TACC)(50000 SUs in total).

Dr. Rommel Miranda and Karen Cimino were awarded a $910 Service-Learning Grant to provide 16 hours of informal science education experiences at the Maryland Science Center for pre-service teachers enrolled in the course “SCIE 170 Experiences in STEM Outreach, Teaching and Learning.”

Student, Kilhwan Wang, was awarded an undergraduate research grant from the TU undergraduate research committee: “Fiber-Coupled Laser for Micro-Raman Spectroscopic Characterization of Graphene.” (Faculty Mentor: Dr. Jeff Simpson)

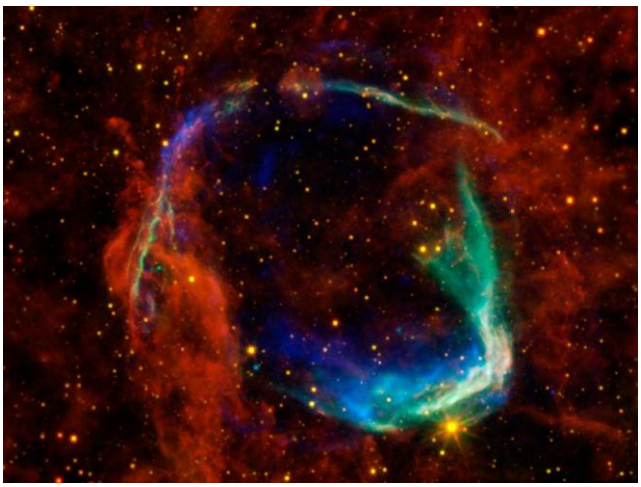
Publications

Dr. Asli Sezen published a paper: Duschl, R. A., Maeng, S., Sezen, A. (2011). “Learning progressions and teaching sequences: a review and analysis,” Studies in Science Education, 47 (2), 119–177.

Dr. Asli Sezen published a paper: Sezen, A., Tran, M., McDonald, S. P., & Kelly, G. J. (in press) “Pre-service science teachers’ reflections upon their micro-teaching experience: an activity theory perspective.” Research in Science Education.

Dr. Phuoc Ha's paper “Applications of the leading-order Dokshitzer-Gribov-Lipatov-Altarelli-Parisi evolution equations to the combined HERA data on deep inelastic scattering” co-authored with M.M. Block, L. Durand, and D. W. McKay, was published in Phys. Rev. D 84, 094010 (2011).

P. Ghavamian was collaborator in a project which was featured in a NASA press release and carried by hundreds of news sources world-wide: http://www.nasa.gov/mission_pages/spitzer/news/spitzer20111024.html In this project, it is suggested that a supernova observed in 185 AD by Chinese astronomers was a Type Ia supernova, produced in a binary star system consisting of a white dwarf star and its massive companion. The white dwarf star exploded off-center in the bubble after accreting matter from its companion.



Press Release image of the supernova observed in 185 AD by Chinese Astronomers. Dr. Parviz Ghavamian is a collaborator on this project.

Presentations and abstracts

Dr. Asli Sezen presented a paper at the following meeting: Duschl, R. A., Maeng, S., Sezen, A. (2011). "Learning progressions and teaching sequences: a review and analysis," European Science Education Research Association Annual Conference, Lyon, France

Dr. Jennifer Scott presented a research poster entitled "HST/COS Observations of Intrinsic Absorption in Mrk 876" at the AGN Winds in Charleston Meeting, held Oct. 15-18 in Charleston, SC.

Dr. Vera Smolyaninova submitted an abstract entitled "Trapped Rainbow Techniques for Spectroscopy on a Chip and Fluorescence Enhancement" by Vera N. Smolyaninova, Igor I. Smolyaninov, Alexander V. Kildishev and Vladimir M. Shalaev to CIMTEC 2012 - 4th International Conference "Smart Materials, Structures and Systems," Montecatini Terme, Italy

Dr. Ron Hermann presented a manuscript entitled, "Views of evolution: A comparison of elementary education majors and their peers," at the 2011 Mid-Atlantic Association for Science Teacher Education Regional Conference.

Dr. Steven Lev and undergraduate geology major Julie New made a presentation for the UEBL at the North American Meeting of the Society of Environmental Toxicology and Chemistry held November 13-18 in Boston.

- S.M. Lev and S.M. Monk, "Toxicological applications of cryogenic laser ablation inductively coupled plasma time of flight mass spectrometery (CLA-ICP-TOF-MS)"

- J.J. New, J. W. Snodgrass, D.R. Ownby, R. E. Casey and S. M. Lev, "A stable isotope approach to investigating zinc toxicity and internal transport in barley (*Hordeum vulgare L.*)"

Dr. Rommel Miranda presented a manuscript entitled, "An Integrated Instructional Approach to Facilitate Inquiry in the Classroom," at the 2011 Mid-Atlantic Association for Science Teacher Education Regional Conference.

Dr. Rommel Miranda and Dr. Ronald Hermann facilitated a workshop entitled, "Implementing Open Inquiry: Ideas for Engaging Students," for 23 in-service middle-school and high-school teachers participating in the Baltimore Excellence in STEM Teaching project.

Dr. Rommel Miranda facilitated a workshop entitled, "Science Centers and Teachers Working Together," at the 2011 Association of Science Technology Centers Conference in the Maryland Science Center.

Dr. Rommel Miranda's and BEST Project Director, Julie Damico's research paper proposal entitled, "Science Teachers' Beliefs about the Influence of their Summer Research Experiences on their Pedagogical Strategies," was accepted for the 2012 National Association for Research in Science Teaching International Conference in Indianapolis, Indiana.

Dr. Rommel Miranda's research paper proposal entitled, "Urban High School Teachers' Beliefs of Essential Science Teaching Dispositions," was accepted for the 2012 Association for Science Teacher Education International Conference in Clearwater, Florida.

Community Engagement and Professional Service

Dr. Phuoc Ha reviewed an article for International Journal of Modern Physics A.

Dr. Vera Smolyaninova reviewed a paper for Physical Review Letters and a paper for Journal of Optical Society of America B.

Dr. Ron Hermann served as co-coordinator for the History, Philosophy and Nature of Science thread of the Association for Science Teacher Education 2012 International Conference coordinating the review of 14 manuscripts by three peers.

Dr. Ronald Hermann and Dr. Rommel Miranda were unanimously recommended by the Association for Science Teachers Education (ASTE) Publications Search Committee to the ASTE Board of Directors to serve as the new Co-Editors for the ASTE Newsletter. Drs. Hermann and Miranda will serve a 3.5 year term (July 2012-December 2015).

Dr. Rommel Miranda reviewed 5 conference proposals for the 2012 National Association for Research in Science Teaching International Conference.

On October 20, Dr. Pamela Lottero-Perdue was an invited participant for the Engineering is Elementary (EiE) training for MSDE's Elementary STEM Network at the Howard County Public School offices in Colombia, MD. She shared her experiences using EiE curricula, integrating EiE units within science instruction, and providing professional development for teachers with teachers, administrators, and higher education representatives from across Maryland.

On November 4, Dr. Pamela Lottero-Perdue provided a total of 6 hours of professional development (PD) to approximately 60 (total) first and second grade teachers in Harford County Public Schools learning the science-engineering-integrated units that are a part of the SySTEmic Project. She co-taught with second grade teacher, Ms. Ashley Black (Darlington Elementary), and first grade teacher, Ms. Tracey Comer (Prospect Mill Elementary), and was assisted by many other classroom teachers familiar with the units. Other master teachers for the project delivered PD to the rest of the approximately 260 (total) first and second grade teachers in the county.

Dr. Jeff Simpson was recently elected as a Councilor for Zone 4 of the Society of Physics Students (SPS). Zone 4 includes colleges and universities in Maryland, Virginia, and the District of Columbia. Dr. Simpson represented Zone 4 at the SPS National Council meeting in September.

Dr. Jeff Simpson represented Towson University at a meeting to encourage interaction between universities and the National Institute of Standards and Technology (NIST) in Gaithersburg, MD. Activities included a meeting with NIST Director Dr. Pat Gallagher, tours of NIST research facilities, and information sessions on NIST opportunities for student researchers.

Dr. David Schaefer served on an NSF review panel for the S-STEM program from September 22-23.

ENVIRONMENTAL SCIENCE AND STUDIES PROGRAM

Oswaldo Carpio, a recent graduate from the Masters in Environmental Science program has had his thesis work published in the American Journal of Environmental Sciences with Dr. Brian Fath as coauthor. The full citation is Carpio, O. V. and B. D. Fath. 2011. "Assessing the environmental impacts of urban growth using land use/land cover, water quality and health indicators: A case study of Arequipa, Peru." American J. of Environmental Sciences, 7:90-101 [http://thescipub.com/abstract/10.3844/ajessp.2011.90.101]

PLEASE JOIN US! On Friday, December 16 from 10:15-12:15, there will be a poster presentation in the Susquehanna Terrace by the students in the Senior Seminar class. Their project this year concerns increasing the sustainability of campus food services. The students will be presenting the results of their exploration of the environmental impacts associated with food services and suggestions as to how to reduce that impact to the public.

MOLECULAR BIOLOGY, BIOCHEMISTRY BIOINFORMATICS (MB3) PROGRAM

On Friday, September 30, the MB3 club fall seminar series started. Ms. Lorie Logan-Bennett, M.A , Director of the Career Center spoke about the services available at the Career Center and the best way to prepare resumes and cover letters.

On October 14, the MB3 club seminar presenter was Dr. Petra Tsuji from the TU Department of Biological Sciences. Dr. Tsuji presented her work on the role of dietary selenium in cancer prevention.

The third seminar of the semester, held on October 28, featured two student presenters. Moses Demehin discussed his work on the role of calcium signals and nuclear reorganization in dedifferentiated skeletal muscle cultures. Marie Valerie Toure presented her work on the quantification of EBV genome copy number in patients with HIV related Kaposi's Sarcoma.

SCHOOL OF EMERGING TECHNOLOGIES

In October, Towson University launched the School of Emerging Technologies, an institution focused on developing and supporting innovative, integrative and interdisciplinary programs at the undergraduate through doctoral levels. The School of Emerging Technologies, or SET, will be administratively housed within the Jess and Mildred Fisher College of Science and Mathematics, and located on the third floor of 7800 York Road. Its aim is to produce college graduates and postgraduates with marketable skills for career growth in technology-driven fields.

Serving both faculty and students, the SET will collaborate with public, private and governmental partners to address the professional development needs of the technical workforce, and establish K-12 outreach initiatives to encourage more students at the pre-college level to pursue technology-based careers. The unit will also serve as an incubator for interdisciplinary faculty and student research and other forms of collaborations on the study, development and application of the emerging technologies that most impact society at work, at home and in the community.

The School of Emerging Technologies held its first public event, a lecture by Andrew Hoog, Chief Investigative Officer and co-Founder of viaForensics. He gave a talk on the challenges of the forensics of mobile devices, especially Android and iOS devices.

CENTER FOR SCIENCE AND MATHEMATICS EDUCATION

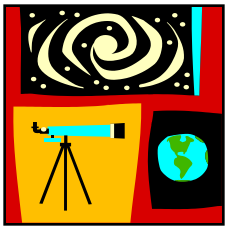
The Center continues a full and active schedule under the leadership of co-Directors Dr. Sarah Haines and Dr. Linda Cooper. In September she attended a Global Water Education Conference in Montana. Dr. Haines and grad students, Natalie Crabbs and Tammy Newcomer, attended the National Science Foundation MSP meeting at The Kellogg Biological Station at Michigan State University.

In October, Dr. Haines, with R.E.T. (Research Experience for Teachers) Shanmugavel Rajendran, gave a presentation on student misconceptions about carbon cycling at the North American Association for Environmental Education annual conference in Raleigh, N.C. Dr. Haines also presented results of her NSF work at the Association for Science Teacher Education meeting in New York and in November she is attending the National Science Teacher's Association meeting in New Orleans to present some of her work there.

In September, Bess Caplan and Tammy Newcomer visited a high school class at Southside Academy to observe a lead teacher pilot the first teacher-led substances in water teaching experiment, part of our NSF grant work. This lesson investigates how substances such as fertilizer, oil, and road salt move through the schoolyard. Students examined evaporation by constructing solar stills; explored surface runoff using a watershed model; delved in groundwater by making soil columns; and inspected how different substances affected celery.

October 19 at the Baltimore Ecosystem Study annual meeting at the Cylburn Arboretum in Baltimore, Bess Caplan and Tammy Newcomer gave a talk "Developing learning progressions for student understanding of water systems in Baltimore." Natalie Crabbs, Julie Baynard, and Tammy Newcomer presented a poster on the "Baltimore Partnership for Environmental Science Literacy."

October 24-27, Bess Caplan, Tammy Newcomer, Natalie Crabbs, and Julie Baynard went to Baltimore Talent Development High School to assist a participating teacher with implementation of the MSP Water Teaching experiment in her four Biology classes. The teacher led her students in a hands-on teaching experiment, tracing water pathways through their schoolyard environment.



HACKERMAN ACADEMY OF MATHEMATICS AND SCIENCE

Saturday Morning Science at Towson University

The Hackerman Academy's Saturday Morning Science began its fall series on September 10 with Dr. Lori Feaga from the University of Maryland presenting "Exploring Comets: The NASA EPOXI Mission." On September 24, Dr. Don Thomas presented a program in cooperation with Cook Library on "The Engineering and Construction of the Statue of Liberty." On October 8, a living history presentation by Dean Bennett was made on "The Discoveries and Inventions of Thomas Edison" and on October 22, Don Thomas presented on "Living and Working in Space." On November 5, Towson University's own Dr. Al Pribula and Ms. Liina Ladon performed their "Magic of Chemistry" to an enthusiastic audience of 525 young students and parents. Total attendance for these five fall programs was 2,075.

Fisher College chemists Dr. Al Pribula and Liina Ladon amazed the Saturday Morning Science audiences with their "Magic of Chemistry" presentations on November 5 in Smith Hall.

Hands-On Science

Following most of the Saturday Science programs this fall, *Hands-On Science* activities were held for 25-30 elementary and middle school students. These hour-long activities allowed the students to explore topics in more detail with themes related to each of the programs at Saturday Morning Science. On September 24, students were able to create their own metal imprints of the Statue of Liberty along with other activities including touring the special traveling exhibit on Emma Lazarius at Cook Library. On October 8, Sherry Leslie, one of the Fisher College Noyce Scholars, led a hands-on activity exploring the process of invention. On October 22, Mr. Ray Miller from the Aberdeen Proving Ground led an activity looking into rocket propulsion. On November 5, he also led the hands-on activity involving chemical reactions.

Outreach Activities

The Hackerman Academy visited the following schools, institutions, and community groups and made presentations on career planning, the Space Shuttle, and science in space reaching nearly 2,000 students, teachers, family members, seniors, and community leaders. School visits covered Baltimore City and Baltimore, Harford, Howard, Carroll, Anne Arundel, and Frederick counties illustrating the breadth of the outreach being done by the Hackerman Academy.

BEST Program School Visits :

In conjunction with Julie Damico and the BEST Program, classroom visits were held at the following schools at the request of the current class of BEST teachers:

9/14 Presentation on the human body in space to 114 students in grades 9-12 at Perry Hall High School (Baltimore County) taking Honors Anatomy and Physiology and AP Biology.

9/21 Presentation on "Spaceship Earth" to 22 9th grade students in the Environmental Science Program at Western School of Technology and Environmental Science (Baltimore County).

9/22 Presentation on "Spaceship Earth" to 22 9th grade students in the Environmental Science Program at Western School of Technology and Environmental Science (Baltimore County).

10/5 Presentation on living and working in space to 125 6th grade students at the Bluford Drew Jemison STEM Academy WEST (Baltimore City).

10/10 Two presentations on achieving your dream to 46 9th grade students in Algebra I and Earth and Space Sciences classes at the Crossroads Center School (Baltimore County).

Students from BEST Program teacher Mathew Doty's class at The Crossroads Center School learn firsthand about what it is like in space.

Additional School Visits:

9/19 Two presentations on spacesuit technology to 50 9th grade students at South River High School (Anne Arundel County) as part of the "*Have Spacesuit Will Travel"* Program.

9/20 Two presentations on spacesuit technology to 52 9th grade students at South River High School (Anne Arundel County) as part of the "*Have Spacesuit Will Travel"* Program.

Teacher Rob Rice and 9th grade student in the STEM program at South River High School check out a Russian spacesuit as part of the Hackerman Academy *Have Spacesuit Will Travel* program. Over 200 students in Anne Arundel County are currently participating in the program.

9/27 Presentation on achieving your dream to 12 middle school students in the Harford County Public Schools Alternative Education Program.

10/3 Presentation on living and working in space to 24 4th and 5th graders at Spring Ridge Elementary School (Frederick County) as part of their after-school STEM Club.

10/4 Hands-on activity exploring surface tension and liquids in space for 24 4th and 5th graders at Spring Ridge Elementary School (Frederick County) as part of their after-school STEM Club.

10/11 Presentations on the importance of STEM education to 200 students and parents at STEM Night at Brunswick Elementary School (Frederick County).

10/13 Three presentations on the importance of STEM education to 300 students and parents at STEM Night at Ilchester Elementary School (Howard County).

10/14 Four presentations on living and working in space to 250 K-8 students at Federal Hill Prepatory School (Baltimore City).

10/19 Participated in mock-interviews for senior interview day at Loch Raven High School (Baltimore County).

10/27 Two presentations on spacesuit technology to 42 9th grade students at North County High School (Anne Arundel County) as part of the "*Have Spacesuit Will Travel"* program.

10/28 Two presentations on spacesuit technology to 46 9th grade students at North County High School (Anne Arundel County) as part of the "*Have Spacesuit Will Travel"* program.

10/31 Review of 40 student "Moon Mission" projects at South River High School (Anne Arundel County) as part of *Have Spacesuit Will Travel* program.

11/2 Two presentations on living and working in space and future NASA missions to 85 forth graders at Hollifield Station Elementary School (Howard County).

11/3 Review of 40 student "Moon Mission" projects at South River High School (Anne Arundel County) as part of *Have Spacesuit Will Travel* program.

11/4 Presentation on living and working in space to 40 students at the Crossroads Home-school Co-op (Baltimore County).

11/7 Presentation on living and working in space to 125 5th graders at Spring Garden Elementary School (Carroll County).

11/9 Interim review of 50 9th grade STEM student "Futuristic Spacesuit Design" projects at North County High School (Anne Arundel County) as part of the *Have Spacesuit Will Travel* program.

11/10 Interim review of 50 9th grade STEM student "Futuristic Spacesuit Design" projects at North County High School (Anne Arundel County) as part of the *Have Spacesuit Will Travel* program.

Additional Community Outreach:

10/14 Participated in informal science education workshop at the Maryland Science Center discussing the role that museums and science centers play in informal science education.

11/1 Presentation on living and working in space and career planning to 175 middle and high school students at the Enoch Pratt Free Library – Southeast Anchor Branch (Baltimore City). Students from 5 Baltimore City middle and high schools attended.

Advisory Board Participation:

10/11 Participated in teleconference for the NASA funded National Space Biological Research Institute (NSBRI) advisory board.

10/18 Attended the first meeting of the Maryland State Department of Education State Leadership Team for the Development of Next Generation of Science Standards.

Hackerman Academy in the News

9/17 *"Riviera Beach gets out of this world visitor"* article in the Maryland Gazette regarding one of the Hackerman Academy school visits to Riviera Beach Elementary School on August 25.

10/20 "A Real Astronaut" photo in The Brunswick Citizen newspaper regarding Hackerman Academy's visit and presentation at Brunswick Elementary School STEM Night on October 11.

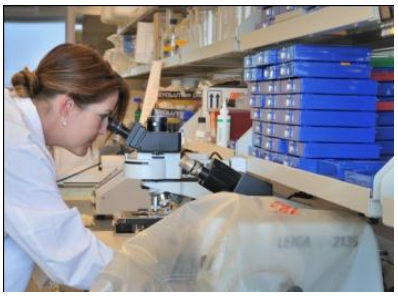
10/24 "Living and Working in Space" photograph in *The Towerlight* from Saturday Morning Science presentation on October 22, 2011.

11/7 "Magic moves beyond 'rabbit out of a hat' " photograph in *The Towerlight* from Saturday Morning Science presentation on November 5, 2011.

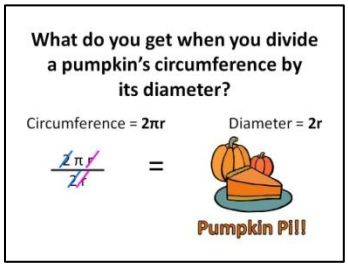
BALTIMORE EXCELLENCE IN STEM TEACHING PROJECT (BEST)

The first annual BEST Project Research Symposium was held in Smith Hall on September 17. The 23 BEST Teachers presented summaries of their summer research projects as well as ideas for translating research content, skills, and career awareness into real-world inquiry-based instruction for their students. Approximately 70 invited guests including research mentors, school system STEM supervisors, school administrators, and family members were able to join us for the Symposium. BEST Teachers' research project summaries, including their personal and professional responses to the internship experience, are available through our teacher-intern webpage.

http://www.towson.edu/cse/best/2011-2012_teacher_interns.asp



During the 2011-2012 school year, BEST Project teachers will complete several outreach activities designed to "build bridges" between their summer research experiences and the educational community. The summer internship is the foundation of their Curriculum Implementation Plan (CIP), a collection of lessons that translates the teachers' enhanced content, skills, and/or career-awareness into engaging, real-world activities for their students. Through presentations to their school and school district colleagues, BEST Teachers will share how their summer research experiences have affected how they view STEM teaching and learning. Academic year workshops aim to further teachers' pedagogical knowledge of inquiry-based learning, instructional technologies, and formative assessment strategies. These learning community meetings also provide support to BEST teachers as they develop their CIPs and plan ways to continue collaboration with their research mentors. BEST Teachers earn up to $1,000 for participating in school-year workshops and 5 MSDE CPD credits for successfully completing all program requirements.



Our first Learning Community Meeting was held on Saturday, October 15. Special thanks to Drs. Ron Hermann and Rommel Miranda for their presentation on "Implementing Open Inquiry in the Science Classroom." Teachers worked in small groups to share their Curriculum Implementation Plan ideas and ended the day with pumpkin-themed inquiry-based learning activities.

We are currently recruiting BEST Project applicants and BEST Project Research mentors for the 2012-2013 Cohort. Research mentors receive a $2,500 stipend for their work with the teacher-intern during the summer as well as $1,000 to defray the cost of supplies directly related to the teacher's research project. For information on the duties of a BEST Project mentor as well as an application, please visit our website www.towson.edu/cse/best. We would love to have the involvement of more FCSM faculty!

MPIRE PROJECT

Project Description

Towson University (TU) and Baltimore City Public Schools (BCPS) are partnering in a Middle School Physics Instruction and Readiness (MPIRE) project to provide physics and physics pedagogy professional development for middle school science teachers. This project is being funded by a $170,000 Maryland Higher Education Commission Improving Teacher Quality (ITQ) grant.

The project consists of five-day professional development (PD) institutes during two consecutive summers with PD meetings and co-planning/co-teaching support for teachers during the school year. A total of 98 hours of professional development will be provided to 24 teachers to improve physics content knowledge so that they will be better prepared to teach middle school physics.

Drs. Hermann and Sandifer serve as co-directors of the project and work directly with the BCPS science supervisor (Ekaterina Denisova) and middle school science coordinators. The physics content training is collaboratively planned by all project partners, and is connected to the Maryland State standards, the BCPS Scope and Sequence standards, and the Common Core mathematics and English-language literacy standards.

Training will be delivered by the nationally recognized Physics Teaching Resource Agents (PTRA), the project directors, Dr. Robert Blake (from the College of Education), and BCPS personnel.

MPIRE Project: Summer and Fall 2011 Activities

Different activities from Towson's MPIRE project are highlighted each newsletter. In this edition, the summer and fall 2011 project activities are described.

Summer and Fall 2011 Activities:

- Multiple summer planning sessions were held. Dr. Cody Sandifer, Dr. Ron Hermann, Ekaterina Devisova (BCPS science coordinator), Criselda Belarmino (BCPS teacher and coach), and Keisha Williams (BCPS middle school coordinator), and Jim Nelson (PTRA director) attended these meetings.
- A five-day physics and physics pedagogy summer institute on kinematics was held in August. Twenty-four MPIRE teachers attended the institute.
- A one-day Saturday follow-up session on physics lesson implementation and Newton's Laws was held in September.
- Ekaterina Denisova continues to co-plan physics lessons with MPIRE teachers. Project funds were used to purchase physics teaching equipment, which is now housed in BCPS and is available to borrow by MPIRE participants.

PhysTEC – PHYSICS TEACHER EDUCATION COALITION

Project Description

The Physics Teacher Education Coalition (PhysTEC) project is a nationwide project that has the mission of improving and promoting the education of future physics teachers. At each of the PhysTEC sites around the United States, physics faculty, education faculty, and a full-time teacher-in-residence (TIR) work together to improve secondary physics education programs.

Towson University's current PhysTEC project will run from 2010-2013. The project team consists of Dr. Ronald Hermann and Dr. Cody Sandifer, two full-time science education faculty in the Department of Physics, Astronomy & Geosciences (PAGS), and a full-time TIR. The 2011-2012 TIR is James (Jim) Selway, a former Baltimore County physics teacher of 30+ years.

At Towson, the PhysTEC project team is making a concerted effort to expose physics majors early in their academic career to (a) the possibility of teaching as a career and (b) actual teaching experiences at both the K-12 and university levels. This is being done through general advertising (posters, open meetings, classroom visits), school- and outreach-based early teaching courses (SCIE 170), and the STEM-TC learning assistant program.

Other efforts are geared towards helping our education majors develop a greater sense of belonging to an educational community. These efforts include the creation of a comprehensive physics education web site, the establishment of a new secondary STEM education club, formal and informal discussions with the physics TIR, and the funding of small grants that allow education majors to attend and present at NSTA and AAPT meetings.

Please visit the national and local web sites for more information about PhysTEC:

http://www.phystec.org (national)

http://www.towson.edu/fcsm/community_engagement/PhysTEC/index.asp (local)

PhysTEC Project: Late Spring, Summer, and Fall 2011 Activities

Different activities from Towson's PhysTEC project are highlighted each newsletter. In this edition, the late spring, summer, and fall 2011 project activities are described.

TIR Jim Selway gives a physics demonstration to Mary Stapleton (Director of Biotechnology Education and Outreach) and a MAST teacher

Tyler Goehringer, Dana Malloy, and Mark Muneses (NTSA student chapter members) at MAST

- *Baltimore County Professional Development* – On August 24, a professional development presentation was given to Baltimore County Physics teachers by Mr. Jim Selway and Mr. Steve Shaw, one of our TAG members. The topic is "Approaching Simple Circuits Using the Current Model." It is based on Physics research done by Dr. Lillian McDermott and Dr. Peter Shaffer of the University of Washington. This type of presentation allows a chance for the PhysTEC recruitment message to be presented once again to high school Physics teachers.
- *MAST Conference* – On October 21, a session similar to the one described above was given at the annual Maryland Association of Science Teachers (MAST) conference to a group of Physics teachers from across Maryland. Mr. Jim Selway and Mr. Tyler Goehringer, a Secondary Physics Education major, ran the session.

Additionally, Dr. Ron Hermann brought three student members of our student chapter of NSTA and manned our booth which distributed information about TU's STEM program and a laminated poster on solving Physics problems that was developed in our PhysTEC program.

- *AAPT/PhysTEC Conference*- On May 19– 23, Dr. Ron Hermann and Mr. Jim Selway attended the Physics Teacher Education Coalition Conference in Austin, Texas. The conference had stands on Learning Assistants, building physics teacher education programs, and recruiting physics teachers. We also gave a presentation on all aspects of the educational outreach programs at TU, including its genesis and growth, the various structures, the student involvement, the feedback from the students and then led a discussion of the value of early teaching experiences.
- *AAPT/PhysTEC Conference*- On July 29-31, Mr. Jim Selway attended the PhysTEC conference in Omaha Nebraska. The conference focused on the successes and future needs of the Physics Teacher in Residence program. It was structured so that the experienced TIRs could orient the new TIRs and pass on the benefit of what they learned in their year as a TIR.
- *Teachers Advisory Group* – The Teachers Advisory Group (TAG) held a meeting on October 13. Its function is to promote communication and collaboration between Towson University and the Physics teachers of the surrounding local educational systems. We discussed the possible workshops and sessions that would appeal to the local Physics teachers and the mostly likely dates and times.
- *Monthly Email to Area Physics Teachers* – Newsletter are continuing to be sent out to the forty Physics teachers in Baltimore County schools. It contains information about the PhysTEC project at TU, several websites where free Physics posters were available, a pdf file of our problem solving poster, a site where enrichment material on the design of guitar pickups could be forwarded to students studying electromagnetism, information about awards to Outstanding Physics teachers, and a note about contacting us about any student interested in teaching Physics as a career.
- *STEM web page* - We are currently developing a STEM page for Towson's website that will give a quick overarching view to all the STEM programs that Towson offers.

STEM Leaders

The STEM leaders had their inaugural Halloween party on October 27, which was a great success. The costume contest was judged by faculty and the winner was Darwin and his Pea.

TOPS (Towson Opportunities in STEM)

Outreach

On September 21, TOPS staff assisted students from the Building Steps Program in completing their 2011 Common App—an undergraduate admissions application that students may submit to any of the 456 participating colleges. An additional 45 students from Building Steps made a visit to campus on October 11 in which TOPS Program members Temi Adelwale (sophomore), Jessica Connor (junior), Bria Phair (junior), Robert Plummer (junior), and Jasmine Williams (sophomore) served as tour guides. This visit included a cadaver demonstration by Dr. Jack Shepherd (Biology), a visit to the Planetarium by Dr. Alex Storrs (PAGS), and a visit to the greenhouse with Dr. Vanessa Beauchamp (Biology).

On October 6, TOPS students in collaboration with representatives from the Minorities in Science and Technology Club (MSTC), National Society for Collegiate Scholars (NSCS), and Enrollment Management, began weekly after-school supplemental learning experiences for middle school students at the Northwood-Appold Community Academy (NACA). Here, TOPS representatives facilitated STEM-related learning activities for students who have shown an early interest in STEM fields.

Programming

Returning TOPS students were able to meet the new TOPS cohort and re-connect with one another on September 30 during a 3.5 hour Challenge Course facilitated by Campus Recreation Services. This annual event is one of the ways the TOPS Program continues to build and maintain a strong sense of community, support, and respect for the uniqueness of individuals.

On October 17, returning TOPS students took part in a Resume Writing Seminar conducted by Lorie Logan-Bennett, Director of the Career Center. This seminar provided students with information on creating effective marketing tools for internships, graduate school, or employment by demonstrating the importance of proper resume construction.

Residential Learning Community

Also in October, the TOPS affiliated STEM Residential Learning Community hosted “Friday on the 13th Floor,” a Halloween celebration that encouraged students to dress up and interact with festive demonstrations of scientific principles. Students experienced the properties of a Non-Newtonian fluid, the radioactive decay of Candium, the creation of a polymer, and the florescent properties of Quinine.

November 4 marked the beginning of the new, informal, “Meet the faculty” seminar series. These seminars allow TOPS students to meet faculty members from STEM-related disciplines and gain insight into how they became interested in their fields, what their research interests are, and the exciting things that are happening in their content areas. Dr. David Hearn (Biology) was the first faculty member to be highlighted in this series and, through his presentation, piqued the research interests of quite a few students.