PROJECT NExT
NEW EXPERIENCES IN TEACHING
2011-2012 FELLOWS
Workshop held in Madison, WI
July - August, 2012
A program of
THE MATHEMATICAL ASSOCIATION OF AMERICA

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Project NExT: New Jobs, New Responsibilities, New Ideas
Program for the Workshop in Madison, WI
August 2012

Project NExT registration is in the main lobby of Pyle Center.

TUESDAY, JULY 31

8:00 - 10:00 pm   Social Event for 2011-2012 and 2012-2013 Project NExT Fellows and presenters – Smith Hall, Laines Lounge

10:00 pm - ?       INFORMAL SOCIALIZING

WEDNESDAY, AUGUST 3

8:15 - 9:30 am    TWO concurrent sessions

A.  8:15 am - 9:30 am   Mathematics Intensive Interdisciplinary Courses
   Pyle 309
   Panelists:  Carl C Cowen, Indiana University-Purdue University Indianapolis
               Mary L. Garner, Kennesaw State University
               Jon L. Johnson, Elmhurst College
               Kimberly D. Kendricks, Central State University
   Interdisciplinary courses (IDCs) are increasingly becoming a part of the undergraduate education program. This session will address some issues instructors commonly face when planning and teaching an IDC with a mathematics component. The panel members -- whose experiences range from teaching first-year seminars with no mathematics prerequisites to upper-level IDCs with students having a strong math background -- will discuss the following points: choosing a course topic, managing the non-mathematical content in the course design, successful techniques for evaluation, the pros and cons of team teaching, and the benefits and drawbacks of teaching an IDC.
   Organizers:  Karen Bliss, US Military Academy
                Mindy Capaldi, Valparaiso University
                Angela L. Kohlhaas, Loras College
                Ryan Therkelsen, Bellarmine University
B. **8:15 am – 9:30 am  Teaching an Introductory Linear Algebra Course**  
**Pyle DE335**  
Panelists: Sheldon Axler, San Francisco State University  
Rob Beezer, University of Puget Sound  
Caroline Haddad, State University of New York Geneseo  
Christine Larson, Vanderbilt University  

One of the more common entry-level courses required by undergraduate science programs is linear algebra. Creative approaches to teaching this course may include utilizing technology, creating student-centered activities, and implementing projects. However, putting such ideas into practice is not always easy. In this session, panelists will share their experiences in developing and teaching undergraduate linear algebra courses which meet the needs of their students, challenge those students with engaging and useful classroom activities and projects, and utilize appropriate technology and software. The discussion will also include common learning difficulties faced by students in a linear algebra course.  
Organizers: Randall E. Cone, Virginia Military Institute  
Louis Deaett, Quinnipiac University  
Gulden Karakok, University of Northern Colorado  
Nicole Seaders, Willamette University

9:35 – 10:05 am  
**BREAK – Pyle Prefunction Space, 3rd Floor East**

10:10 - 11:25 am  **TWO concurrent sessions**

A. **10:10 – 11:25 am  Assessing Classroom Effectiveness**  
**Pyle 309**  
Panelists: Mike Axtell, University of St. Thomas  
Patrick Bahls, University of North Carolina, Asheville  
Aimee Ellington, Virginia Commonwealth University  
Angie Hodge, University of Nebraska Omaha  

Regular self-assessment is an important part of our professional development. In particular, evaluating our own teaching is something we all do while we teach a course and when we plan to teach the same course again. How do we accurately assess our own teaching? As new professors, this is one of the most important and most difficult to answer questions we have. It is the question of whether we are awesome or just grade too leniently. In this session, the panel will discuss using quick writing and speaking assignments to check student learning and encourage reflection, making effective and efficient use of regular homework collection, assessing teaching through the scholarship of teaching and learning, designing projects to measure quantitative reasoning skills in introductory courses, and evaluating different approaches to teaching the same material.  
Organizers: Eleanor Farrington, Massachusetts Maritime Academy  
Timothy Goldberg, Lenoir-Rhyne University  
Paige Rinker, John Carroll University  
Rohit Thomas, University of Arizona
B.  **10:10 am - 11:25 pm Publishing with Undergraduates**  
Pyle DE335  
Panelists:  
  Tom Langley, Rose-Hulman Institute of Technology  
  Liz McMahon, Lafayette College  
  Frank Morgan, Williams College  
  Sarah Spence Adams, Franklin W. Olin College of Engineering  
We aim to explore the process of writing and publishing articles with undergraduate students. The panel will discuss how to work with students to improve their writing either for undergraduate or professional mathematical audiences and what editors look for in considering articles on undergraduate research and student-faculty collaborations. Appropriate length and level of publishable material, how to deal with varying proportions of student/faculty involvement in the paper, and venues for publication on particular topics will also be discussed. The panel will present successful publishing experiences (and less-successful experiences!) in order to give examples to attendees.  
Organizers:  
  Catherine Buell, Bates College  
  Joe Eichholz, Rose-Hulman Institute of Technology  
  Zachary Kudlak, Mount Saint Mary College  
  Kaisa Taipale, St Olaf College  

11:30 am - 12:15 pm Small Group Discussions with other Project NExT Fellows  
(This session is organized by area of research. Please attend the group that best fits your research interests.)  
  
Group A: Algebra, Group Theory, Linear Algebra, **Pyle 220**  
Group B: Algebraic Geometry, **Pyle DE232**  
Group C: Analysis, **Pyle 111**  
Group D: Combinatorics, Graph Theory, Discrete Math, **Pyle 226**  
Group E: Number Theory, Mathematical Logic, **Pyle DE227**  
Group F: Geometry, Topology, **Pyle 225**  
Group G: Differential Equations, Dynamical Systems, **Pyle DE332**  
Group H: Applied Math, Operations Research, **Pyle DE327**  
Group I: Math Biology, **Pyle 313**  
Group J: Mathematics Education, Probability, Statistics, **Pyle VandeBerg Auditorium 121**  

12:15 – 1:30 pm LUNCH – **Pyle Center Main Dining Room**
A. 1:35 pm - 2:50 pm  Involving Undergraduates In Research
Pyle 309
Panelists:  Timothy D. Comar, Benedictine University
             Leslie Hogben, Iowa State University and American Institute of Mathematics
             Kathryn Leonard, California State University Channel Islands
             Mark Pearson, Hope College
How does one involve undergraduates in meaningful mathematical research? Panelists
will compare and contrast summer research experiences for undergraduates with
academic-year undergraduate math research at a diverse group of institutions. Strategies
for identifying appropriate research problems, both pure and applied, will be discussed,
including approaches panelists have gleaned from the AIM's Research Experiences for
Undergraduate Faculty program. Additionally, the panel will address issues of program
funding and evaluation and share their views on effective mentoring.
Organizers:  Dawn Archey, University of Detroit – Mercy
             Andrew Connor, Wake Forest University
             Debra Mimbs, Lee University
             Ursula Whitcher, University of Wisconsin – Eau Claire

B. 1:35 pm - 2:50 pm  Teaching Introduction to Proofs Courses
Pyle DE335
Panelists:  Connie Campbell, Millsaps College
             Carol Schumacher, Kenyon College
             Joseph Straight, SUNY Fredonia
             Ted Sundstrom, Grand Valley State University
Introduction to Mathematical Proofs (or Transition to Advanced Mathematics) courses
are meant to develop the communication and thinking skills necessary for advanced
mathematics. Most students arrive at college or university with little to no experience in
reading, comprehending or producing mathematical proofs, and hence these courses play
an essential role in a student's mathematical journey. In this session we take a closer look
at such courses, while focusing on the following aspects: mathematical content,
evaluating students’ writing, finding and using resources, and incorporating inquiry-
based-learning.
Organizers:  Erin Bancroft, Grove City College
             Lisa Driskell, Colorado Mesa University
             Shay Fuchs, University of Toronto
             W. Andy Lorenz, Denison University

3:25 - 3:55 pm  BREAK -- Pyle Prefunction Space, 3rd Floor East

3:55 - 5:25 pm  Closing Session – Pyle 325/326
Recognition of 2011-12 Fellows
Presentation: Finding Your Niche in the Profession
Joseph Gallian, University of Minnesota Duluth
6:00 – 7:30 pm  Mathfest Opening Reception (cash bar) – **Level 1 of the Monona Terrace Convention Center**

7:30 - 9:30 pm  Mathfest Opening Banquet

9:30 pm - ?  INFORMAL SOCIALIZING

**THURSDAY AND FRIDAY, AUGUST 2 AND 3**

**Project NExT Courses during the Mathfest:** Four-hour courses meeting in the **Hilton Madison Monona Terrace** on Thursday and Friday, August 2 and 3.

A. *Teaching Mathematics for Future Teachers (With an Emphasis on K-8 Teacher Preparation)* – Beth Burroughs, Montana State University, 1-3 p.m., **Tenney, Hilton Madison Monona Terrace**
B. *Teaching Liberal Arts Mathematics Courses* – Dale Buske, St. Cloud State University, 1-3 p.m., **LaFollette, Hilton Madison Monona Terrace**
C. *Undergraduate Research—How to Make It Work* – Aparna Higgins, University of Dayton, 1-3 p.m., **Doty, Hilton Madison Monona Terrace**
D. *Using Inquiry to Teach Mathematics and Thinking* – Carol Schumacher, Kenyon College, 1-3 p.m., **Vilas, Hilton Madison Monona Terrace**
E. *When Life is Linear: Applications of Linear Algebra* – Tim Chartier, Davidson College, 3:15-5:15 p.m., **Tenney, Hilton Madison Monona Terrace**
F. *The World is More Random Than You Think: Big Ideas for Mathematicians Who Will Be Teaching Statistics* – Richard Cleary, Bentley College, 3:15-5:15 p.m., **LaFollette, Hilton Madison Monona Terrace**
G1. *Applying for Grants from the National Science Foundation* – Jennifer Slimowitz Pearl, National Science Foundation, Thursday; *Getting Your Research Off to a Good Start,* Joe Gallian – University of Minnesota, Duluth, Friday; both days 3:15-5:15 p.m., **in Doty, Hilton Madison Monona Terrace**
G2. *Getting Your Research Off to a Good Start,* Joe Gallian – University of Minnesota, Duluth, Thursday; *Applying for Grants from the National Science Foundation* – Jennifer Slimowitz Pearl, National Science Foundation, Friday; both days 3:15-5:15 p.m., **in Vilas, Hilton Madison Monona Terrace**

We thank peach11 Project NExT Fellows Thomas Höft, Tufts University, and Melissa Stoner, Salisbury University, for coordinating the planning of the peach11 (2011-12) Fellows’ sessions.

**Project NExT (New Experiences in Teaching)** is a professional development program of the Mathematical Association of America for new or recent Ph.D.s in the mathematical sciences who are interested in improving the teaching and learning of undergraduate mathematics. It addresses the full range of faculty responsibilities in teaching, research, and service.