



Mechanics Division

NEWSLETTER

Spring 2011

Chair: Anna Dollár
Secretary: Chris Papadopoulos

Visit the Mechanics Division Website <http://comp.uark.edu/~jjrencis/aseemechanics/>

Message from the Chair

Dear Mechanics Division Members:

Greetings to all Mechanics Division members and friends! I hope that your academic year has been successful and rewarding. While I am sure that your summer will be busy with both personal and professional plans, I hope that many of you will be attending the 2011 ASEE Annual Conference and Exposition in Vancouver, BC, Canada, a lovely city which has a lot to offer!

Many of you may have already registered, but if you've procrastinated, I would like to encourage you to finalize your plans soon. The dates for this year's conference are June 26 – 29 and advance registration is open until May 25th.

Remember that all non-Canadian visitors must present appropriate travel documents in order to enter the country. US citizens do not need a visa to enter Canada, but must display a valid US passport. For more information, please visit <http://www.asee.org/conferences-and-events/conferences/annual-conference/2011>.

The conference kicks off with a picnic on Sunday evening. This is an excellent time to see old friends and make new ones in the mechanics education community and in ASEE in general. Please look for the Mechanics Division banner - this year marks its 25th anniversary!

Jon-Michael Hardin, this year's Program Chair, has assembled a collection of sessions that covers innovations in teaching Statics, Mechanics of Materials, and Dynamics. I hope you can attend all or most of the Mechanics Division sessions which are listed on pp. 5-7.

I also encourage you to attend both the Mechanics Division Executive Committee meeting early Monday morning and the Mechanics Division Business meeting at noontime on Wednesday. For the Mechanics Division to remain vital and relevant it is important to merge the experience and service of our longtime members with the innovations and energy of new members. This is the place to share your ideas for the Division and to get involved in the Division's activities. Your input and ideas will keep the Mechanics Division vibrant, and we encourage you to come join us and get involved.

This year's Awards Banquet was organized by Eric Bell, who will serve as next year's Program Chair. The Banquet will take place at the Show Case Restaurant & Bar in the Vancouver Marriott Pinnacle Downtown Hotel. During the banquet, we will honor several of our colleagues for their contributions to mechanics education. Please make plans to attend, and order your tickets early - it will be a good time and a memorable evening that you do not want to miss!

Finally, I'd like to take this opportunity to thank all of the officers and volunteers for all of your work in making the Mechanics Division run smoothly. It's your enthusiasm and efforts that make our group a success. Thank you for giving me the opportunity to serve as the Mechanics Division Chair. It has been a pleasure and indeed an honor.

I hope to see all of you in Vancouver!

Anna Dollár
Mechanics Division Chair, 2010-11
dollar@muohio.edu

Comments on the 2011 Mechanics Division Program

This year the Mechanics Division sponsors five technical sessions featuring 20 technical papers. These papers represent a diverse range of educational activities going on in Mechanics education across the country and should provide us all with some very exciting new ideas. In addition to the technical sessions, allow me to call your attention to the following special sessions:

- Mechanics Division Executive Committee Meeting, Session M150 (7:00am – 8:30am)
- Town Hall Meeting on Interdivisional Exchange & Cooperation, Session M645 (4:00pm – 5:30pm)
- Mechanics Division Awards Banquet, Session T750 (7:00pm – 9:00pm)
- Mechanics Division Business Meeting, Session W450 (12:30pm – 2:00pm)

Please note that no meals will be provided at the Executive and Business meetings so attendees are encouraged to bring breakfast or lunch purchased from a local vendor to the meeting. Also, the Awards Banquet is a ticketed event (\$65 pre-registration; see inset for further details).

I thank all the Division members who volunteered to make this year's conference a success. Thank you to the reviewers of abstracts and papers for their valued and informed opinions; the quality of this year's program is due in great measure to their constructive criticism and feedback. Thanks also to those who volunteered and will serve as moderators for our sessions. Finally, I thank Eric Bell for organizing the Awards Banquet.

If you have any questions or comments about the program, please don't hesitate to contact me. I look forward to seeing you in Vancouver!

Best regards,
Jon-Michael Hardin
Mechanics Division Program Chair, 2010-11
hardinj@vmi.edu

Mechanics Division News and Announcements

Congratulations Joe Rencis! Congratulations to Division Member and Webmaster **Joseph J. Rencis** for being elected Chair of the Professional Interest Council III.

Call for Experts to Participate in Mechanics Education Research Project. The University of Puerto Rico, Mayagüez is beginning a research project “Leveraging Simulation Tools to Deliver Ill-Structured Problems: Enhancing Student Problem-Solving Ability in Statics and Mechanics of Materials”, sponsored by the NSF TUES Program. The project will develop new modules for Statics and Mechanics of Materials that deliver open-ended and design-oriented problems that are hypothesized to have impact in later courses in mechanics, structural analysis, and design. **The project seeks approximately 20 experts to form a Delphi group that will provide advice for module content and format during the Summer and Fall of 2011**, and occasional feedback thereafter. Participants will be selected to balance diversity of institutional affiliation, gender, rank, and academic/professional specialty, and will receive a \$100 honorarium. To express interest or for further information, please contact christopher.papadopoulos@upr.edu.

48th Annual Technical Meeting of Society of Engineering Sciences. The 48th Annual Technical Meeting of Society of Engineering Sciences will be held **October 12-14, 2011 at Northwestern University, Evanston, Illinois 60208, USA**. The meeting will have 43 symposia covering a wide range of topics in engineering sciences. To learn more about the conference and submit an abstract, please check the conference webpage www.ses2011.org.

ISTEC 2011: Integration of Simulation Technology into Engineering Curricula: A University-Industry Workshop. Cornell University will host a university-industry workshop on the integration of simulation technology into engineering curricula, **July 22-23, 2011 in Ithaca, NY**. Computer simulation has emerged as a powerful new modality for solving engineering problems, distinct from theory and experiments. Currently, the deployment of sophisticated commercial simulation software in engineering curricula is done primarily by individual faculty in their courses without the widespread sharing and standardization of materials. In order to scale up the effective use of advanced simulation in curricula, there needs to be increased collaboration among the major stakeholders: educators, industry practitioners, software vendors, educational researchers, professional societies and funding agencies. The ISTEC 2011 workshop will bring together these major stakeholders in a sustained conversation on scaling up the effective use of advanced simulation in engineering curricula. This workshop will build on the success of the ISTEC 2008 workshop where there was palpable excitement about the potential for simulation to improve problem solving and critical thinking skills of budding engineers. The following simulation technologies/areas are of particular interest:

- **Finite Element Analysis**
- **Computational Fluid Dynamics and Heat Transfer**
- **Multi-body Dynamics and Control**
- **General-purpose Numerical Analysis and Programming**

Please register using the Registration Page at <http://www.mae.cornell.edu/swanson/workshop2011/>. If you have questions or clarifications, please contact Dr. Rajesh Bhaskaran at bhaskaran@cornell.edu.

Upper Division Transfer Programs at California State University, Long Beach. The College of Engineering at California State University, Long Beach, in partnership with the College of Continuing and Professional Education announces a unique opportunity for students to complete their Mechanical and Electrical Engineering baccalaureate degrees. These upper division transfer programs are accredited by the Western Association of Schools and Colleges (WASC) and **will be offered at the Lancaster University Center, in the Antelope Valley, CA**. The cohort based programs enjoy industry support from organizations such as the Air Force Flight Test Center, the Air Force Research Laboratory, Northrop-Grumman, Lockheed Martin, TYBRIN, Jacobs Engineering, and NASA Dryden Flight Research Center among others. Applications are being accepted until **June 1, 2011**. Please visit our web site at www.ccpe.csulb.edu/engineering for admission requirements and a full program description.

Collection of Mechanics Division Archival Materials: If you have any materials from past decades, such as monographs, photographs, results from the Mechanics Readiness Test, or any other historically interesting mechanics education materials, please contact Archivist Ralph Flori, (573) 341-7583, reflori@mst.edu and/or Secretary Chris Papadopoulos, (787) 832-4040 x3336, christopher.papadopoulos@upr.edu.

Mechanics Division Awards Banquet (Session T750)

Tuesday, June 28, 7:00pm – 9:00pm

The Mechanics Division Annual Awards Banquet will take place Tuesday, June 28, at the Show Case Restaurant & Bar in the Vancouver Marriott Pinnacle Downtown Hotel, 1122 West Hastings Street (at Thurlow), two blocks from the Vancouver International Conference Centre. Show Case features a fine dining experience reflective of Vancouver's ethnicity with a diverse mix of flavours, influences and inspirations. Enjoy great company, wonderful food, and fascinating conversation.

Registration

Please sign up early to help us planning this event! The cost per person is \$65 pre-registration. Guests welcome. Late registration (not guaranteed): contact Eric Bell, ebell.triton@gmail.com.

Mechanics Division Award Recipients, 2011

The Mechanics Division is pleased to announce the following winners of its 2010 awards who will be recognized at the Banquet. Please join us in congratulating these colleagues.

Archie Higdon Distinguished Mechanics Educator Award

Charles Krousgrill, Purdue University

Ferdinand P. Beer and E. Russell Johnston, Jr. Outstanding New Mechanics Educator Award

Rashid K. Abu Al-Rub, Texas A&M University

Jeffrey Rhoads, Purdue University

Meriam Service Award

Glenn Kraige, Virginia Tech

Mechanics Division Best Paper Award (2011 Annual Conference)

Overarching Problems in Sophomore Mechanics Courses

Shawn P Gross (Villanova University), David W Dinehart (Villanova University), Joseph R. Yost (Villanova University), and Aleksandra Radlinska (Villanova University)

Mechanics Division Best Presentation Award (2010 Annual Conference)

Dynamics Buzzword Bingo: Active/Collaborative/Inductive Learning, Model Eliciting Activities, and Conceptual Understanding

Brian Self (California Polytechnic State University) and James Widmann (California Polytechnic State University)

2011 Conference Sessions: Mechanics Division

Monday, June 27, 2011

M150: Mechanics Division Executive Committee Meeting

7:00am – 8:30am, Vancouver International Conference Centre, Room 212

Moderator(s): Anna Dollár, Miami University Ohio

Division(s): Mechanics Division

Annual Executive Committee Meeting of the Mechanics Division. All are welcome.

M450: Innovations in Teaching Statics

12:30pm – 2:00pm, Vancouver International Conference Centre, Room 120

Moderator(s): Shahnam Navee, Georgia Southern University

Division(s): Mechanics Division

Innovative uses of projects, design, and technology in the teaching of Statics.

Going Online with Statics, Sheryl A. Sorby (Michigan Technological University) and Dr. Carl R. Vilmann P.E. (Michigan Technological University)

Blending Interactive Courseware into Statics Courses and Assessing the Outcome at Different Institutions, Anna Dollár (Miami University), Ronald R. Ulseth (Itasca Community College), and Paul S. Steif (Carnegie Mellon University)

InTEL: Presenting Online 3D Exercises in a Statics Class, Christine Valle (Georgia Institute of Technology), Sue Rosser (San Francisco State University), Janet H Murray (Georgia Tech), Wendy C. Newstetter (Georgia Institute of Technology), John D. Leonard II (Georgia Institute of Technology), and Laurence J. Jacobs (Georgia Institute of Technology)

M645: Town Hall Meeting: Open Forum on Fostering Interdivisional Exchange and Cooperation

4:00pm – 5:30pm, Vancouver International Conference Centre, Room 203

Moderator(s): n/a

Division(s): Liberal Education, Entrepreneurship & Engineering Innovation, Materials, Student Constituent Committee, Engineering Ethics, Information Systems, Electrical and Computer, **Mechanics**, Educational Research and Methods, Systems Engineering, and Engineering Libraries

Following the Louisville meeting, the Liberal Education Division (LED), after consulting with several PIC Chairs, established a Committee on Interdivisional Cooperation for exploring opportunities for enhancing interdivisional exchange and coordination within ASEE. This conversation led to a number of preliminary recommendations. The overall purpose of this town hall meeting will be to continue discussing our preliminary recommendations in an open forum, and to compile these in a form that can be forwarded to the PIC Chairs. In addition to the co-sponsors listed, this session is co-sponsored by the following divisions: Biological and Agricultural Engineering, Graduate Studies, and Minorities in Engineering.

Tuesday, June 28, 2011

T250: Innovations in Teaching: Mechanics

8:45am – 10:15am, Vancouver International Conference Centre, Room 215

Moderator(s): Phillip Cornwell, Rose-Hulman Institute of Technology

Division(s): Mechanics

Innovative uses of projects, design, and technology in the teaching of Mechanics.

The Purposeful Use of Activities to Affect Learning, Renee K. Petersen (Washington State University, Department of Civil and Environmental Engineering) and Dr. Denny C. Davis, P.E. (Washington State University)

A Heuristic to Aid Teaching, Learning, and Problem-Solving for Mechanics of Materials, C.J. Egelhoff (U.S. Coast Guard Academy) and K.L. Burns (U.S. Coast Guard Academy)

The Effect of On-Line Videos on Learner Outcomes in a Mechanics of Materials Course, Jeffery S. Thomas (Missouri University of Science & Technology), Richard H. Hall (Missouri University of Science & Technology), Timothy A. Philpot (Missouri University of Science & Technology), and Douglas R. Carroll (Missouri University of Science & Technology)
A Prerequisite Skills Exam for Solid Mechanics, David B. Lanning (Embry-Riddle Aeronautical University)

A Philosophy of Integrating FEA Practice Throughout the Undergraduate CE/ME Curriculum, Jim M. Papadopoulos (University of Wisconsin - Stout), Christopher Papadopoulos (University of Puerto Rico, Mayagüez), and Vincent C. Prantil (Milwaukee School of Engineering)

T450: Teaching Statics

12:30pm – 2:00pm, Vancouver International Conference Centre, Room 122

Moderator(s): Tom Nordenholz, California Maritime Academy

Division(s): Mechanics

New 'tricks of the trade' in the teaching of Statics.

Investigating the Validity of Students' Self-Assessments of Their Ability in Statics, Jeffrey L. Newcomer (Western Washington University)

Identifying and Addressing Student Difficulties in Engineering Statics, Andrea Brose (Hamburg University of Technology) and Christian H. Kautz (Hamburg University of Technology)

Supplemental Learning Tools for Statics and Strength of Materials, Cliff J. Lissenden (Pennsylvania State University, University Park), Christine B. Masters (Pennsylvania State University, University Park), Samia A. Suliman (Pennsylvania State University, University Park), and Roxanne Toto (Pennsylvania State University, University Park)

T750: Mechanics Division Awards Banquet

7:00pm – 9:00pm, Show Case Restaurant & Bar in the Vancouver Marriott Pinnacle Downtown Hotel

Moderator(s): Anna Dollár, Miami University Ohio

Division(s): Mechanics Division

THIS IS A TICKETED OFFSITE EVENT (\$65 pre-registration). The Mechanics Division Annual Awards Banquet will be held at Show Case Restaurant & Bar in the Vancouver Marriott Pinnacle Downtown Hotel, featuring a fine dining experience reflective of Vancouver's ethnicity with a diverse mix of flavours, influences, and inspirations. See inset for further details.

Wednesday, June 29, 2011

W250: Teaching Dynamics

8:45am – 10:15am, Vancouver International Conference Centre, East Building, Room 15

Moderator(s): Rungun Nathan, Penn State Berks

Division(s): Mechanics

New "tricks of the trade" in the teaching of Dynamics.

Applying Dynamics to the Engineering of the Perfect Bounce: Experimental Investigation of Why the NBA Requires a Specific Inflation Pressure for Basketballs used in Professional Games, Josue Njock-Libii (Indiana University-Purdue University Fort Wayne)

Teaching Dynamics with Design Projects, David R. Mikesell (Ohio Northern University) and John-David S. Yoder (Ohio Northern University)

Alignment of Preparation via First-year Physics Mechanics and Calculus Courses with Expectations for a Sophomore Statics and Dynamics Course, Kristi J. Shryock (Texas A&M University), Prof. Arun R. Srinivasa (Texas A&M University, Department of Mechanical Engineering), and Jefferey E. Floyd (Texas A&M University)

First Look at a Video Game for Teaching Dynamics, Brianno Coller (Northern Illinois University)

W450: Mechanics Division Business Meeting

12:30pm – 2:00pm, Vancouver International Conference Centre, East Building, Room 11

Moderator(s): Anna Dollár, Miami University Ohio**Division(s):** Mechanics

Annual business meeting of the Mechanics Division. All are welcome to attend.

W550: Teaching Mechanics

2:15pm – 3:45pm, Vancouver International Conference Centre, East Building, Room 15

Moderator(s): Eric Bell, Triton College**Division(s):** Mechanics

This session, co-sponsored by the Mechanics Division, reviews pedagogical innovation in mechanical systems.

Teaching Deflections of Beams: Comparison of Advantages of Method of Model Formulas versus Method of Superposition,

Ing-Chang Jong (University of Arkansas) and William T. Springer (University of Arkansas)

Just-in-Time Approach to Integrate a Design Project into Mechanics of Materials, Joseph J. Rencis (University of Arkansas) and Hartley Theodore Grandin, Jr. (Worcester Polytechnic Institute)**Using an orthopaedic biomechanics project to reinforce solid mechanics principles,** Jennifer Kadlowec (Rowan University), Andrew D. Rosenthal (Rowan University), Patrick C. Leung (Rowan University, Undergraduate Student), and Alexander Vincent Redfield (Rowan University)**Overarching Problems in Sophomore Mechanics Courses,** Shawn P Gross (Villanova University), David W Dinehart (Villanova University), Joseph Robert Yost (Villanova University), and Aleksandra Radlinska (Villanova University)**Introduction of a Global Perspective Using a Team Project in a Strength of Materials Course,** Dean Q. Lewis (Penn State Erie, The Behrend College) and Mary Lynn Brannon (Pennsylvania State University, University Park)**2011 Mechanics Division Schedule at a Glance**

Time	Monday June 27	Tuesday June 28	Wednesday June 29
7:00am – 8:30am	M150: Mechanics Division Executive Committee Meeting, Room 212		
8:45am – 10:15am	M204A: Main Plenary West Ballroom CD	T250: Innovations in Teaching: Mechanics Room 215	W250: Teaching Dynamics East Building, Room 15
10:30am – 12:00pm	M3xx: Focus on Exhibits Brunch & NSF Poster Session Exhibit Hall C	T3xx: Distinguished Lecture Series, Various	W3xx: Distinguished Lecture Series, Various
12:30pm – 2:00pm	M450: Innovations in Teaching Statics Room 120	T450: Teaching Statics Room 122	W450: Mechanics Division Business Meeting East Building, Room 11
2:15pm – 3:45pm			W550: Teaching Mechanics East Building, Room 15
4:00pm – 5:30pm	M645: Town Hall Meeting: Open Forum on Fostering Interdivisional Exchange and Cooperation Room 203		
7:00pm – 9:00pm		T750: Mechanics Division Awards Banquet Show Case Restaurant & Bar, Vancouver Marriott Pinnacle Downtown Hotel	

2010-11 Mechanics Division Executive Committee and Officers

Chair: Anna Dollár, Miami University
(513) 529-1875, dollara@muohio.edu

Past Chair: Gary L. Gray, Penn State University
(814) 863-1778, gray@enr.psu.edu

Program Chair: Jon-Michael Hardin, Virginia Military Institute
(540) 464-7308, hardinj@vmi.edu

Program Chair Elect: Eric Bell, Triton College
(708) 456-0300 (x3349), ebell@triton.edu

Executive Committee Rungun Nathan, Penn State Berks (2007-11)

Directors: (610) 396-6170, rungun.nathan@psu.edu

Christine Masters, Penn State University (2010-12)
(814) 865.6674, cbm100@enr.psu.edu

Tom Nordenholz, California Maritime Academy (2008-12)
(707) 654-1114, tnordenholz@csum.edu

Luciana Barroso, Texas A&M University (2009-13)
(979) 845-0290, lbarroso@civil.tamu.edu

Christopher Papadopoulos, University of Puerto Rico, Mayagüez (2010-14)
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Laura Ruhala, Southern Polytechnic State University (2010-14)
(678) 915-7315, lruhala@spsu.edu

Secretary: Christopher Papadopoulos, University of Puerto Rico, Mayagüez
(787) 832-4040 x3336, christopher.papadopoulos@upr.edu

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(479) 575-3386, jjrencis@uark.edu

Archivist: Ralph Flori, University of Missouri – Rolla
(573) 341-7583, reflori@mst.edu

Nominating Committee: Gary L. Gray (chair), Benson Tongue, Timothy Philpot

Membership Committee: Laura Ruhala (chair), Rungun Nathan, Rich Ruhala

Awards Committee: Rungun Nathan (chair), Brian Self, Ing-Chang Jong

Notes: Two Directors are elected at each annual Business Meeting for terms of four years. Directors who have served for at least one year are eligible to be elected as Program Chair Elect (and to serve consecutively as Program Chair and Chair). Secretary and Treasurer are ex-officio (non-voting) elected at each annual Business Meeting for terms of one year. Webmaster and Archivist are ex-officio (non-voting) and are elected for terms of one year. The Nominating Committee is specified to consist of the three most recent Past Chairs. The Membership and Awards Committee are appointed to serve for terms of one year.