

American Society for Engineering Education

First-year Programs Division

Newsletter

Fall 2010

Editors: Sue Freeman, Rich Whalen, Beverly Jaeger - Northeastern University

ASEE Vision Statement

"ASEE will serve as the premier multidisciplinary society for individuals and organizations committed to advancing excellence in all aspects of engineering and engineering technology education."

A Message from the Chair

It is clear that many institutions are paying great attention to their first-year program in engineering. With over 100 abstracts submitted to the 2010 Annual Conference resulting in 47 technical paper presentations, activity in the first year is clearly strong. This is quite refreshing. It seems that educators involved in first-year student learning and acculturation to the study of engineering have finally gotten the ear of administrators. They have heeded the warnings from professional societies, the National Academies, and practitioners regarding retention, student learning, outcomes assessment and overall student satisfaction. Serious work is going into first-year engineering programs and the rigor of the studies on their effectiveness is increasing. The gap between engineering instruction and education research is narrowing as we engineers learn how to perform proper research on our programs, classes and students. Anecdotes and surveys are simply not good enough anymore. We need real evidence of learning – or lack thereof – to spur policy change



that best serves our students and their needs.

It is clear that no two schools of engineering are alike. It is also clear that no two first-year programs are alike. Each program must take on the unique character of its institution and be designed to solve very specific issues within that college or school. Not every school has a significant retention problem. Remedial education may not be high on other schools' priority lists. Nonetheless, from the past years of research, the argument is easy to make that while first-year programs should be tailored to fit their specific institutions' needs, we can all stand to learn something from each other.

(Continued page 13)

Inside this issue:

Call for Papers 2011 Annual Conference	1
Call for Papers FPD	3
Meet the Board	4
FPD Business Meeting	5
Presentation Guidelines	7
Highlighting Freshman Programs	7
Perspectives – A Message from the Past Chair	9
FPD Awards	11
FPD Workshop	12
Vancouver Highlights	13
Future Conferences	13
2010 ASEE FPD Session Program	14

Call for Papers – Vancouver 2011

In this newsletter is the official First-Year Programs Division (FPD) "Call for Papers" for the 2011 Annual Conference in Vancouver, British Columbia.

(Continued on next page)

Call for Papers – Vancouver 2011

(continued from previous page)

Abstract submission, the initial step in getting a paper accepted for the conference, has already begun and **abstract submission will close on October 9th**. Please see the details on the page below that outline the requirements for abstracts and papers.

Abstracts and papers will be submitted via the **improved** ASEE SmoothPaper system: (<http://www.asee.org/smoothpaper>) according to ASEE deadlines which will soon be published on the website. Please view the link below for an update.

<http://www.asee.org/conferences/annual/2010/Call-for-Papers.cfm>

Since the system is new, it is important to have abstracts ready somewhat before the deadline, and submit them at least a couple of days early, just to be safe. Leave the last-minute crisis management to others!

General Author Deadlines

Abstract Submission	October 8, 2010
Abstract Status Notifications	December 3, 2010
Draft Paper Submission	December 6, 2010 – January 7, 2011
Draft Paper Status Notifications	February 25, 2011
Final Paper Submission	February 25 – March 11, 2011
Accepted Pending Changes upload	March 11 – 18, 2011
Accepted Pending Changes decision	March 25, 2011
Proceedings/Copyright Transfers	April 2, 2011
Author Registration Deadline	April 1, 2011
Housing Deadline	TBA

Note that the FPD has a Publish-to-Present requirement. What this means to authors is that if your abstract is accepted, you are **not** guaranteed a spot in a technical session to present your work. To be assured of a place on the program, you must write, submit, and re-submit, if required, a paper deemed acceptable by the reviewers assigned to your paper topic.

All abstracts and papers will be peer-reviewed. The reviewers will include members of the FPD Executive Board, session chairs for the conference, and volunteer reviewers.

It is not too late to volunteer to be a Reviewer or Session Moderator. Please contact Rick Freuler at freuler.1@osu.edu if you are interested in serving in either or both of these capacities.

The First-Year Programs Division is proud to encourage quality papers and presentations: In addition to first and second place best paper awards *with new increased \$cash awards\$,* there are awards for the best presentation and for the best STUDENT presentation. The authors and presenters will receive a check and a suitable award at the FPD business meeting in Vancouver. We look forward to seeing you there!

FIRST-YEAR PROGRAMS DIVISION 2011 CALL FOR PAPERS

The First-Year Programs Division (FPD) seeks papers relating to educational activities associated with first-year engineering students, including freshman and transfer students. Topics under consideration include those below, and papers on other pertinent topics are very welcome.

Topic Suggestions:

- Innovative approaches to first-year engineering education,
- Insights into teaming, group work, and team/member assessment,
- Creative problem-solving courses and/or related teaching activities,
- Project-based and hands-on courses and/or related teaching activities,
- Instructional use of computers and computer software,
- Integrating engineering design into the freshman year,
- Integrated curricula for the freshman year,
- Advising, student services, and orientation programs,
- Retention strategies and programs,
- Pre-college programs and experiences,
- Linkages with 2-year and junior college institutions, and
- Linkages with K-12 education

Due to the competitiveness of publication in the First-Year Programs Division, the quality of abstracts submitted is of utmost importance. As the reviewers are required to evaluate numerous submissions in a short time frame, below are some guidelines and features authors may want to incorporate in order to help the reviewers gain a better understanding of the nature of the work submitted. As each author's potential for contribution to ASEE through the FPD is unique, all of the additional guidelines do not have to be met.

Minimum Requirements:

- Extended abstracts of up to one full page of text are customary (750-800 words).
- This is a blind submission and blind review. Do not include the names of institutions or authors anywhere in the abstract.

Additional Guidelines and Suggestions:

- As appropriate, include the pedagogical theory or approach being used;
- Indicate the form that your outcome(s) will take as appropriate;
- As applicable, methods of assessment should be made clear;
- A second page may be used to include a graph or image to clarify the nature of your work or to include limited references to indicate a basis for the work undertaken.

Peer review occurs for both abstracts and papers. Abstract acceptance does not guarantee acceptance of the paper. The First-Year Programs Division has a Publish-to-Present requirement and final papers must be written and accepted in order for the work to be presented at the 2010 ASEE Annual Conference in Vancouver, BC, Canada. Submission of abstracts and final papers will be via the new ASEE monolith system and in accordance with ASEE published deadlines.

(See: <http://www.asee.org/conferences/annual/2011/Call-for-Papers.cfm>).

For more information, contact:

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Engineering Education Innovation Center
244 Hitchcock Hall
2070 Neil Avenue

Phone: 614.688.0499
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Members of the 2010-2011 Executive Committee are (left to right) Robin Hensel, Richard Whalen (Program Chair-Elect), Chris Rowe (Chair), Kenneth Reid, Scott Moor (Secretary/Treasurer), Richard Freuler (Program Chair), Paul Palazolo, Keith Mazachek, (front row): Beverly Jaeger, Kris Craven (Past Chair), Jean Kampe

Meet the Board (continued)

Meet the Board

The First-Year Programs Division By-laws provide for an Executive Committee to administer the affairs of the division and to formulate policy. This committee has eight members elected by the FPD membership for terms of four years each, with the terms staggered so that two members are elected each year. At the Annual Conference, elections are held each year at the Division Business Meeting and officers for the division are selected by the Executive Committee from its members prior to the business meeting. The officers include the Chair, Program Chair, Program Chair-Elect, Secretary/Treasurer. The By-Laws provide for a succession from Program Chair-Elect to Program Chair and then to Division Chair over a three-year period. Following a term as Chair, the past chair remains on the Executive Committee for an additional year and becomes the ninth member of the committee unless his/her term on the committee has not yet expired.

We welcomed Kenneth Reid, Paul Palazolo and Keith Mazachek (filling a transition term) to the FPD Executive Committee at the Division Meeting in Louisville. The entire 2010-2011 Executive Committee is pictured in the photo above which was taken following the Division Business Meeting. Contact information for each member of the executive committee is provided here. The number in parentheses indicates the year each member is scheduled to rotate off the board. At the 2011 Annual Meeting in Vancouver, we will have elections to serve a four-year term on the board. If you are interested in being nominated please let current past chair Kris Craven know.

Chair

Christopher Rowe (2010)
Mechanical Eng, Education Dept
Vanderbilt University
chris.rowe@vanderbilt.edu

Program Chair

Richard Freuler (2011)
Engineering Education Innovation Center
Ohio State
Freuler.1@osu.edu

Program Chair, Elect

Rich Whalen (2013)
Mechanical and Industrial Engineering,
Northeastern University
whalen@coe.neu.edu

Secretary/Treasurer

Scott Moor (2010)
Mechanical Engineering
IU Purdue Fort Wayne
moors@ipfw.edu

Past Chair

Kristine Craven (2011)
Basic Engineering Program
Tennessee Technological University
kcraven@tntech.edu

Meet the Board (continued from previous page)

Members at Large

Beverly Jaeger (2011)
Mechanical and Industrial Engineering,
Northeastern University
bkjaeger@coe.neu.edu

Jean Kampe (2012)
Engineering Fundamentals
Michigan Technological University
kampej@mtu.edu

Robin Hensel (2013)
West Virginia University
Robin.hensel@mail.wvu.edu

Kenneth Reid (2014)
Director of Freshman Engineering
Ohio Northern University
k-reid@onu.edu

Paul Palazol (2014)
Asst Dean, Recruitment and Retention
University of Memphis
ppalazol@memphis.edu

Keith Mazachek (2012)
Washburn University
Coordinator of the Engineering
Transfer Program
keith.mazachek@washburn.edu



Past chair, Sandy Wood with current chair, Kris Craven. Thank you Sandy!



Your Newsletter team from Northeastern University visiting Churchill Downs!

Minutes of the Business Meeting, First-year Programs Division ASEE 2010 Annual Conference at Louisville, KY Tuesday, June 21, 2009, 7:00 am

Division Chair, Kris Craven, called the meeting to order at 7:10. Thanks were expressed to the Program Chair, Chris Rowe, for doing a super job with this year's sessions! Thanks were also expressed to reviewers and moderators.

PIC III Chair, Jenna Carpenter, was present to bring information from the board and to answer division members' questions. Jenna reported as follows: The new paper management software, The Monolith Project, is replacing Smooth Paper this coming year. This system will also handle registration, membership, and website. This system was developed internally over the past year. It should improve the paper submittal and review process as well as coordinate better between various society data bases.

Division operating budgets will be adjusted every two years based on division membership. This should happen this next year. Our allocation should be increasing. Special funding (\$2-3,000) will be available from the PIC Chairs for special events. An RFP should be out shortly. Applications will be due in mid-October. This year's annual conference has reached 1,900 in attendance which is the break even point for the conference. Membership in the Society as a whole is down ~8.2% over last year. Members can contact Jenna Carpenter at jenna@latech.edu.

Members suggested ASEE have ways to obtain continuing education credits at the conference for those members who need it to maintain their PE registration. It was also noted that the evaluation form needs to be updated.

The current members of the Division Executive Board were introduced.

Minutes from 2009 were distributed in the 2009 newsletter and at the meeting. The minutes were **APPROVED**.

FPD 2010 Business Meeting Minutes *(continued from previous page)*

Treasurer's Report: Last fiscal year (2009) the division basically broke even, receiving approximately \$200 more than we spent. No expenses have been paid yet this year but an estimate of income & expenses indicates they are approximately equal.

Current balance in operating account is \$790. However, known commitments will likely spend this amount out by the end of the fiscal year. Current balance in the BASS account is nearly \$10,000. Treasures report was **APPROVED**.

Program Chair Report: Chris Rowe, Program Chair for 2010 gave the program chair report. There were 110 abstracts submitted, 99 abstracts accepted, 59 full papers submitted, and 47 final papers accepted. These numbers are up 23 – 60% over 2009.

There are a total of 10 sessions (some longer) with 3 to 6 papers/session this year. These are packed, quality sessions. We did not use a poster session this year. A sign-up sheet was passed around for reviewers for next year.

Report of Nominating Committee: The nominating committee put forth the following nominations to the executive board:

Kenneth Reid, Ohio Northern University (four-year term)

Paul J. Palazolo, University of Memphis (four-year term)

Nominated from the floor was:

Keith Mazachek, Washburn University (two-year term)

The nomination committee also nominated, to continue as Secretary/Treasurer

Scott Moor, Indiana University Purdue University, Fort Wayne (one-year term)

There were no further nominations from the floor and all were elected by the membership present.

It was announced that the board had appointed Richard Whalen as Vice Chair Elect/Program Chair Elect and that the following positions were filled for the next year by succession as prescribed in the division by-laws:

Past Chair:	Kris Craven
Chair:	Chris Rowe
Program Chair:	Rick Freuler

Communication Committee: Beverly Jaeger, Chair of the Communications Committee noted that they are looking for a new member to join their committee. She is looking for someone from the K-12 division to help with an article on that division. She noted that the committee was very open to suggestions for the newsletter and requested that people turn in their submittals for the newsletter as soon as possible. In addition she requested volunteers to proof read the newsletter before it is sent out.

Old business - none

New business – The possibility of a social event in Vancouver was discussed and the possibility of partnering with another division for that event.

Awards: Awards were presented including:
Service Award to Past Chair, Sandy Wood, University of Alabama

Presentation Awards for 2009 conference

Best Presentation - Ronald Welch, University of Texas, Tyler, Engaging Freshman Experience: The Key to Retention?

Best Student Presentation - Casey Canfield and Yevgeniya Zastavker, Franklin W. Olin College of Engineering, Mathematics and Physics Faculty Conceptions of Teaching in a First-Year Integrated Project-Based Engineering Curriculum

Paper Awards for the 2010 conference

First Place - Stacy Bamberg, Debra Mascaro, Robert Roemer, University of Utah, Interactive Learning Using a SPIRAL Approach in a Large Required First-Year Mechanical Engineering Class

Second Place (Also awarded Best PIC III paper and Best Paper at the Conference) - Beverly Jaeger, Susan Freeman, Richard Whalen, and Rebecca Payne, Northeastern University, Successful Students: Smart or Tough?

Third Place - John K. Estell, Kenneth Reid, Jed Marquart, Ohio Northern University, Addressing Third World Poverty in First-Year Engineering Capstone Projects: Initial Findings

~ Respectfully submitted by S. Scott Moor.

Guidelines for Presentations—Some Thoughts

As we reflected on this conference and others events that we attend, many agreed that it might be time to review and rethink again about presentation guidelines. We try to emphasize these to our students, but may forget them from time to time ourselves. So in this article, we have summarized some basic points but also included some links that really showed us what a great presentation might look like.

The FPD moderators and the Program Chair may decide to send some presentation guidelines and/or requirements, so be looking for those as you prepare. One specific suggestion is to repeat the title slide at the end of the presentation for review and contact. Also, the ASEE FPD website may contain similar information for you to refer to next Spring. So happy presenting!

Top Ten Slide Tips:

1. Keep it Simple
2. Limit Bullet points and text
3. Limit transitions and builds (animation)
4. Use high quality graphics
5. Have a visual theme, but avoid using PowerPoint templates
6. Use appropriate charts
7. Use color well
8. Choose your fonts well
9. Use video or audio
10. Spend time in the slide sorter



So here are some of those links:

<http://www.garrreynolds.com/Presentation/slides.html>

<http://www.the-eggman.com/writings/keystep1.html>

Highlighting Freshman Programs: University of Utah

By Stacy Bamberg

Each year, the FPD Newsletter highlights the Program or University that earned Best Paper in the First-year Programs Division.

The University of Utah is located in Salt Lake City, Utah, and has a student population of over 29,000. It is the oldest and largest institution of higher education as well as one of the largest employers in Utah. There are more than 100 undergraduate and 90 graduate degree programs offered. The College of Engineering has seen incredible growth, with the total number of degrees in engineering and computer science increasing by 79% from 1999 to 2009, with 643 degrees in 2009. Utah Engineering is ranked by ASEE to be 40th out of 237 schools for number of tenure-track faculty, 46th out of 192 schools in research expenditures, and among the top 50 for BS degrees in computer science, civil engineering, mechanical engineering and electrical engineering. The College does not have a common core curriculum.

The Department of Mechanical Engineering has generated a large portion of the growth in the last decade. This growth has been substantial at the undergraduate level, nearly doubling from 65 B.S. degrees awarded in 1999 to 119 in 2009. Interest has continued to climb in the last several years, with our required freshman introductory class having an enrollment of over 140 in fall 2009, and an anticipated enrollment of over 160 in fall 2010.

In 2006, we embarked upon a substantial change to our curriculum for our freshmen and sophomores. We were spurred in part by our growth—we needed to find a way to safely accommodate twice as many students coming through our machine shop class as sophomores, as well as to ensure that we continue to engage our students as class sizes expanded. In addition, we wanted to continue our innovation in undergraduate education by providing our students with team-based design projects every semester. We already had a year-long Mechatronics course for our juniors, and a year-long Capstone course for our seniors. We received funding from the National Science

Foundation Division of Undergraduate Education, for our "Design Based SPIRAL Learning Curriculum" in March 2009, and implemented our changes to our freshman curriculum in academic year 2009-2010.

We have sought to specifically integrate the use of active, co-operative, and design-project based learning approaches. We do this using a Student-driven Pedagogy of Integrated, Reinforced, Active Learning (SPIRAL) approach that applies Bruner's concept of a "spiral curriculum" that turns back on itself at higher levels" through repetition at ever-increasing depth of knowledge.

In the first year, we took our original freshman introductory course (formerly called "Design and Visualization") and our original introductory programming class (formerly taught by the computer science department and called "Engineering Computing") and created a two-semester sequence called "Introduction to the Design of Robotic Systems Design I and II." The new fall semester retains much of the introductory design curriculum, and focuses on mechanical elements of robotic systems and modeling using explicit finite difference techniques. In the lab and on homework, students learn SolidWorks and Excel.

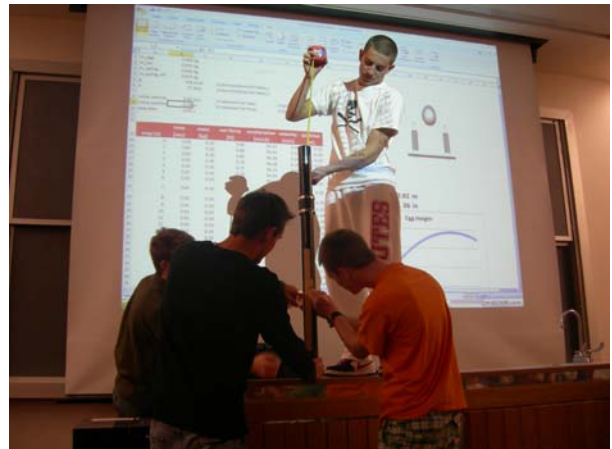
The spring semester retains much of the introductory programming curriculum, and focuses on sensors and control of robotic systems (using the Arduino Duemilanova platform). In the lab and on homework, students learn MATLAB and continue to develop their skills on SolidWorks and Excel. Communication skills are also integrated across both classes, with required written memos and oral presentations related to the design project (we reported on our overall program, the integration and reinforcement, the active learning, and the communications in four papers at the ASEE 2010 annual conference).

Our lecture format is two 80-minute periods per week. This longer time-frame can make holding students attention a challenge, and encouraged our incorporation of

active learning techniques, some of which are in wide-spread use, such as small and large group discussions and student response systems. One of the techniques that got the most positive response from the students was what we call *giant, oversized demos*.

In creating these oversized demos, we sought to capture our students' attention and increase student participation, while not requiring a large expense. Since our fall classroom is a typical 200+ seat lecture hall, there is a long distance from the front of the room to the back, our goal was to have several interactive demonstrations that could be readily seen by students sitting in the back row.

We kept the costs low by using rapid prototyping tools available in our department, primarily the waterjet cutter. This serves an additional learning purpose, since our students are required to each create CAD models for parts that are machined on the waterjet (the actual machining is done by our TAs) for use on their design project. The demos then provide examples of different parts and materials that can be manufactured on the waterjet cutter. We have also engaged our undergraduate population by designing independent studies (for which students can earn



technical elective credit) for motivated undergraduates to help us design and build these demos.

Last year, our oversize demos included:

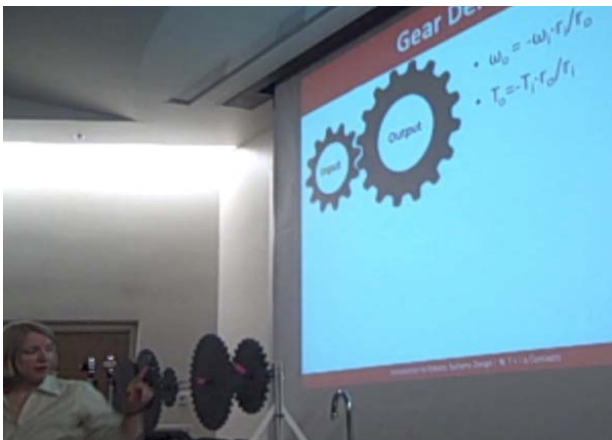
- An "Egg-zooka" (pictured above)
- A fourbar linkage model
- A gear train (pictured next page)

A pulley with two wheel size

The "Egg-zooka" was constructed from large PVC pipe, and was used for modeling and predicting the trajectory of an egg propelled by springs. This was used to demonstrate physics concepts ($F=ma$ in particular) and explicit finite difference techniques. The Excel spreadsheet is visible in the background of the photograph, and students cheered when the distance traveled by the egg matched the model predictions.

The other three demos were primarily constructed from PVC using the waterjet cutter. The fourbar linkage models were used to demonstrate link behavior and inversions. The gear trains were used to demonstrate gear ratios in simple and compound gear trains (with swappable gears), and the whole class participated by counting revolutions of the output gear as the input gear was turned. The pulley with two swappable wheel sizes was used to demonstrate physics concepts, $T=I\alpha$ in particular.

All of these demonstrations had associated example problems that were solved by the students working in small groups of 2-4 students during the lecture. We gave the students quizzes using the student response systems before and after the demonstrations related to the behavior of the models. At the end of the semester, we asked the students to rate the various interactive activities, and the Egg-zooka was the clear favorite.



For the upcoming year, we had three students design and build a planetary gear (approximately 4 feet in diameter), also primarily from PVC using the waterjet cutter. Our experience with these oversized demos has been very positive. The large size captures the students' attention, and the students clearly enjoy seeing the predicted behavior demonstrated experimentally.

Perspectives-

A Message from the Past Chair

It has been a privilege to be associated with the First-year Programs Division for so many years. The quality of the people and their work remains among the highest in ASEE. With yet another best paper award to our credit and the most sessions and paper presentations for our PIC at the conference in Louisville, it was a banner year in 2010. I am continually amazed at the creativity of my fellow faculty members and I only wish that I could measure up to the standards set by this outstanding division. Although I am a little sad to think that my involvement may be diminishing, I remain convinced that the future leaders of this division will propel it in the right direction for many years to come.

Kris Craven
Past Chair
First-Year Programs Division

Louisville, KY

FPD Sessions and some Louisville highlights



ASEE 2010 FPD Best Papers

Reviewers and FPD Board members voted for the best papers. The winners are:

Best Paper Award, First Place

AC 2010-1710: INTERACTIVE LEARNING USING A SPIRAL APPROACH IN A LARGE REQUIRED FIRST-YEAR MECHANICAL ENGINEERING CLASS, University of Utah

Stacy Bamberg—presenter, Debra Mascaro and Robert Roemer

Second Place

AC 2010-1033: SUCCESSFUL STUDENTS: SMART OR TOUGH? Northeastern University

Beverly Jaeger, Susan Freeman, Richard Whalen—presenters, Rebecca Payne

Third Place

AC 2010-197: ADDRESSING THIRD WORLD POVERTY IN FIRST-YEAR ENGINEERING CAPSTONE PROJECTS: INITIAL FINDINGS, Ohio Northern University

John K. Estell, Kenneth Reid—presenters, Jed Marquart



ASEE 2009 FPD Best Presentations

Best Presentation Award:

AC 2009-731: ENGAGING FRESHMAN EXPERIENCE: THE KEY TO RETENTION?

Ronald Welch, University of Texas, Tyler -presenter

Best Student Presentation:

AC 2009-1444: MATHEMATICS AND PHYSICS FACULTY CONCEPTIONS OF TEACHING IN A FIRST-YEAR INTEGRATED PROJECT-BASED ENGINEERING CURRICULUM

Franklin W. Olin College of Engineering
Yevgeniya Zastavker-Presenter, Casey Canfield



PROPOSED WORKSHOP- WE'D LIKE YOUR INPUT!

I Hadn't Thought of Doing *That*:

Sharing Best & Unique Practices in the Classroom

For ASEE 2011, FPD is looking to sponsor a workshop that involves YOU and situations beyond our teaching tasks. We are looking to conduct a guided workshop that shares best practices on a variety of topics that are common to faculty. In addition, a variety of interactive techniques will be infused into the activities of the workshop.

With your input, some *examples* we may be choosing from are:

- Breaking the Ice* - Managing introductions and the first day of class
- Is it Right or Wrong?* - Approaches and rubrics for subjective grading
- Academic Dishonesty in the Gray Zone* - Handling class integrity issues
- Exam and Quiz Writing* - Planning for time, grading, interpretations, etc ...
- TA in the Way* - Effective use of untrained/uninvested graduate teaching assistants/graders
- The Team Approach* - Philosophies and Techniques for Effective and Efficient Team Formation
- When class is in a Funk* - Motivating students when they are in the "trough of disillusionment"
- Creative Ideas for the active and cooperative classroom* - Ideas for getting students engaged
- Teaching Student Success*—What can we teach, and how should we teach it to help our students be successful?

Please go to the link at:

<https://spreadsheets.google.com/viewform?formkey=dGEyTzg5cFRIYjVvVVE1a2wzczNRbGc6MQ>

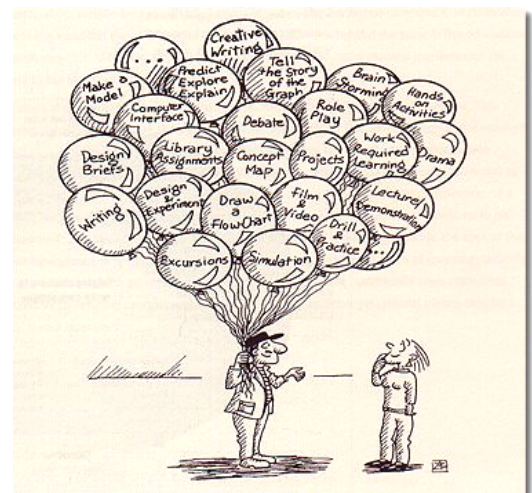
to vote for the top subjects you'd like to see covered in the workshop and to offer your own ideas for topics that may be helpful to share among colleagues in a guided open forum.

Questions or comments:

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bkjaeger@coe.neu.edu
whalen@coe.neu.edu



"I expect you all to be independent, innovative, critical thinkers who will do exactly as I say!"



Message from the Chair (continued from page 1)

As the previous Program Chair for FPD, I was thrilled to be able to dedicate two large technical sessions purely to research on the first year at the 2009 Annual Conference in Louisville, KY. These sessions dealt specifically in answering research questions ranging from 'how do we better transfer the right knowledge to our students' to 'how can we meet their needs as young engineers given the uneven playing field of an entering cohort.' This past year's conference dealt somewhat less with program descriptions and anecdotal evidence of basic satisfaction and more on what it takes for our students to truly be successful in engineering – if they are even well-suited to do so. Understanding the moving target that is a first-year student cohort is challenging, laborious and relevant to those who consider these new students as the next best hope for our profession.

With our leadership transitional period completed, the future is very bright for the First-Year Programs Division. The Executive Board is a group comprised of very special people who are knowledgeable and passionate about their work. Recognition of our division members' hard work is increasing with one of the FPD papers being selected Best Paper for the entire 2010 Annual Conference, lending a nod to the increasing rigor and creativity in first-year student research. I am extremely confident the new Program Chair will lead the planning and execution of the technical portion of the 2011 Annual Conference with great care and attentiveness.

As the new FPD Division Chair, I am looking forward to establishing networking opportunities with other divisions within ASEE. We simply do not operate in a vacuum or in traditional academic silos anymore. As first-year educators we inherit the product of our K-12 colleagues and we pass on our students to more advanced study in specific engineering disciplines. How we transform our students and prepare them for further study is a critical role in engineering student development. I am pleased to know so many people are working so hard on solving these types of problems in our engineering schools. After all, it can be argued that Engineering Education begins in The First-Year Program!

Chris Rowe, First-Year Programs Division Chair

ASEE 2011: Next Year in Vancouver

S. Scott Moor, Indiana University Purdue University Fort Wayne
Carolyn Labun, University of British Columbia, Kelowna
Jason Bazylak, University of Toronto

Next year's ASEE Annual Conference and Exposition will be held in Vancouver, British Columbia, a truly unique city. Vancouver is a city of approximately half a million people surrounded by water with mountains to the north and the Fraser River to the South. Vancouver has a more temperate climate than recent conference locations. Vancouver's June temperature is usually cool with an average temperature of 59° F and an average high of 67° F. It rains an average 8 days in the month of June, but usually only light rains.

Vancouver has a well-developed public transit system.
(continued on page 17)

FUTURE CONFERENCES:

FILE: 2010 Frontiers in Education Conference:

"Celebrating 40 Years of Innovation"

October 27 – 30, 2010

Arlington, VA

Annual ASEE Global Colloquium on Engineering Education:

October 18-21, 2010

Part of WEEF: the World Engineering Education Forum
Singapore, Marina Bay Sands Hotel

Conference for Industry and Education Collaboration (CIEC):

"Transforming the Education of Future Generations in Engineering and Engineering Technology"

February 2-4, 2011

San Antonio, TX

Upcoming Annual ASEE Conferences!:

2011 ASEE Annual Conference & Exposition
June 26 - 29, 2011 - Vancouver, BC, Canada

2012 ASEE Annual Conference & Exposition
June 17 - 20, 2012 - San Antonio, TX

2013 ASEE Annual Conference & Exposition
June 23-26, 2013, Atlanta, GA

It is not too early to put San Antonio on your calendar :)

2010 Annual Conference in Louisville

June , 2010

Freshman Programs Division (FPD) Sessions Details

Sunday, June 20, 2010

2:15-4:00 p.m. **Moderator(s):** Kristine Craven, Tennessee Technological University

0553: First-Year Programs Executive Board Meeting

This is the business meeting of the Executive Committee of the First-Year Programs Division.

2:00 p.m.-5:00 p.m. **0453: Media Programming: A Gateway to College Math**

Participants learn the pedagogy and tools of "An Introduction to Computational Systems" (ICS). ICS exploits programming to enable freshmen with weak mathematical maturity to examine the evolution of familiar dynamic processes such as ballistics and resonance. Programming is initially introduced in the context of graphical manipulation and is then exploited as a malleable scaffolding for modeling the evolution of dynamic systems through the summation of finite differences. Through this process, students gain visceral understanding of the relationship between familiar dynamic phenomena and mathematics. ICS provides experiences relevant to career/major selection and variants are available to both STEM and non-STEM majors.

Speaker: Eric Freudenthal, University of Texas, El Paso

Monday, June 21, 2010

7:00-8:15 a.m. **Moderator(s):** Robin Hensel, West Virginia University

1153: Introducing Programming in the First Year

Programming can be difficult for students who are new to engineering. The following panel presentations explore how some schools are teaching programming concepts in unique and innovative ways to first-year students.

AC 2010-869: USING COMPUTER MODELING PROBLEMS FOR UNDERGRADUATE ENGINEERING EDUCATION

Steven Gordon, The Ohio State University

AC 2010-1431: INTEGRATION OF GRAPHICAL PROGRAMMING INTO A FIRST-YEAR ENGINEERING COURSE

Gregory Bucks and William Oakes, Purdue University

AC 2010-1840: WORK IN PROGRESS: ADOPTION OF CCS0 COMPUTATIONAL METHODS AND CIRCUIT ANALYSIS TECHNIQUES INTO AN INTRODUCTORY PROGRAMMING COURSE FOR ELECTRICAL ENGINEERS

Virgilio Gonzalez and Eric Freudenthal, University of Texas, El Paso

12:30-2:00 p.m. **Moderator(s):** Richard Whalen, Northeastern University

1453: Potpourri of First-Year Issues

This session's panels combine many aspects of first-year engineering education not covered in other sessions. New directions, trends, best practices, boutique topics, etc., will be included here.

AC 2010-313: INTEGRATING SERVICE-LEARNING IN THE FIRST-YEAR INTRODUCTION TO ENGINEERING COURSE

Farid Farahmand, Sonoma State University, Saied Moslehpour, University of Hartford

AC 2010-1266: ENGAGING SPACES FOR FIRST-YEAR ENGINEERING: A TALE OF TWO CLASSROOMS

S. Scott Moor, Indiana University-Purdue University, Fort Wayne

AC 2010-112: CHEESEBURGER, FRIES, AND A COKE: IT'S ABOUT THE PRESENTATION

John K. Estell, Kenneth Reid, and Laurie Laird, Ohio Northern University

AC 2010-1079: FIRST-YEAR ENGINEERING FROM THE PERSPECTIVE OF A HIGH-SCHOOL TEACHER.

Rod Paton, Chris Smaill, and Gerard Rowe, University of Auckland

AC 2010-1659: IMPLEMENTING PEER LED TEAM LEARNING IN GATEWAY SCIENCE AND MATHEMATICS COURSES FOR ENGINEERING MAJORS

Benjamin Flores, James Becvar, Ann Darnell, Helmut Knaust, Jorge Lopez, and Josefina Tinajero, UTEP

2:15-4:00 p.m. **Moderator(s):** Gunter Georgi, Polytechnic University

1553: Research on the First Year I

This panel session involves research projects on first-year programs and students, the first-year transition, and student learning. The papers have varying topics but underscore the relevance of knowing who first-year students are and how they navigate early engineering education.

AC 2010-479: TEACHING DECISION-MAKING IN ENGINEERING: A REVIEW OF TEXTBOOKS AND TEACHING APPROACHES

Senay Purzer and Jing Chen, Purdue University

AC 2010-1788: ANALYSIS OF FRESHMAN-TO-SOPHOMORE RETENTION IN YEAR TWO OF A FIRST-YEAR ENGINEERING PROGRAM

Richard Cassady and Gigi Secuban, University of Arkansas

AC 2010-1033: SUCCESSFUL STUDENTS: SMART OR TOUGH?

Beverly Jaeger, Susan Freeman, Richard Whalen and Rebecca Payne, Northeastern University

AC 2010-1483: EVALUATION OF A SUMMER BRIDGE PROGRAM ON ENGINEERING STUDENTS' PERSISTENCE AND SUCCESS

Rhonda Kowalchuk, Tarnisha Green, Robert Ricks and John Nicklow, Southern Illinois University, Carbondale

AC 2010-866: INCORPORATING PROBLEM BASED LEARNING (PBL) IN A FRESHMAN ENGINEERING COURSE: METHODS FOR CLASSIFYING AND ASSESSING PBL PROJECTS

Javarro Russell, Olga Pierrakos, Megan France, Ronald Kander, Robin Anderson and Heather Watson, James Madison University

AC 2010-1195: DESIGN OF THE LEARNING ENVIRONMENT FOR INCLUSIVITY: A REVIEW OF THE LITERATURE

Chirag Variawa and Susan McCahan, University of Toronto

4:30-6:00 p.m. **Moderator(s):** Jean Kampe, Michigan Technological University

1653: Design in the First Year

This session's panels explore instruction in design concepts and project work in first-year engineering courses and programs.

AC 2010-2021: A STUDENT PERSPECTIVE ON FRESHMAN ENGINEERING DESIGN PROJECTS: DEVELOPING CORE SKILLS IN YOUNG ENGINEERS

Michael Pacella and Taryn Bayles, University of Maryland, Baltimore County

AC 2010-1044: SHORT, HANDS-ON TEAM DESIGN PROJECTS IN A FRESHMAN ENGINEERING PHYSICS CLASS

Richard Bennett and Will Schleter, University of Tennessee, Knoxville

AC 2010-624: THE ARTIFICIAL KIDNEY: INVESTIGATING CURRENT DIALYSIS METHODS AS A FRESHMAN DESIGN PROJECT

Noelle Comolli, William Kelly and Qianhong Wu, Villanova University

AC 2010-470: DRAW BRIDGE DESIGN: AN INTERDISCIPLINARY, HANDS-ON PROJECT FOR FRESHMAN ENGINEERING STUDENTS

Sami Khorbotly and Kenneth Reid, Ohio Northern University

Tuesday, June 22, 2010

7:00-8:15 a.m. **Moderator(s):** Kristine Craven, Tennessee Technological University

2153: First-Year Programs Division Business Meeting

Ticketed event: \$25 onsite. This is the business meeting of the First-Year Programs Division. This meeting is open to all FPD members and interested conference attendees. Join the Executive Committee for a full, hot breakfast while we conduct the official business of the First-Year Programs Division - one of the larger divisions of ASEE.

Awards presented will include 2010 Best Paper, 2009 Best Presentation and 2009 Best Student Presentation. We will also be electing new executive board members. Your participation and input is valued.

8:30-10:15 a.m. **Moderator(s):** Beverly Jaeger, Northeastern University

2253: Mentoring First Year Students

Mentoring first-year students is of increasing importance to persistence in engineering programs. This session explores various programs and their effects in specific environments.

AC 2010-1358: IMPLEMENTATION OF AN EARLY WARNING SYSTEM IN ENGINEERING: A PARTNERSHIP WITH ACADEMIC ADVISORS AND INSTRUCTORS ACROSS THE CAMPUS

Mary Goodwin, Amy Brandau, Deb DeWall and Bing Du, Iowa State University

AC 2010-913: EVALUATING A PEER LEADERSHIP MODEL IN A LARGE-SCALE PEER MENTORING PROGRAM

Rosemary Patterson, Erin Crede, Kaitlyn Hines, Tyler Aarons, Jean-Louis Bile, Jared Chelko, Whitney Edmister and Bevelee Watford, Virginia Tech

AC 2010-1662: DEALING WITH FAILURE AND MAKING THE TRANSITION BETWEEN HIGH SCHOOL AND COLLEGE

Dan Budny, Elaine Allen and Jeremy Tartt, University of Pittsburgh

AC 2010-1149: CAMPING THE WAY TO HIGHER RETENTION RATES

Steve Rippon and James Collofello, Arizona State University

AC 2010-384: PEER MENTORING: IMPACT ON MENTEES AND COMPARISON WITH NON-PARTICIPANTS

Rose Marra, University of Missouri, Whitney Edmister and Bevelee Watford, Virginia Tech, Barbara Bogue, Pennsylvania State University

Chia-Lin Tsai, University of Missouri, Fleur Gooden, Virginia Tech

AC 2010-420: THE EEES/CONNECTOR FACULTY PROGRAM: SURVEYS OF ATTITUDES, EXPERIENCE AND EVALUATIONS

Daina Briedis, Nathaniel Ehrlich, Colleen McDonough, Jon Sticklen and Thomas Wolff, Michigan State University

12:30-2:00 p.m. **Moderator(s):** Kristine Craven, Tennessee Technological University

2453: Multidisciplinary First Year Programs

Integrating engineering with other core courses in the first year is gaining traction at many schools. This session explores what is being done to successfully integrate math, science, engineering, social sciences, and current events.

AC 2010-2057: JOINT MATH-ENGINEERING PROJECTS TO FACILITATE CALCULUS SUCCESS IN FIRST YEAR STUDENTS

Andrew Lowery, Steve Kane, Vicki Kane, Robin Hensel and Gary Ganser, West Virginia University

AC 2010-1246: THE ROLE OF STRUCTURAL ENGINEERING IN MULTI-DISCIPLINARY FRESHMAN PROJECTS

David Dinehart, Joseph Yost, Shawn Gross and Aleksandra Radlinska, Villanova University

AC 2010-1502: FIRST-YEAR ENGINEERING: A COMPREHENSIVE APPROACH

Timothy Hinds, Thomas Wolff, Neeraj Buch, Amanda Idema and Carmellia Davis-King, Michigan State University

AC 2010-187: INTRODUCING ENGINEERING AND STRENGTHENING KNOWLEDGE OF MATHEMATICS

Ismail Jouny and Polly Piergiiovanni, Lafayette College

2:15-4:00 p.m. **Moderator(s):** Susan Freeman, Northeastern University

2553: Research on The First Year II

This session involves research projects on first-year programs, students, the first-year transition, and student learning. These papers have varying topics but underscore the relevance of knowing who first-year students are and how they navigate early engineering education.

AC 2010-622: PREDICTION OF SOPHOMORE RETENTION

Catherine Pieronek, Kerry Meyers, Sara Skiles, Sean Kelly and Leo McWilliams, University of Notre Dame

AC 2010-829: SUCCESS IN FALL MATH COURSE FOR FRESHMAN STUDENTS ACCEPTING
Nancy O'Connor and Gerard Jones, Villanova University

AC 2010-2027: EVALUATING THE MOTIVATIONAL AND LEARNING POTENTIAL OF AN INSTRUCTIONAL PRACTICE FOR USE WITH FIRST YEAR ENGINEERING STUDENTS
Odesma Dalrymple, ASU Polytechnic, David Sears and Demetra Evangelou, Purdue University

AC 2010-1842: STUDENTS' PEER EVALUATION CALIBRATION THROUGH THE ADMINISTRATION OF VIGNETTES
Junqiu Wang and P.K. Imbrie, Purdue University

AC 2010-1710: INTERACTIVE LEARNING USING A SPIRAL APPROACH IN A LARGE REQUIRED FIRST-YEAR MECHANICAL ENGINEERING CLASS
Stacy Bamberg, Debra Mascaro and Robert Roemer, University of Utah

AC 2010-777: INFLUENCING SENSE OF COMMUNITY IN A STEM LIVING-LEARNING COMMUNITY: AN NSF STEP FUNDED PROJECT
Melissa Dagley-Falls, Michael Georgiopoulos and Cynthia Young, University of Central Florida

Wednesday, June 23, 2010

7:00-8:15 a.m. **Moderator(s):** Norma Veurink, Michigan Technological University

3153: Service Learning and Societal Issues in the First Year

This session explores curriculum development and implementation of topics relating to contemporary social problems and service learning as they relate to engineering education.

AC 2010-297: EFFECTS OF SERVICE LEARNING IMPLEMENTED IN AN INTRODUCTORY ENGINEERING COURSE ON STUDENT ATTITUDES AND ABILITIES IN THE CONTEXT OF ABET OUTCOMES
Carol Sevier, Seung Youn Chyung, Cheryl Schrader and Janet Callahan, Boise State University

AC 2010-197: ADDRESSING THIRD WORLD POVERTY IN FIRST-YEAR ENGINEERING CAPSTONE PROJECTS: INITIAL FINDINGS
John K. Estell, Kenneth Reid and Jed Marquart, Ohio Northern University

AC 2010-323: ENGAGING STUDENTS WITH GREAT PROBLEMS
Brian Savilonis, David Spanagel and Kristin Wobbe, Worcester Polytechnic Institute

12:30-2:00 p.m. **Moderator(s):** Gretchen Hein, Michigan Technological University

3453: Innovations in First Year Programs

This session showcases various new and innovative aspects in first year programs. Program descriptions and/or demonstrations will be the focus of these papers.

AC 2010-1265: USE OF METACOGNITION STRATEGY TO IMPROVE STUDENT LEARNING
Quamrul Mazumder and Anita Ainsworth, University of Michigan-Flint

AC 2010-1278: INTRODUCING CRITICAL THINKING TO FRESHMAN ENGINEERING STUDENTS
James Lewis, Jeffrey Hieb and David Wheatley, University of Louisville

AC 2010-2298: EARLY UNDERGRADUATE RESEARCH AT THE UNIVERSITY OF SOUTHERN INDIANA
Zane Mitchell, Marco Lara Gracia, Ronald Diersing and Glen Kissel, University of Southern Indiana

AC 2010-1876: ENHANCING THE FIRST YEAR LEARNING EXPERIENCE FOR BIOSYSTEMS ENGINEERING STUDENTS AT UNIVERSITY COLLEGE DUBLIN
Thomas Curran, Colleen Doyle, Enda Cummins, Kevin McDonnell and Nicholas Holden, University College Dublin

AC 2010-1060: THE MICHIGAN LECTURER COMPETITION: USING A MULTI-TIERED CLASS COMPETITION TO INCREASE STUDENT COLLABORATION AND COMPREHENSION
Jeffrey Ringenberg, Cooper Union, Marcial Lapp, University of Michigan

2:15-4:00 p.m. **Moderator(s):** Richard Freuler, Ohio State University

3553: Administering First-Year Programs

Administration of first-year programs is an ever-present challenge at many engineering schools. This session attempts to address key challenges and potential solutions of implementing, administering and assessing such complex curricular entities.

AC 2010-283: WHO CREATES AND DEVELOPS FIRST-YEAR ENGINEERING DESIGN ACTIVITIES?
Gretchen Hein, Amber Kempainen, Susan Amato-Henderson, Jason Keith and Melissa Roberts, Michigan Technological University

AC 2010-944: DEVELOPMENT AND ASSESSMENT OF A REVISED INTRODUCTORY ENGINEERING COURSE
Philip Parker, University of Wisconsin, Platteville

AC 2010-1457: ASSESSMENT-DRIVEN EVOLUTION OF A FIRST-YEAR PROGRAM
Rick Williams and William Howard, East Carolina University

AC 2010-146: PROJECT-BASED FRESHMAN ENGINEERING EXPERIENCE: THE CORE COURSE
Robert Caverly, Howard Fulmer, Sridhar Santhanam, Pritpal Singh, James O'Brien, Gerard Jones, Edward Char, Frank Mercede, Randy Weinstein and Joseph Yost, Villanova University

AC 2010-1351: STUDENTS AS THE KEY TO UNLEASHING STUDENT ENGAGEMENT: THE THEORY, DESIGN, & LAUNCH OF A SCALABLE, STUDENT-RUN LEARNING COMMUNITY AT XX
Russell Korte, University of Illinois, Urbana-Champaign, David Goldberg, University of Illinois, Urbana

Vancouver *(continued from page 13)*

You can find your way around using Google Maps, which for Vancouver has directions for using public transit as well as walking and driving directions.

It is impossible to give a full view of Vancouver and BC in a brief article. But to get you started on planning for next year, below is a list of some example activities you can consider. All prices are the approximate current cost in Canadian dollars. Currently Canadian and US dollars are approximately equal value (1\$ CDN ~ 0.96 \$US).

On the Water:

The Vancouver Convention Center is located on the shore of the Burrard Inlet in downtown. There are many options to get out on the water if you would like.

SeaBus

A couple of blocks east of convention center is the SeaBus terminal. The SeaBus is part of the Vancouver transit system and operates several 400-passenger ferries. These boats leave every 15 min during the day and every 30 min in the evening. They take approximately 12 minutes to cross to Lonsdale Quay (www.lonsdalequay.com) in North Vancouver. Lonsdale Quay marketplace includes fish-stalls, bakers, delis, fruit stands and small shops, as well as a bus transit hub for North Vancouver. The SeaBus is part of the regular BC transit system. A single one way ride is \$3.75 but the better option may be a transit system day pass at \$ 9.00 adults and \$7 children 4-13. You can just go for the ride or spend a little time exploring Lonsdale Quay or North Vancouver.

Water Taxies

South of downtown is a narrow inlet known as False Creek. Vancouver's Worlds Fair, Expo 86, was held on the north shore of this body of water and is now called Yale town. There are water taxies that crisscross this inlet in small boats run by two companies: False Creek Ferries (www.granvilleislandferries.bc.ca) and Aquabus (www.theaquabus.com). Adult fares: One way ~ \$3.00-6.50, All-day pass \$15. Spend 20 minutes as part of visiting Granville Island or Science World or spend an hour just cruising False Creek.

Ferry to Victory

Ferries to Victoria leave from Tsawwassen, approximately 30 mi. south of Vancouver. The ferry takes 1 hour and 35 minutes to go the 24 nautical miles to Swartz Bay on Vancouver Island. It is about 18 miles from the ferry docks to downtown Victoria. Adult Passenger \$14, Vehicle \$46.75. Walk on passengers can generally get right on the ferry. However, cars can get backed up in the summer and have to wait several ferries for enough room. A vehicle reservation can be made for an extra fee (\$17). Pacific Coach (www.pacificcoach.com) offers bus service from downtown Vancouver to Victoria via this ferry (\$42 one way adult). The full trip takes approximately 4 hours. Or take the fast trip; Harbor Air (<http://www.harbour-air.com/>) runs float planes from downtown Vancouver to Downtown Victoria. The trip takes 30 minutes (\$145 one way).

Gulf Islands and other BC Ferries (www.bcf ferries.com)

Ferries can also be taken to a range of places along the inland water way particularly to the small gulf islands that lie between the mainland and Vancouver Island. One favorite stay is at the Oceanwood Resort on Mayne Island (\$125-250/night, 2 night min stay). Prices are less if you stay before peak season begins in mid June17 (www.oceanwood.com). Another popular option is the B&B's on Salt Spring Island. Both islands boast artist studios, good food, cycling, and kayaking options.

Sea Kayak

The protected waters of the inland waterway and the various inlets near Vancouver offer many options for sea kayaking. In town Ecomarine Ocean Kayak Center has locations at English Bay Beach (approximately 1.5 mi from Convention Center), Granville Island, and Jericho Beach (near the University of B.C.). A 2.5 hour tour is \$59 (www.ecomarine.com).

Or go fancy and check out the Sunset Chocolate Fondue Kayak tour at Deep Cove Canoe and Kayak \$75, 7-10 pm, It would most likely would require a car to get to Deep Cove. (<http://www.deepcovekayak.com/>). Both locations have a

range of other boating options.

Cruise to Alaska

Canada Place, the pier with the sail roof just east of the convention center, serves as the cruise ship dock for Vancouver. Find information on schedules at www.portmetrovancover.com/about/cruiseandtourism/curiselineschedules.aspx . Trips are generally 7-14 days. Itineraries and prices vary.

There are also a range of whale watching and fishing options from both Vancouver and Victoria.

On the Rails

British Columbia also boasts some of the worlds great train trips through amazing and diverse scenery.

SkyTrain

The sky train is Vancouver's light rail system. In preparation for last year's Olympics a new light rail line from the airport to downtown was added. This train trip takes 30 minutes (\$3.75 one way). The SkyTrains are completely automated (i.e., driverless).

Seattle to Vancouver (www.amtrakcascades.com)

Amtrak's Cascades train covers the four hour trip to and from Vancouver each morning and evening (~\$35 USD one way). The train travels much of the trip right on the coast. Upgrading to business class is worth considering (extra ~\$14). Be sure to get the train, not the "Thruway", i.e., bus, service.

Vancouver to Whistler (www.rockymountaineer.com)

Rocky Mountaineer has a range of trips to Whistler and back. For example a 2-day/1 night is \$305 and includes overnight accommodations in Whistler. You may want to stay longer. See the Beyond Vancouver Section.

Vancouver to Banff, Jasper and the Canadian Rockies

Rocky Mountaineer also has trains to Banff in the Canadian Rockies. A 4-day/3 night round trip costs \$829 USD. This trip includes 3 nights hotel, 2 breakfasts, 2 lunches. Train runs only during the day for two days each direction with an intermediate stop at a hotel. Again you may want to stay longer to enjoy the Rockies. Rocky Mountaineer also has trips to Jasper and other places in Western Canada.

Via Rail to Jasper (www.viarail.ca) – Canada's national rail way has a ~\$400 round trip (coach super saver fare). This trip is 20 hours each way and does not include any hotel stays.

With the Kids

Kid's Market on Granville Island (<http://www.kidsmarket.ca/>)

This building is a mall of 28 very cool and unique toy stores. It is located in an old factory building and a caboose. It is fun for both children and adults to just to be here even if you do not buy anything. Allow a couple of hours. Free except for what you buy.

Granville Island Water Park (<http://vancouver.ca/parks/cc/falsecreek/website/waterpark.cfm>)

Right behind the Toy Company is a water spray playground worth the stop. It includes spraying fire hydrants, geysers, sprinklers and a water slide. There is a separate area for toddlers. A favorite feature is the geysers that have a rubber bladder underground. If a child steps on the small geyser and blocks it for a minute, when they let go they are rewarded with a spray that can go 20 ft. in the air. Cost is free and allow an hour or two.

While on Grandville Island be sure to visit the Public Market. This market is filled with a wide range of food vendors. Stop by for the experience, a snack or a meal. There are also a range of artists studios on the island.

Science World at Telus World of Science (<http://www.scienceworld.ca/>)

Vancouver's hands-on Science Museum is currently undergoing a renovation but is still open and renovations should be completed by March 2011. This hands on museum is located in one of the few remaining buildings from Vancouver's Worlds Fair Expo 86. Take the Skytrain to the Science World Station and walk to the large geodesic dome. The museum is at the end of False Creek and you can take a water taxi from there to Granville Island. (\$21 for adults, allow at least 2 hours). There is also an OMNIMAX theater with an additional admission charge.

Stanley Park (<http://vancouver.ca/parks/parks/stanley/>)

Stanley Park is one of the great urban parks of North America. There are a wide range of activities here for families. You can take a swim at the Second Beach pool, go play in the water park at Lumberman's Arch, visit the Children's Farmyard and Miniature Train, or take in the Vancouver Aquarium.

For more information for families, the Vancouver, BC information on Disney's family.com has a well done "things to do" list for Vancouver. (<http://family.go.com/travel/things-to-do/canada/vancouver--bc/>).

Going Outdoors and Gardens

Vancouver and British Columbia are loaded with great places for those who love the outdoors. From almost anywhere in the city you can see the green mountains of North Vancouver and the waters of the Burrard Inlet. BC's Provincial Parks provide a range of excellent outdoor experiences. Many are just a short drive from downtown. There are also more developed outdoor experiences including Grouse Mountain just north of Vancouver with a cable car up the mountain and a zip line circuit up top and the Capilano Suspension Bridge a 450-ft long bridge 230 ft above a river. Other options include:

The Vancouver Seawall (<http://vancouver.ca/parks/parks/stanley/seawall.htm>)

A developed path almost 14 miles long runs along the Vancouver Seawall. This path starts at the Convention Center, runs 1.3 miles around Coal Harbor, and 5.5 miles around Stanley Park. It continues around English Bay and False Creek. The trail has two "lanes"; the one closest to the water is for walking, the inland side is for bicycles and rollerblading (free, take as long as you want).

Stanley Park (<http://vancouver.ca/parks/parks/stanley/>)

A great place for adults as well as children. Besides walking or bicycling the sea wall, you can walk some of the interior trails, watch the constantly changing fountain on Lost Lagoon (which is lighted at night), eat at *The Teahouse* at Ferguson Point, visit one of the many gardens in the park, and much much more.

Dr. Sun Yat Sen Garden (<http://www.vancouverchinesegarden.com/>)

Approximately one mile from the Convention Center this walled classical Chinese garden can provide a tranquil break in the day. It is a good stop rain or shine as the garden is designed for the rain with most walkways covered (allow approximately 1 or 2 hours, Adults \$14)

Queen Elizabeth Park (www.walkvancouver.com/QEPark/)

This is Vancouver's smaller lesser known urban park. Its Quarry gardens can be spectacular. There is also a rose garden, bocce courts and even disk golf. There is tropical plant conservatory on the top of "little mountain" under the geodesic dome (I prefer the outdoor spaces).

Butchart Gardens (www.butchartgardens.com)

It is almost impossible to adequately describe these 55 acres of gardens and fountains. These 100 year old gardens are developed in garden styles from around the world including a garden built in an old quarry. It is on Vancouver Island between the Swartz Bay Ferry dock and Victory. This is more or less the middle of nowhere, so you will need to plan ahead for transit. You can expect to spend half a day there plus transit time. Adults ~ \$28 Afternoon Tea at the Dining Room Restaurant is worth considering (\$27).

Beyond Vancouver

Whistler and the Peak 2 Peak Gondola (<http://ww1.whistlerblackcomb.com/p2pg/>)

Whistler was the site of many of the 2010 Olympic events. It's only two hours from Vancouver on the Sea to Sky highway or by train (see On the Rails section). In addition to the town, there are many recreational activities including mountain biking and hiking. The Peak 2 Peak gondola gives opportunities for alpine hiking. The Peak 2 Peak breaks many records, and is worth taking for the experience alone.

Okanagan Valley

A mere 4 hours from downtown Vancouver is the wine region of BC's interior. The region boasts excellent wines (<http://www.missionhillwinery.com/default.asp>) and hiking and biking opportunities as well as BC's largest interior city, Kelowna. (<http://www.kelowna.ca/cm/site3.aspx>). Lake Okanagan, a 135 km long lake, provides many recreational opportunities. Myra Canyon's bike trails are spectacular as well. (<http://www.bcadventure.com/adventure/explore/ok/trails/kettle.htm>).

Tofino on Vancouver Island

Take the ferry from Horseshoe Bay north of Vancouver to Nanaimo on Vancouver Island. Then drive to the west coast of Vancouver Island. On the way you can stop at Cathedral Grove with many towering trees, some over 800 years old. Then from Tofino you can hike in the local rainforests or take part in the excellent surfing on Long Beach. Many, many excellent B&B's here.

West Coast Trail (<http://www.vancouverislandoutdoors.com/westcoasttrail/>)

For the truly adventurous there is always the grueling west coast trail on Vancouver Island. This is a 50-mile long hike through some amazing terrain (or so I'm told, I was never crazy enough to attempt it). It is not for novice hikers and requires extensive planning and a permit.

Some Unique Entertainment Options:

Vancouver Theater Sport (www.vtsl.com)

Competitive improv, a uniquely Canadian phenomenon and has taken deep root in Vancouver. The "games" are generally Thurs-Sat. at the Improve Centre on Granville Island. See website for other improv options. 2 hours, (~\$20, Thursday's are half price).

Rogue Folk Club (<http://www.roguefolk.bc.ca/>)

This nonprofit club sponsors 50 to 60 Celtic, Folk, and Roots music concerts, each year. Most concerts are at St. James Hall in the Kitslano neighborhood, 3214 West 10th Avenue \$24.

We hope this list whets your appetite. There is so much more to explore in British Columbia's lower Mainland as well. Vancouver has a range of interesting neighborhoods to explore, several universities, and all the attractions of a major city. Enjoy!

