Welcome

The Colloquium on International Engineering Education is celebrating 20 years of gathering to promote an engineering workforce with the skills to be successful in global contexts. Such an anniversary provides us with a good moment to reflect on our collective impact of the past two decades and revitalize our vision for the future as our meeting theme Proven Methods and New Frontiers suggests. Using the original Newport Declaration (2009) as a guide, we will make progress on a plan to update this document given the persistent need for the world’s engineers to have the preparation and skills to work across cultural and international borders.

Melissa Armstrong, Director
Interdisciplinary Global Programs
Northern Arizona University

The Newport Declaration to Globalize U.S. Engineering Education

WHEREAS the world is experiencing dramatic geopolitical and technological changes which are continually revolutionizing transportation, communication, commerce, education, and life experience; and

WHEREAS these transformations are intertwined with rapidly increasing human population and resource consumption, and therefore bring about increased worldwide challenges and tensions; and

WHEREAS engineering is crucial to addressing these grand challenges facing the planet, and to thereby enhancing global peace and prosperity, and

WHEREAS collaboration on grand challenges builds a stronger sense of global community, and U.S. engineering students engaged in global outreach are uniquely positioned to be ambassadors for the nation; and

WHEREAS the national economy, competitiveness, security, and well-being depend upon successful participation in a global, technology-driven marketplace; and

WHEREAS the U.S. engineering culture brings ingenuity, boldness, and a results-oriented mentality that are crucial to global collaborative progress, and

WHEREAS U.S. citizens tend to be poorly informed about nations and cultures and therefore under-equipped to work effectively with international partners; and

WHEREAS all of the above have vital implications for the education of U.S. engineers;

IT IS IMPERATIVE that U.S. engineering educators and education adapt to the contemporary global environment; and

IT IS IMPERATIVE that all engineering students develop the skills and attitudes necessary to interact successfully with people from other cultural and national environments.

TO THIS END, we call on engineering educators, engineering administrators, and engineering policy leaders to take deliberate and immediate steps to integrate global education into the engineering curriculum to impact all students, recognizing global competency as one of the highest priorities for their graduates; and

TO THIS END, we call on funding agencies, foundations, and leaders in the private sector to shape their policies and priorities in support of these goals; and

furthermore

TO THIS END, we urge that this document be widely distributed and endorsed by all key constituencies.
Thursday, November 2, 2017

ON-SITE REGISTRATION
7:30 am–5:00 pm | High Country Conference Center (HCCC), 201 W. Butler Ave.

SENSE OF PLACE ADDRESS
8:30–8:50 am | HCCC Humphreys
Keynote Speaker:  Telletha Valenski, Dream Dine’ Charter School

WELCOME
8:50–9:00 am | HCCC Humphreys
Keynote Speaker:  Daniel Palm, Associate Vice President for Global Initiatives and Executive Director of the Center for International Education, Northern Arizona University

SETTING A BOLD NEW AGENDA FOR GLOBALIZING ENGINEERING EDUCATION
9:00–10:30 am | HCCC Humphreys
Moderator:  Pauline Entin, Vice Provost, Academic Affairs, Northern Arizona University
Panelists:
• Dave Holger, ABET Past President, Associate Provost for Academic Programs and Dean of the Graduate College (Ret.), Iowa State University
• Rocío Chavela Guerra, Director of Education and Career Development, American Society for Engineering Education
• Peter Kerrigan, Deputy Director, German Academic Exchange Service (DAAD)
• Kyle Squires, Dean, Ira A. Fulton Schools of Engineering, Arizona State University
• Renetta Garrison Tull, Associate Vice Provost of Strategic Initiatives at University of Maryland Baltimore County and VP of Initiatives for the Latin American and Caribbean Consortium of Engineering Institutions (LACCEI)

COFFEE BREAK
10:30–11:00 am | HCCC Peaks Lobby

INTERNATIONAL CAFÉS & COLLECTIVE IMPACT
11:00 am–12:15 pm | HCCC Humphreys

Theme-based discussion time is provided to gain insight from the Colloquium community on the visioning process for the field to remain vital into the future. Participants will choose a theme closest to their own interest area. Themes include:

1. Best practices in international engineering programs
2. Identifying outcomes and assessment techniques
3. Sourcing and sustaining international internships
4. Understanding the goal of global competency
5. Diversity in international engineering programs
6. Alumni engagement
7. What’s next in international engineering education

LUNCH
12:15–1:45 pm | HCCC Humphreys
Keynote Speaker:  John Grandin, Director Emeritus International Engineering Program, University of Rhode Island
### Thursday, November 2, 2017

#### CONCURRENT SESSIONS

**2:00–3:15 pm**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00–2:05 pm</td>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>2:05–2:20 pm</td>
<td>Mark Rectanus &amp; Mark Looney</td>
<td>Iowa State University</td>
</tr>
<tr>
<td></td>
<td>Language and Culture: Achieving Global Competency through Interdisciplinary Efforts</td>
<td></td>
</tr>
<tr>
<td>2:05–2:20 pm</td>
<td>Erik Nielsen</td>
<td>Northern Arizona University</td>
</tr>
<tr>
<td></td>
<td>Advancing Research Ties in Patagonia through NSF-Funded Projects</td>
<td></td>
</tr>
<tr>
<td>2:20–2:35 pm</td>
<td>Benning Tieke</td>
<td>Northern Arizona University</td>
</tr>
<tr>
<td></td>
<td>Preparing Engineers as Global Citizens through Long-Term Language and Cultural Immersion</td>
<td></td>
</tr>
<tr>
<td>2:20–2:35 pm</td>
<td>Mitchel Pardes</td>
<td>Cultural Vistas</td>
</tr>
<tr>
<td></td>
<td>Funding Opportunities for U.S. and International Students and Faculty</td>
<td></td>
</tr>
<tr>
<td>2:35–2:50 pm</td>
<td>Niko Tracksdorf</td>
<td>University of Rhode Island</td>
</tr>
<tr>
<td></td>
<td>A Change of Perspective: Developing Global Competencies through Interdisciplinary Collaborations and Problem-Solving Activities in the STEM-Focused Language Classroom</td>
<td></td>
</tr>
<tr>
<td>2:35–2:50 pm</td>
<td>Peter Kerrigan</td>
<td>German Academic Exchange Service (DAAD)</td>
</tr>
<tr>
<td></td>
<td>Engineering Education Opportunities in Germany</td>
<td></td>
</tr>
<tr>
<td>2:50–3:05 pm</td>
<td>Mareen Fuchs</td>
<td>University of Alabama</td>
</tr>
<tr>
<td></td>
<td>What Works and Doesn’t When Offering an Engineering Program in German</td>
<td></td>
</tr>
<tr>
<td>2:50–3:05 pm</td>
<td>Michael Ort</td>
<td>Northern Arizona University</td>
</tr>
<tr>
<td></td>
<td>100,000 Strong in the Americas Grant Funding</td>
<td></td>
</tr>
<tr>
<td>3:05–3:15 pm</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>

---

**2:00–2:05 pm**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00–2:05 pm</td>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>2:05–2:20 pm</td>
<td>Rebecca Deadmond</td>
<td>Program Manager, Interdisciplinary Global Programs, Northern Arizona University</td>
</tr>
<tr>
<td></td>
<td>Concrete Methods to Promote International Experiences for Students</td>
<td></td>
</tr>
<tr>
<td>2:20–2:35 pm</td>
<td>Courtney Kenny</td>
<td>The Asia Institute</td>
</tr>
<tr>
<td></td>
<td>High Impact International Programs: Innovative Examples of the Short-term Faculty-led Model</td>
<td></td>
</tr>
<tr>
<td>2:35–2:50 pm</td>
<td>Frank Owen</td>
<td>California Polytechnic State University</td>
</tr>
<tr>
<td></td>
<td>Mining German Skripts: Common Skripts to Tie Curricula Together and Save Students Money</td>
<td></td>
</tr>
<tr>
<td>3:05–3:15 pm</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>
### COFFEE BREAK
3:15–3:35 pm  |  HCCC Peaks Lobby

### CONCURRENT SESSIONS
3:35–5:00 pm

<table>
<thead>
<tr>
<th>HCCC Doyle</th>
<th>HCCC Humphreys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose Driven Missions: A Better World <em>is</em> Possible</td>
<td>Curriculum Integration for Global Competencies</td>
</tr>
<tr>
<td>Moderator: <em>Ora Marek-Martinez</em>, Executive Director, Native American Cultural Center, Northern Arizona University</td>
<td>Moderator: <em>Michael Ort</em>, Professor of Geology and Environmental Sciences, Northern Arizona University</td>
</tr>
<tr>
<td>3:45–3:50 pm Introduction</td>
<td>3:45–3:50 pm Introduction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3:50–4:05 pm</th>
<th>3:50–4:05 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Brandon Reynante</em>, University of California San Diego</td>
<td><em>Jennifer Evanuik Baird &amp; Lorie Johns Páulez</em>, Georgia Tech</td>
</tr>
<tr>
<td>Teaching Design for Social Justice in Development Engineering</td>
<td>Best Practices for Sending High Numbers of Engineers Abroad</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4:05–4:20 pm</th>
<th>4:05–4:20 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Silke Scholz</em>, University of Rhode Island</td>
<td><em>Joerg Mossbrucker</em>, Milwaukee School of Engineering</td>
</tr>
<tr>
<td>Project in Sustainable Design of Prosthetics</td>
<td>Accreditation Issues of a Bi-Directional, Dual-Degree Exchange Program in Electrical Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4:20–4:35 pm</th>
<th>4:20–4:35 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Melissa Armstrong &amp; Jazmyn Serrano</em>, Northern Arizona University</td>
<td><em>Adrienne Weishaar</em>, Worcester Polytechnic Institute</td>
</tr>
<tr>
<td>International STEM as a Catalyst for Diversity and Diplomacy</td>
<td>Evaluation of the WPI Off-Campus Project System from a Student Perspective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4:35–4:50 pm</th>
<th>4:35–4:50 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Renee Ronika Klug</em>, Arizona State University</td>
<td><em>Kirsten Davis</em>, Virginia Tech</td>
</tr>
<tr>
<td>A Pragmatic Approach to Including International Students in the American Engineering Classroom</td>
<td>The Rising Sophomore Abroad Program at Virginia Tech: Combining a First-Year Global Engineering Course with Short-Term Study Abroad</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4:50–5:00 pm</th>
<th>4:50–5:00 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>Discussion</td>
</tr>
</tbody>
</table>

### DINNER & KEYNOTE
6:00–7:30 pm  |  NAU International Pavilion, 1450 S. Knoles Dr. |

Keynote Speaker: *Daniel Kain*, Provost and Vice President for Academic Affairs, Northern Arizona University
Friday, November 3, 2017

ON-SITE REGISTRATION
7:30 am–2:00 pm | High Country Conference Center (HCCC), 201 W. Butler Ave.

HOT TOPICS IN INTERNATIONAL ENGINEERING EDUCATION
8:30–10:00 am | HCCC Humphreys

Moderator: Constantin “Cornel” Ciocanel, Associate Professor, Mechanical Engineering Department, Northern Arizona University

Panelists:

- Jenny Benois-Pineau, Professor of Computer Science, Chair of International Relations, Faculty of Sciences and Technologies, University of Bordeaux, France
- Elhachmi Essadiqi, Professor, Director of the School of Aerospace Engineering and UIR Laboratory of Renewable Energies and Advanced Materials, International University of Rabat, Morocco
- Adalberto A. Calderón Trujillo, Rector, Technical University of Hermosillo, Mexico
- Keiko Ikeda, Vice Director, Center for International Education, Kansai University, Japan
- Paul W. Jagodzinski, Dean of the College of Engineering, Forestry, and Natural Sciences, Northern Arizona University, on joint program with Chongqing University of Posts and Telecommunications, China

COFFEE BREAK
10:00–10:30 am | HCCC Peaks Lobby

“The Jack Welch of the future cannot be me. I spent my entire career in the United States. The next head of General Electric will be somebody who spent time in Bombay, in Hong Kong, in Buenos Aires.

We have to send our best and brightest overseas and make sure they have the training that will allow them to be global leaders.”

—Jack Welch, General Electric Chairman & CEO (1981-2001) in a speech to GE employees
**CONCURRENT SESSIONS**

10:30 am–11:45 am

<table>
<thead>
<tr>
<th>HCCC Doyle</th>
<th>HCCC Humphreys</th>
<th>HCCC Rees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employability of the Internationally-Prepared Engineer</strong></td>
<td><strong>Entrepreneurship and Other Cross-Disciplinary Initiatives that Intersect with Economic Development</strong></td>
<td><strong>Assessment, Evidence and Trends</strong></td>
</tr>
<tr>
<td>Moderator: Ace Baty, Divisional Technical Operations Leader, Medical Products Division, W. L. Gore and Associates</td>
<td>Moderator: Mark Rectanus, Director of Languages and Cultures for Professions, Professor of German Studies, Iowa State University</td>
<td>Moderator: Lisa Turker, Associate Director, Study Abroad, Office of Global Initiatives, University of Arizona</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10:30–10:35 am</th>
<th>10:30–10:35 am</th>
<th>10:30–10:35 am</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Introduction</td>
<td>Introduction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10:35–10:50 am</th>
<th>10:50–11:05 am</th>
<th>10:50–11:05 am</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Robertino Nuñez</strong>&lt;br&gt;North Carolina State University</td>
<td><strong>Robert Burgess</strong>&lt;br&gt;Georgia Tech</td>
<td><strong>Scott Streiner</strong>&lt;br&gt;Rowan University</td>
</tr>
<tr>
<td>Successful Integration of Engineering Universities and Trade Association for Student Career Development</td>
<td>Opportunities and Challenges of an Interdisciplinary Minor that Enables Entrepreneurial Goals of Engineering Students</td>
<td>Developing an Operational Model for Global Engineering Programming: A Participatory, Mixed-Methods Approach</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11:05–11:20 am</th>
<th>11:05–11:20 am</th>
<th>11:05–11:20 am</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kelly Carolyn Ottman</strong>&lt;br&gt;Milwaukee School of Engineering University</td>
<td><strong>Alphonse Habyarimana</strong>&lt;br&gt;4Fab (formerly Kepler Tech Lab Rwanda)</td>
<td><strong>Sigrid Berka</strong>&lt;br&gt;University of Rhode Island</td>
</tr>
<tr>
<td>Developing Engineering Leaders in a Global World</td>
<td>A Locally-Relevant Engineering Entrepreneurship Module for Development Communities</td>
<td>University of Rhode Island Results of an NSF-Sponsored Cross-International Study for Assessing the Spectrum of International Undergraduate Engineering Education Experiences</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11:20–11:35 am</th>
<th>11:20–11:35 am</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mary Anne Walker</strong>&lt;br&gt;Michigan State University</td>
<td><strong>Joe Tort</strong>&lt;br&gt;Purdue University</td>
<td></td>
</tr>
<tr>
<td>Curriculum Mapping to Strengthen Global Competencies: Your Future Employer Wants You to Have These Skills</td>
<td>Maximizing the International Experience through Training and Assessment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11:35–11:45 am</th>
<th>11:35–11:45 am</th>
<th>11:35–11:45 am</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>Discussion</td>
<td>Discussion</td>
</tr>
</tbody>
</table>
**Friday, November 3, 2017**

**LUNCH**
12:00–1:20 pm | HCCC Humphreys

Keynote Speakers:

- David Abeyta, Divisional Leader, Medical Products Division, W. L. Gore and Associates
- Francisco Gaona, Operational Director, Núcleo de Investigación Científica y Desarrollo Tecnológico (NICDET), Rubio Corporativo, Mexico

**CONCURRENT SESSIONS**
1:30–2:45 pm

**HCCC Doyle**

Fostering Pathways to International Engineering

Moderator: Stacie Zanzucchi, Principal of Coconino High School

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30–1:35 pm</td>
<td>Introduction</td>
</tr>
<tr>
<td>1:35–1:50 pm</td>
<td>Cristina Ladas, Cave Creek Unified School District</td>
</tr>
<tr>
<td></td>
<td>Community Inspired, Globally Prepared</td>
</tr>
<tr>
<td>1:50–2:05 pm</td>
<td>Jennifer Evanuik Baird &amp; Lorie Johns Páulez, Georgia Tech</td>
</tr>
<tr>
<td></td>
<td>Engaging First Year Students to Create an International Pathway</td>
</tr>
<tr>
<td>2:05–2:20 pm</td>
<td>Tari Popham, Rochelle Bronson, &amp; Cate Malone, Sinagua Middle School</td>
</tr>
<tr>
<td></td>
<td>Building from the Bottom Up</td>
</tr>
<tr>
<td>2:20–2:35 pm</td>
<td>Bryan Hill, University of Arkansas</td>
</tr>
<tr>
<td></td>
<td>Achieving the Impossible: Tripling the Number of Engineering Students</td>
</tr>
<tr>
<td></td>
<td>Spending a Semester Abroad Without Delaying Graduation</td>
</tr>
<tr>
<td>2:35–2:45 pm</td>
<td>Discussion</td>
</tr>
</tbody>
</table>

**HCCC Humphreys**

Out of the Box: Examples of What the Internationally-Prepared Engineer is Poised to Do

Moderator: Ryne Flanagan, Interdisciplinary Global Programs Alumnus, Northern Arizona University

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30–1:35 pm</td>
<td>Introduction</td>
</tr>
<tr>
<td>1:35–1:45 pm</td>
<td>Grant Schuler, Global Engineering Alliance for Research and Education (GEARÉ) Program Alumnus, Purdue University</td>
</tr>
<tr>
<td>1:45–1:55 pm</td>
<td>Megan Lobaugh, 2010 Boren Fellow, University of Cincinnati</td>
</tr>
<tr>
<td>1:55pm–2:05 pm</td>
<td>Karl Zimmer, International Co-op Program Alumnus, University of Cincinnati</td>
</tr>
<tr>
<td>2:05–2:15 pm</td>
<td>Logan Bacher, Interdisciplinary Global Programs Alumnus, Northern Arizona University</td>
</tr>
<tr>
<td>2:15–2:25 pm</td>
<td>Michele Mandula, International Plan Program Alumnus, Georgia Institute of Technology</td>
</tr>
<tr>
<td>2:25–2:45 pm</td>
<td>Discussion</td>
</tr>
</tbody>
</table>

**COFFEE BREAK**
2:45–3:15 pm | HCCC Peaks Lobby
INTERNATIONAL CAFÉS & COLLECTIVE IMPACT
3:15 pm–5:00 pm  HCCC Humphreys

As the 20th Colloquium comes to a close, we have another opportunity to work together and consider the collective impact of the community.

Participants will again break into groups based on themes, contributing their own ideas and thoughts after two days of meetings. Such dedicated time will help us emerge from the Colloquium with a concrete plan to update the Newport Declaration to again stress importance of internationally-prepared engineers in our complex and global future.

CLOSING RECEPTION
5:00–6:00 pm  HCCC Peaks Lobby

Saturday, November 4, 2017
Optional Excursion to Grand Canyon National Park

Wear comfortable layers and closed-toed shoes. A light lunch will be provided. Registration is required; spots are limited.

MEET FOR DEPARTURE TO GRAND CANYON NATIONAL PARK
7:45 am  High Country Conference Center (HCCC), 201 W. Butler Ave.
Meet outside by the front doors or near the Peaks Lobby front desk

DEPARTURE
8:00 am  HCCC, Flagstaff

ARRIVAL & SIGHTSEEING
9:30–10:30 am  South Rim

ROCK TALK: TRAVELING BACK IN TIME THROUGH GEOLOGY
10:15–10:30 am  South Rim
Guide: Linda Maria Alvarado, Center for International Education, Northern Arizona University

LUNCH & SIGHTSEEING
10:30 am - 1:00 pm  South Rim

MEET FOR DEPARTURE TO FLAGSTAFF, ARIZONA
1:00 pm  Grand Canyon Visitor Center
3:00 pm  Drop-Off at High Country Conference Center/Drury Inn & Suites
201 W. Butler Ave./300 S. Milton Rd.

Thank You

A special thanks to the 20th Colloquium Steering Committee:

John Grandin, Sigrid Berka, and Silke Scholz, University of Rhode Island
Mark Rectanus, Iowa State University
Gregg Warnick, Brigham Young University
Eckhard Groll and Joe Tort, Purdue University
Gayle Elliott and Christopher Cooper, University of Cincinnati
Amy Henry, Georgia Tech
Melissa Armstrong, Liliane Palm, and Michael Ort, Northern Arizona University
Alumni Spotlight

Learn more about our featured alumni who have become leaders in their disciplines and participated in significant international study abroad experiences.

“To be successful in a career, it is not enough to be able to ‘do your job.’ Rather, you need to be able to lead, encourage, and motivate others; my international experiences have allowed me to accelerate these critical leadership skills. Having been forced, through international immersion, to understand and work with others in very different cultures, I believe I have been better able to subsequently lead, motivate, and work with others throughout my career.”

-Karl Zimmer, International Co-op Program Alumnus, University of Cincinnati

“My international education has prepared me to be successful professionally and has given me valuable skills I still use every day. Above all else, studying abroad gave me the opportunity to master another language, which has opened the door to new world. The daily challenges I faced living in a foreign country have developed my problem solving skills along with a deeper cross-cultural understanding. I value everything I gained through my experience abroad, especially in today’s fast paced international environment.”

-Logan Bacher, Interdisciplinary Global Programs Alumnus, Northern Arizona University

“My international education experiences have helped me improve my communication skills, as well as my ability to recognize and understand different perspectives. Living in another culture and language provides you with lots of practice communicating on all levels and with different styles. Interacting and working in a multicultural atmosphere gives you training in sensitivity, perspective, and approach. I see these as key problem solving skills and crucial to being a successful engineer. The biggest impact this has had on my career is opening doors to projects where communication is key: emergency response, international collaborations, and work with the public.”

-Megan Lobaugh, 2010 Boren Fellow, University of Cincinnati

“My educational and work experience abroad during my undergraduate education has allowed me the opportunity to develop product development and implementation processes that consider the unique needs of our international customers and the teams that support them. This in turn yields higher customer satisfaction with our people and products and creates a feeling of inclusion and importance for those international customers that are (seemingly) so often forgotten when U.S.-based companies are developing and selling products.”

-Michele Mandula, International Plan Program Alumnus, Georgia Institute of Technology

“Having international work experiences not only helps with understanding the habits of fellow international employees but allows you to be a more effective co-worker, by giving you the tools to interact across cultures easily and gain the respect that comes with that.”

-Grant Schuler, Global Engineering Alliance for Research and Education (GEARE) Program Alumnus, Purdue University
Keynote Speakers and Panelists

Abeyta, David
Divisional Leader, Medical Products Division, W. L. Gore and Associates

*Keynote Speaker, Lunch, November 3, 2017*

David was born and raised in Flagstaff, Arizona. He graduated from Northern Arizona University with a B.S. in Accounting. Currently the Medical Products Division leader with W. L. Gore, David has now been with Gore Medical for a total of fifteen years. During that time he spent two years in the finance function as a financial analyst supporting the vascular business. Products supported during that time included all the surgical vascular grafts and interventional devices. During the next eight years, he was the business leader for the Aortic Team as they entered new markets, developed line extensions, conducted clinical trials, and converted the market from a surgical-based business into a majority of endovascular products. Since 2011, David has lead the Global Medical Division for Gore. The healthcare industry has recently gone through many changes that have created the need for reorganization, strategy refinement, and talent development which has been David’s focus to ensure W. L. Gore’s customers continue to receive innovative, and cost effective products. David is married to his wife Cathy, and they enjoy many activities together such as running, hiking, and travel.

Benois-Pineau, Jenny
Professor of Computer Science, Chair of International Relations, Faculty of Sciences and Technologies, University of Bordeaux, France

*Panelist, Hot Topics in International Engineering Education*

Jenny Benois-Pineau is a full professor of Computer Science at the University Bordeaux and chair of Video Analysis and Indexing Research Group in the Image and Sound Department of LABRI UMR 58000 Université Bordeaux/CNRS/IPB-ENSEIRB. She has been a Deputy Scientific Director of Theme B of French National Research Unity GDR CNRS ISIS (2008 - 2015) and is now a Chair of International Relations at College of Sciences and Technologies at University Bordeaux. She obtained her Ph.D. degree in Signals and Systems in Moscow and her Habilitation à Diriger la Recherche in Computer Science and Image Processing from University of Nantes, France. Her topics of interest include image and video analysis and indexing, motion analysis and content description for content-based multimedia retrieval.

Calderón Trujillo, Adalberto A.
Rector, Technical University of Hermosillo

*Panelist, Hot Topics in International Engineering Education*

Adalberto Abdalá Calderón Trujillo is the Rector (President) of the Technological University of Hermosillo. He is from Sahuaripa, Sonora, Mexico. He studied Chemistry at the Universidad Nacional Autónoma de México (UNAM) in Mexico City. Mr. Calderón Trujillo spent 16 years teaching at the University of Sonora, Colegio Regis, Colegio de Bachilleres, and Kino University. He also has held director positions for the State of Sonora as the Director of Development Promotion in the Ministry of Development Planning of the Government and General Director of Mining Development in the Secretariat of Industrial Development and Commerce of the Government of the State of Sonora. He joined the Technological University of Hermosillo, Sonora in 1999 and became Rector in 2015.
Keynote Speakers and Panelists

Chavela Guerra, Rocío
Director of Education and Career Development, American Society for Engineering Education

*Panelist, Setting a Bold New Agenda for Globalizing Engineering Education*

Dr. Rocío C. Chavela Guerra is director of Education and Career Development at the American Society for Engineering Education (ASEE). She oversees a portfolio of professional development opportunities for faculty and academic administrators and serves as staff liaison to ASEE’s Diversity Committee. Prior to joining ASEE, she served as a full-time instructor at Universidad de las Americas, Puebla (UDLAP) in Mexico, and as a graduate fellow at the U.S. National Academy of Engineering’s Center for the Advancement of Engineering Education. Rocío’s efforts focus on engineering faculty and graduate student development with particular emphasis on the adoption of evidence-based instructional practices.

Essadiqi, Elhachmi
Professor, Director of the School of Aerospace Engineering and UIR Laboratory of Renewable Energies and Advanced Materials, International University of Rabat, Morocco

*Panelist, Hot Topics in International Engineering Education*

Dr. Elhachmi Essadiqi is currently the Dean of Aerospace Engineering school and director of Renewable Energy and Advanced Materials (REAM) at the Université Internationale de Rabat, Morocco and is an adjunct professor at Mississippi State University. His main research interests are in the area of water and environment, alloys and process design of materials, as well as microstructure and properties relationship in ferrous and non-ferrous alloys. Dr. Essadiqi developed a twin roll casting process and design thermo-mechanical processes for new magnesium – RE alloys sheet in Canada, in collaboration with General Motors, Novelis, MagnET (network of excellence of 5 Canadian Universities), and Helmholtz Geesthacht Zentrum (old GKSS) in Germany. He is now working on seawater desalination using solar energy, development of wastewater, and lightweight materials for automotive and aeronautics applications.

Gaona, Francisco
Operational Director, Rubio Corporativo, Núcleo de Investigación Científica y Desarrollo Tecnológico (NICDET), Mexico

*Keynote Speaker, Lunch, November 3, 2017*

Eng. Francisco Gaona, Chief Operative Officer (COO) for NICDET, Núcleo de Investigación Científica y Desarrollo Tecnológico (Nucleus of Scientific Research and Technological Development), is responsible for the day-to-day administration and operations, and he also is in charge of executing the strategies correlated to the long-term vision of the company. This includes overseeing each project execution for all department and research centers within NICDET. He applies his expertise from his consulting firms in Mexico on Design, Advance Manufacture, IT, Project Management and spent five years in the United States, as Director of Manufacture & Research in a medical design firm based in Houston, Texas.
Keynote Speakers and Panelists

**Grandin, John**
Director Emeritus, International Engineering Program, University of Rhode Island

*Keynote Speaker, Lunch, November 2, 2017*

John Grandin is Professor Emeritus of German and Director Emeritus of the International Engineering Program at the University of Rhode Island, an interdisciplinary curriculum through which students complete simultaneous degrees (B.A. and B.S.) in a language and an engineering discipline. Grandin has received numerous awards for his work combining languages and engineering, including the Federal Cross of Honor from the Federal Republic of Germany. He has published widely on such cross-disciplinary initiatives and has been the principle investigator for several funded projects related to the development of the International Engineering Program. Grandin is the founder of the Annual Colloquium on International Engineering Education.

**Holger, Dave**
ABET Past President, Associate Provost for Academic Programs and Dean of the Graduate College (Ret.), Iowa State University

*Panelist, Setting a Bold New Agenda for Globalizing Engineering Education*

Dave Holger received his B.S., M.S., and Ph.D. degrees in aerospace engineering from the University of Minnesota. He joined Iowa State University as a faculty member in 1974, later served as chair of the Department of Aerospace Engineering and Engineering Mechanics, as associate dean of the College of Engineering, and Associate Provost for Academic Programs and Dean of the Graduate College. He retired from ISU in 2017. Holger has served as chair of the Engineering Accreditation Commission of ABET, as president of the ABET Board of Directors, as a member of the Engineering Accreditation Board of the Hong Kong Institution of Engineers, is currently Chair of the Sydney Accord, and is Chair of the governing group of the International Engineering Alliance. He is a Fellow of the American Association for the Advancement of Science, of INCE USA, of ABET, and of the AIAA.

**Ikeda, Keiko**
Vice Director, Center for International Education, Kansai University

*Panelist, Hot Topics in International Engineering Education*

Keiko Ikeda is the Professor and Vice-Director of the Center of International Education at Kansai University. She completed her Ph.D. from University of Hawai‘i at Manoa in Japanese linguistics, foreign language education, conversation analysis. Her research areas include (1) ethnomethodology, conversation analysis, and multimodal analysis of various social interactions such as political communication, human robot interaction, ICT-enhanced classrooms, and (2) international education (particularly internationalization at home).
Keynote Speakers and Panelists

Jagodzinski, Paul W.
Dean of College of Engineering, Forestry, and Natural Sciences, Northern Arizona University

Panelist, Hot Topics in International Engineering Education

Paul W. Jagodzinski earned his B.S. degree in Chemistry from the Polytechnic Institute of Brooklyn and his Ph.D. degree in Physical Chemistry from Texas A&M University. He was a member of the faculty at Eastern Michigan University, West Virginia University, and the Colorado School of Mines before joining Northern Arizona University. He served as a Chair of the Department of Chemistry at WVU and Head of the Department of Chemistry & Geochemistry at the School of Mines. He moved to Northern Arizona University in 2009 as Dean of the College of Engineering, Forestry & Natural Sciences and Professor in the Department of Chemistry & Biochemistry. He has received Outstanding Faculty Awards at both WVU and the School of Mines, awards for supporting underrepresented student success at the School of Mines, and was recognized as an Educator of Influence at NAU. He is an active member of the American Chemical Society and has served in elected and appointed positions at both the local and national levels. He is currently a member of Society’s Board of Directors.

Kain, Daniel
Provost and Vice President for Academic Affairs, Northern Arizona University

Keynote Speaker, Dinner, November 2, 2017

Dr. Daniel L. Kain became the Provost and Vice President for Academic Affairs in December 2016. Dr. Kain has served NAU in a variety of capacities for over twenty-three years. Most recently, and for the past six years, Dr. Kain has served as NAU’s Vice Provost for Academic Personnel. While serving in that capacity, Dr. Kain also served as Interim Provost during the summer of 2015, and as the Interim Dean of the College of Education during the summer/fall of 2014. Prior to Dr. Kain’s service as a Vice Provost, he served NAU’s College of Education in a variety of capacities spanning from 1993 to 2010, including as an Associate Professor, a Professor, Associate Dean and the Dean of that College, among other roles. Dr. Kain holds an undergraduate degree from Montana State University in English, a master’s degree from the University of Washington in English Literature, and a Ph.D. from the University of British Columbia in Curriculum and Instruction.

Kerrigan, Peter
Deputy Director, German Academic Exchange Service (DAAD)

Panelist, Setting a Bold New Agenda for Globalizing Engineering Education

Peter R. Kerrigan is the Deputy Director of the German Academic Exchange Service’s (DAAD) Regional Office in New York and is the Director of Marketing and Outreach for DAAD in North America. He is responsible for all areas of the marketing of German higher education and research and DAAD’s scholarship programs in the U.S. and Canada. Peter served as Vice President of Membership Development and Services at the Forum on Education Abroad and Assistant Director of the Higher Education Resource Group at the Institute of International Education. Peter serves on the General Council of the European Association for International Education (EAIE), the Standards Committee of the Forum on Education Abroad, and the Advisory Board of NAFSA’s Rainbow Special Interest Group. In September 2016, Peter received EAIE’s Transatlantic Leadership Award. Peter was awarded an M.A. in Political Science by the Freie Universität, Berlin and a B.A. in Political Science and German by Bates College, Maine.
Keynote Speakers and Panelists

**Palm, Daniel**
Associate Vice President for Global Initiatives and Executive Director of the Center for International Education, Northern Arizona University

*Keynote Speaker, Welcome*

Daniel Palm is the Associate Vice President for Global Initiatives and Executive Director of the Center for International Education at Northern Arizona University. Mr. Palm continues to be a strong advocate for access to international opportunities for underrepresented students, internationalization of campus curricula to infuse themes of sustainability, diversity and global engagement, and establishing collaborative partnerships around the globe. He holds an M.A. in Leading Innovation and Change from York St. John University, York, England and a B.A. in History from Northern Arizona University. He is a speaker of Mandarin Chinese and lived in Beijing, China for four years, two of which he engaged in research and study at Beijing International Studies NAU.

**Squires, Kyle**
Dean, Ira A. Fulton Schools of Engineering, Arizona State University

*Panelist, Setting a Bold New Agenda for Globalizing Engineering Education*

Kyle Squires is the dean of the Ira A. Fulton Schools of Engineering at Arizona State University. Appointed in February 2016, Squires previously served as vice and interim dean, as well as the director of the School for Engineering of Matter, Transport and Energy, one of the six Fulton Schools of Engineering. A Foundation Professor of mechanical and aerospace engineering, Squires holds a B.S. in mechanical engineering from Washington State University and M.S. and Ph.D. degrees in mechanical engineering from Stanford University. Squires’ expertise encompasses computational fluid dynamics, turbulence modeling of both single-phase and multi-phase flows, and high-performance computing.

**Tull, Renetta Garrison**
Associate Vice Provost of Strategic Initiatives at University of Maryland Baltimore County and VP of Initiatives for the Latin American and Caribbean Consortium of Engineering Institutions (LACCEI)

*Panelist, Setting a Bold New Agenda for Globalizing Engineering Education*

Renetta Tull is Associate Vice Provost for Strategic Initiatives at the University of Maryland, Baltimore County (UMBC), and Professor of the Practice in UMBC’s College of Engineering and IT (COEIT). She also leads the NSF PROMISE AGEP and LSAMP programs for the University System of Maryland. Tull earned the BSEE (Howard University), and the MSEE and Ph.D. (Speech Science) from Northwestern University. She is the VP of Initiatives for the Latin and Caribbean Consortium of Engineering Institutions, and has been honored by ABET, the Global Engineering Deans Council, Tau Beta Pi, and UNESCO. Twitter: @Renetta_Tull #ThinkBigDiversity.

**Valenski, Telletha**
Dream Dine’ Charter School

*Keynote Speaker, Sense of Place Address*

Kinyaa’aanii, born for Hashtł’ishnii. Her maternal grandfather is Tó dich’ii’i nii and paternal grandfather is Ta’neeszhahni. Telletha works as a School Health Education specialist in the Four Corners area with schools. She coordinates the “Together We Rise” Youth Leadership for high school students to mentor leadership skills through community projects. She also volunteers as a governing council board member for Dream Dine’ Charter School. She received her Bachelor’s degree in Behavioral Sciences at Northern Arizona University. In recent years, she has become a youth advocate on the Navajo Nation and the College of Albert Einstein, Xela, Guatemala.
Presenter Abstracts

Armstrong, Melissa  
Director, Interdisciplinary Global Programs, Northern Arizona University

Serrano, Jazmyn  
Program Assistant, Interdisciplinary Global Programs, Northern Arizona University

“International STEM as a Catalyst for Diversity and Diplomacy”  
Purpose Driven Missions: A Better World is Possible

It is undeniable that the timing is right for high impact educational experiences that cross disciplinary and international borders, ultimately in the name of diplomacy. In higher education, we have an opportunity to help students respond to this complexity. One of NAU’s answers is the Interdisciplinary Global Programs (IGP), which integrates language and culture study with undergraduate students’ STEM majors and includes a long-term international immersion experience. We will present our research findings to understand the high participation of underrepresented minority (43%) and women students (61%) in IGP, considering the implications of inherently intercultural STEM programs in supporting diversity and what implications this might ultimately have for diplomacy.

Bacher, Logan  
Interdisciplinary Global Programs Alumnus, Northern Arizona University

Out of the Box: Examples of What the Internationally-Prepared Engineer is Poised to Do

Born and raised in Phoenix, Mr. Bacher moved to Flagstaff to attend Northern Arizona University after high school and participated in the Global Science and Engineering Program (now Interdisciplinary Global Programs). Through GSEP, he graduated with degrees in Mechanical Engineering and Modern Languages (Spanish). Mr. Bacher spent a year abroad in Chile to develop his Spanish language skills and broaden his engineering perspective. Mr. Bacher is an avid traveler and enjoys spending his free time outside. He currently works at Northern Arizona Wind & Sun as a Sales and Design Engineer.

Baird, Jennifer Evanuik  
Director, Global Internship Program and International Plan, Georgia Tech

Páulez, Lorie Johns  
Director, Education Abroad, Georgia Tech

“Best Practices for Sending High Numbers of Engineers Abroad”  
Curriculum Integration for Global Competencies

It is commonly claimed that it is difficult to send engineering students abroad. Reasons cited often include inflexibility in the engineering curriculum, lack of support by College of Engineering leadership and faculty, or lack of programs that offer engineering credit. Despite these possible barriers, Georgia Tech has found success in providing international experiences to its engineering students. In 2015-16, 64% of GT’s College of Engineering undergraduates participated in an international program. Moreover, GT sent 1,335 engineering students abroad across the undergrad and grad levels in 2015-16. In this session, we will offer best practices and lessons learned throughout our journey to become a leader in international engineering education. Topics will include: developing a variety of programs that appeal to students and that meet curricular needs; partnering with and supporting faculty working on international initiatives; various forms of curriculum integration including the International Plan; and the importance of funding in making these opportunities a reality. Participants will come away with strategies that can be adapted to their own campus and a renewed vigor for international engineering education.
**Proven Methods & New Frontiers**

**Presenter Abstracts**

**Baird, Jennifer Evanuik**  
Director, Global Internship Program and International Plan, Georgia Tech

**Páulez, Lorie Johns**  
Director, Education Abroad, Georgia Tech

**“Engaging First Year Students to Create an International Pathway”**  
*Fostering Pathways to International Engineering*

Traditionally, study abroad is associated with the junior year. Often times, students don’t even start thinking about their international options until they’re already established in their studies. We found through a survey of GT undergraduates that 86% of our first year students are highly or somewhat likely to go abroad while they are at Tech. This number falls to 62% by the second year. Despite our high percentage of participation international programs (54%), we have the goal to reach 60% by 2020. Reaching this next population of students has required us to employ new strategies in outreach and advising. We have been intentionally engaging first year students in order to capitalize on their interest in going abroad early and create lasting relationships with our office. In this session, we will provide highlights of our efforts in order to spark a conversation among participants about ideas they might introduce on their campuses. Efforts to be discussed include: deliberate and increased collaboration with the GT Freshman Seminar, Residence Life, and other campus partners; incorporating intrusive advising elements into our international program advising; and encouraging underclassmen to lay the groundwork for a future international internship through a seminar course entitled “Preparing to Work in a Global Economy.”

**Berka, Sigrid**  
Executive Director of the International Engineering Program (IEP), University of Rhode Island

**“University of Rhode Island Results of an NSF-Sponsored Cross-International Study for Assessing the Spectrum of International Undergraduate Engineering Education Experiences”**  
*Assessment, Evidence, and Trends*

This presentation is on IDI assessment results of “Germany Today: Science-Technology & Culture” with integrated on-campus preparatory module and short-term January study tour. We used the Intercultural Development Inventory (IDI) (Hammer, Bennett, and Wiseman) to evaluate changes in students’ orientation toward interacting with people from different cultures. It yielded gains in intercultural development orientation. The curriculum design involved several interventions before and during the travel course. First was the preparatory three-day course in which students were instructed in the target language despite the various language levels. Next, they had a chance to go on the subsequent tour to Germany in a virtual way before going in person, and thus could familiarize themselves with what to expect and get excited about their personal passions (e.g. going to the Porsche plant in Leipzig, the Maxi Gorki theater in Berlin, the universities in Braunschweig or Darmstadt where they would study abroad in their senior year etc.). Lastly, they could bond ahead of time with the faculty leading the tour and fellow students, strengthening their advising and peer-to-peer relationships. While the curriculum design described in this session may not serve as a foolproof method of why the outcome of the IDI assessment was particularly positive, it can, however, provide a good template for an “invention strategy” in the sense of Paige and Vande Berg, that is for a successful structured engagement with the new culture before, during, and after the trip.
Presenter Abstracts

Burgess, Robert (Bob)  
Administrative Director, Denning Technology & Management Program,  
Scheller College of Business, Georgia Tech  
“Opportunities and Challenges of an Interdisciplinary Minor that Enables Entrepreneurial Goals of Engineering Students”  
Entrepreneurship and Other Cross-Disciplinary Initiatives that Intersect with Economic Development

Companies need engineers who understand market forces and the financial implications of technology investments and managers who understand the technical aspects of new process and product development, as well as the capabilities and constraints of technologies. This presentation addresses opportunities and challenges of an Academic Minor designed to accomplish these goals, which ultimately impacts an engineering student’s ability to become an entrepreneur.

Davis, Kirsten  
Ph.D. Student & Graduate Assistant, Department of Engineering Education, Virginia Tech  
“The Rising Sophomore Abroad Program at Virginia Tech: Combining a First-Year Global Engineering Course with Short-Term Study Abroad”  
Curriculum Integration for Global Competencies

The Rising Sophomore Abroad Program (RSAP) is a global engineering program for first year engineering students that aims to develop their interest and awareness of global topics early in their undergraduate career. The program combines a spring semester course on global engineering practice with a two-week international module in May. The course discusses global challenges, intercultural communication, and travel skills through a combination of group projects and interdisciplinary speakers from around campus. RSAP has been running for ten years, and over the past three years has been significantly expanded to include 135 students across six international tracks in the 2017 cohort. This presentation will discuss the challenges of expanding the program, summarize the assessment results obtained over the past few years, and explain how we have incorporated this information into program improvements.

Fuchs, Mareen  
Instructor of German, University of Alabama  
“What Works and Doesn’t Work in International Engineering Programs”  
Language and Culture: Achieving Global Competency through Interdisciplinary Efforts

In the fall of 2014, the Engineering Department and German Program at the University of Alabama started an ambitious collaborative 4-year program combining the study of various engineering fields and German. The collaboration also includes the nearby industry partner Mercedes Benz International U.S., and its German location in Stuttgart and the Technical University in Esslingen, Germany. The inaugural year posed many challenges which were corrected and led to a successful second, third, and now fourth year. Participants are at the top of their classes and achieve a B1 or better German language proficiency before their junior year abroad, during which they take engineering courses taught in German and intern at Mercedes in Germany. Yet, there are still occasional (and sometimes unforeseen) circumstances that require individual attention and correction. As an International Café Facilitator and as the special advisor for the German-Engineering program at the University of Alabama, I will provide the attendees with valuable experiences on what works and does not work when starting such a program.
Presenter Abstracts

Habyarimana, Alphonse
Lab Manager & Developer, I4Fab (formerly Kepler Tech Lab Rwanda)

“A Locally-Relevant Engineering Entrepreneurship Module for Developing Communities”
Entrepreneurship and Other Cross-Disciplinary Initiatives that Intersect with Economic Development

Entrepreneurship opportunities for students in developing communities is especially valuable as students are able to generate income to support their families, as well as create solutions for their community. Student entrepreneurs with engineering projects are often able to create simple technological solutions for their community. With this in mind, I4Fab (formerly Kepler Tech Lab), an innovation center in Kigali Rwanda, has developed a one month-long engineering entrepreneurship module for high school students interested in development engineering. The module is the culmination of a 4-month long course on locally-relevant engineering challenges. Students from the program have won seed-fund pitches and have turned prototypes into full-fledged start-ups. Other students have used their experience to take entrepreneurship-related jobs. This presentation will cover the process for developing the course model, keeping in mind the local context as well as previous work in this area, the challenges with the model, and share ideas for adapting it to other contexts.

Hill, Bryan
Assistant Dean, University of Arkansas

“Achieving the Impossible: Tripling the Number of Engineering Students Spending a Semester Abroad without Delaying Graduation”
Fostering Pathways to International Engineering

At the University of Arkansas, the College of Engineering made a strong push to increase the number of students spending a semester abroad while ensuring the students graduate with their engineering degree in 8 semesters. Surveys of our engineering students revealed the two main obstacles to study abroad as delayed graduation and financial strain. Through curricular mapping, we are now able to hand an entering freshman, and their parents, an 8-semester degree plan that includes an exchange semester abroad. In addition, students can also participate in our International Engineering Program, modeled after URI, for those interested in adding a language degree alongside their engineering degree. The results have been outstanding. In our first year, we’ve tripled the number of engineering students spending a semester abroad while also launching our IEP. Talking points include: mapping the profile of the engineering students going abroad for a semester; discussion on the factors that limit semester study abroad options for engineers and ways to address these; creating the 8-semester degree plans; increasing semester exchanges while limiting the faculty-led programs hosted out of engineering; getting buy-in of engineering faculty; incorporating existing MOUs across the institution and exchange partners rather than creating new; and partnering with your study abroad office to handle the non-academic parts.
**Presenter Abstracts**

**Kerrigan, Peter**  
Deputy Director, German Academic Exchange Service (DAAD)  

“**Engineering Education Opportunities in Germany**”  
*Funding Opportunities for U.S. and International Students and Faculty*

With a strong engineering sector, high-quality higher education system and robust research landscape, Germany has long attracted top researchers and students from around the world. In this presentation, Germany as a study and research destination will be discussed. Funding opportunities to facilitate academic/research mobility for engineering and German studies students, faculty, and researchers to Germany will be explored. Internship opportunities (RISE, for example) for undergraduate and graduate students will also be examined.

**Kenny, Courtney**  
Senior Manager, Partner Development, The Asia Institute  

“**High Impact International Programs: Innovative Examples of the Short-term Faculty-led Model**”  
*Concrete Methods to Promote International Experiences for Students*

As evidenced in IIE’s 2016 Open Doors, engineers account for 20% of all undergraduates studying abroad; in fact, STEM fields are one of the top 5 major fields of study represented abroad. To promote and sustain this growth, many international program offices are utilizing the short-term faculty-led program model to create high impact engineering programs. This brief session provides working examples that can be adapted by peer institutions. Participants are encouraged to share their own examples of well-designed international engineering programs.

**Klug, Renee Ronika**  
International Educator, Senior, Arizona State University  

“**A Pragmatic Approach to Including International Students in the American Engineering Classroom**”  
*Purpose Driven Missions: A Better World is Possible*

Nearly one million international students choose to study at universities throughout the United States. When welcoming diverse students into engineering classrooms, educators have an unprecedented opportunity to build diplomacy, integrate the unique strengths of international learners, and streamline teaching with tools to engage students from every culture. This session highlights the value international students bring to U.S. classrooms and offers teaching suggestions educators can implement to better internationalize classrooms, recognizing that incorporating tools for an international community inevitably benefits all students.
Presenter Abstracts

Kramer, Dan
Program Lead, Fulbright U.S. Student Program and Whitaker International Program, Institute of International Education

“Engineering International Mobility Trends”
Assessment, Evidence, and Trends

A myth persists that many obstacles prevent Engineering students from studying abroad – from course sequencing and equivalents to costs and concerns about different cultures. The data shared in this presentation, however, will attempt to show otherwise. STEM students in fact and engineering students, in particular, appear to be taking the lead. But why? Is the rise in women engineering students playing a significant role? Are hiring practices turning the tide? Are summer programs the wave of the future? Are world rankings helping to move the needle? Learn more about the mobility trends among international and U.S. engineering students, and join the discussion about the possible factors driving these trends.

Ladas, María “Cristina”
World Language Programs Coordinator, Cave Creek Unified School District

“Community Inspired, Globally Prepared”
Fostering Pathways to International Engineering

In attempts to better prepare students for a globally-competitive workforce, Cave Creek Unified School District (CCUSD) has developed preschool through 12th grade pathways for Spanish, French, and Mandarin Chinese for ALL students. After 15-years of articulation, students now have a choice of program models, multiple entry points, two seals of biliteracy, and the possibility of earning college credit prior to high school graduation. More recently, CCUSD has focused on developing partnerships with universities, embassies, and ministries of education as a way of further extending the preschool through university pipeline. All of these pieces, as well as a shift to proficiency-oriented pedagogy, have allowed CCUSD to become a leader in truly preparing students for the global economy.
Presenter Abstracts

**Lang, Dena H.**  
Associate Director of Engineering Leadership Research, Pennsylvania State University

**Erdman, Andrew M. (Mike)**  
Walter L. Robb Director, Engineering Leadership Development Program, Pennsylvania State University

**Handley, Meg H.**  
Associate Director, Engineering Leadership Outreach, Pennsylvania State University

“International and Cross-Cultural Engagement at the Undergraduate and Graduate Level”  
*Concrete Methods to Promote International Experiences for Students*

Penn State’s Engineering Leadership Development Program (ELDP) is recognized for its efforts to incorporate cross-cultural, international aspects of engineering leadership in its curriculum at the undergraduate level (past 13 years) and recently in their new Engineering Leadership and Innovation Management graduate program. Contemporary engineering practice is largely driven by globalization. ELDP courses at Penn State are designed to capture this reality by incorporating globally distributed, virtual teaming experiences as well as the development of intercultural competencies. Courses introduce students to dimensions of culture, challenges and techniques of effective virtual collaboration, project planning, and the realities of time constraints in the engineering business context. The importance of appropriate engineering design, ensuring that solutions are consistent with the local cultural context, is also emphasized. Engineering students in ELDP internationally-focused courses work together virtually with students at partner schools on semester long projects to develop engineering solutions for socially-relevant problems in collaboration with remote customers. These courses vary in their degree of shared lectures across universities, and each provide unique opportunities for our engineering students. Universities that have been a part of this collaboration are located in the United Kingdom, Belgium, Hungary, Saudi Arabia, Australia, Benin, and South Africa. ELDP courses also provide an opportunity for a culminating face-to-face international immersion experience. The goals of this experience center on development of global and cross-cultural perspectives through experiential learning activities, provide opportunities for students to practice/apply cross-cultural team skills face-to-face, as well as demonstrate awareness of challenges associated with working across cultures.

**Lobaugh, Megan**  
2010 Boren Fellow, University of Cincinnati

“Coordination, Cooperation, and Diplomacy: Engineering a Career in Government with the Help of Boren Awards”  
*Out of the Box: Examples of What the Internationally-Prepared Engineer is Poised to Do*

Megan Lobaugh graduated with her Ph.D. in Nuclear Engineering in December 2013 from the University of Cincinnati. During her graduate studies, she was awarded a Boren Fellowship for Portuguese study and research in Rio de Janeiro, Brazil. Currently, she is a Health Physicist at the Centers for Disease Control and Prevention, The National Institute for Occupational Safety and Health. Her previous experience includes: radiation safety project management at the International Atomic Energy Agency and radiation protection including emergency preparedness and management at Lawrence Livermore National Laboratory. Her interest in international education began while studying Physics and Mathematics at Miami University (OH), when she took the opportunity to study in Luxembourg at the Miami University Dolibois European Center. She has sought out international study and work as a way of challenging herself and learning more about her field of Health Physics and Nuclear Engineering.
Mossbrucker, Joerg
Associate Professor, Milwaukee School of Engineering

“Accreditation Issues of a Bi-directional, Dual-Degree Exchange Program in Electrical Engineering”
Curriculum Integration for Global Competencies

The Milwaukee School of Engineering (MSOE) and the University of Applied Sciences Luebeck/Germany (FHL) have a well-established undergraduate, bi-directional exchange program in Electrical Engineering that is completely integrated into the curricula of both institutions. Students from both universities spend their junior year together at FHL and their senior year together at MSOE. The full academic year abroad provides the best aspects of an immersion type program, but in the company of fellow students from one’s home institution. All courses taken abroad fully transfer, ensuring no delay of the students time to graduation. Upon successful participation students receive accredited undergraduate Electrical Engineering degrees from both institutions. This allows students from both institutions to obtain an internationally accredited Ms.EE. degree within a total of five years only, thereby providing students with the unique opportunity to gather three degrees in a five-year term (two Bs.EE. and one Ms.EE degrees). Integration of the graduate course work is seamless with all necessary per-requisite courses being offered by both institutions. This presentation shows our approach to the following problems: requirements for accreditation in Europe requirements set forth by the federal and state government of Germany; logistical issues regarding the capstone projects integration of the global competencies requirements; strategies for faculty buy-in; and strategies for student buy-in “teething problems.”

Mandula, Michele
International Plan Program Alumnus, Georgia Institute of Technology

“Lost in Translation”
Out of the Box: Examples of What the Internationally-Prepared Engineer is Poised to Do

Born in San Jose and raised north of Atlanta, Georgia, Michele moved just an hour south to attend Georgia Tech for college. She participated in the International Plan program while at Tech to bring a broader perspective to her Biomedical Engineering degree and Industrial Design minor. As part of the International Plan program, Ms. Mandula spent time in Germany developing her language skills and working in a biochemistry research lab at RWTH Aachen University’s hospital under Jürgen Bernhagen. She currently works for Varian Medical Systems as a Customer Success Manager for their Analytics Software business group and is based in Silicon Valley.
Presenter Abstracts

Niñez, Roberto  
Lecturer and Senior Construction Extension Specialist, North Carolina State University  
“Successful Integration of Engineering Universities and Trade Associations for Student Career Development”  
Employability of the Internationally-Prepared Engineer

The employability and career development of current Civil Engineering graduates can be greatly enhanced by integration of traditional scholastic activities with opportunities associated with student involvement in industry trade associations at the national and international levels. This presentation describes the general process that allowed students at two universities to achieve professional success by implementing experiences gained through training, education, and certifications associated with the American Concrete Institute (ACI); more specifically, the presenters describe how students and graduates have incorporated ACI training and certifications at other US institutions and in the country of Panama, working both as instructors and program examiners. Since 2007, more than 150 U.S. and international students have been certified as ACI Concrete Field Testing Technicians - Grade I at North Carolina State University. There is evidence that this certification obtained as a student can greatly enhance employability and career development opportunities. In addition to technical competency and rapid integration of students into their profession, due to their ability for pragmatic implementation of engineering concepts, ACI programs provide leadership, mentoring, and teaching abilities that increases construction industry employment or graduate study opportunities.

Nielsen, Erik  
Associate Professor, Northern Arizona University  
“Advancing Research Ties in Patagonia through NSF-Funded Projects”  
Funding Opportunities for U.S. and International Students and Faculty

International STEM programs on university campuses provide a useful infrastructure for National Science Foundation (NSF) funded projects. Northern Arizona University’s (NAU) Interdisciplinary Global Programs (IGP) have been a valuable platform to obtain grant funding from (NSF). NAU IGP provides: (1) advanced student preparation, including professional development and foreign language skills; (2) a program infrastructure designed for long-term sustainability; and (3) staff to assist with international partner development and maintenance. Examples will be presented of faculty collaboration with international and diversity programs at NAU to write successful grants in the NSF International Research Experiences for Students (IRES) and the NSF Partnerships for International Research and Education (PIRE) programs.

Ort, Michael  
Professor, Northern Arizona University  
“100,000 Strong in the Americas Grant Funding”  
Funding Opportunities for U.S. and International Students and Faculty

The 100,000 Strong in the Americas Innovation Fund has successfully supported three start-up initiatives in Latin America related to NAU: (1) a field course exchange with the University of Tucumán in Argentina, which led to a bilateral exchange agreement; (2) scholarships to support Tucumán students to come to NAU on exchange, which prompted the establishment of the NAU English Language Bridge Program; and (3) a volcano geophysics field research exchange with the National Autonomous University of México, which helped begin another new bilateral exchange agreement. The collaboration between academic colleges and international programs can be a successful recipe for successful 100,000 Strong in the Americas grants that can lead to long-term exchange arrangements.
Ortelt, Tobias
Head of Department Engineering Education and Remote Manufacturing Institute of Forming Technology and Lightweight Components, TU Dortmund University

May, Dominik
Research Associate Centre for Higher Education – Engineering Education Research Group, TU Dortmund University

“Virtual and Remote Instrumentation for International Engineering Education 4.0”
Concrete Methods to Promote International Experiences for Students

The internationalization of universities, curricula, and courses is still a growing field in the area of engineering education research. The introduction of new media and innovative digital tools can play an important role in this context, as it supports international communication and collaboration among faculty and students around the world. Especially in the area of mechanical engineering education, virtual and remote instrumentation are of high interest. This interest is based on the necessity to include experiments into engineering courses in order to offer learning environments where students can develop competence for the theory-practice-nexus. At TU Dortmund University (Germany), such equipment has been developed and introduced into several educational settings. A tele-operative testing cell for material characterization, with two material testing machines and a robot for specimen handling, can be used by students via internet. With this approach, it is possible to offer extended experimentation practice to on-campus students and to international students who are not living in Dortmund or even in Germany. The testing cell supports the development of international classes and transnational student working groups around the globe that are using real equipment and perform explicit engineering experiments. This presentation explains firstly the developed remote equipment; secondly, an international online course using the equipment offered in Dortmund; and thirdly the tremendous potentials of online engineering for the internationalization of engineering education. The presentation concludes with the lessons learned during the program development.

Ottman, Kelly Carolyn
Professor, Rader School of Business, Milwaukee School of Engineering University

“Developing Engineering Leaders in a Global World”
Employability of the Internationally-Prepared Engineer

Global competence is essential for responsible engagement in the world. Preparing leaders for this engagement is one of the challenges found in higher. International immersion programs provide transformational learning experiences that have the potential to build high levels of global business and leadership acumen (Hallows, Wolf & Marks, 2011). With intentionality, these programs can provide disruptive and transformative learning, also known as threshold concepts. Consistent with the characteristics of threshold concepts, integrative, reconstitutive, and often times troubling/disruptive learning are required for the transformation (Land, Meyers & Flannigan, 2016). Historically, international immersion programs were a term or longer in length. Yet the top barriers to participation in tradition immersion programs are time and money, especially for adult learners and graduate students. However, short-term study abroad programs have been shown to be effective and efficient in helping students attain the same transformative experience (Zamastil-Vondrova, 2005). This session focuses on the value of short-term immersion programs, as well as highlights learning strategies to promote transformation, specifically at the leadership level. Grounded in a model of best practices for short-term study abroad programs (Donnelly-Smith, 2009) and the author’s seven years of experience with over 70 graduate students participating in a China short-term immersion program, specific strategies to promote threshold concepts and leadership development will be discussed. The value of servant leadership/service learning as central to the learning process will be highlighted.
Presenter Abstracts

Owen, Frank
Professor, Mechanical Engineering, California Polytechnic State University

“Mining German Skripts: Common Skripts to Tie Curricula Together and Save Students Money”
Concrete Methods to Promote International Experiences for Students

Textbook prices represent a significant financial burden on students. In engineering studies in Germany, this is recognized, and professors assemble and publish their lecture notes as “Skripts.” Collectively these Skripts represent a vast amount of learning material that can be mined for the purpose of student learning. We imported this model to Cal Poly, and students have been thankful for the reduced financial burden. Teaching out of the same Skript opens exchange opportunities for faculty. It also exposes students to a wider, useful range of analysis methodology, since the Skript contains the collective experience of colleagues with different backgrounds and points of view. Today’s internet-based learning has also driven us to develop additional, internet-based material to supplement regular class notes and lectures. Putting this material on the open web establishes a world-wide learning node that brings unexpected results and collaborations. This presentation covers the story of our venture into creating a common curriculum between California Polytechnic State University and the Munich University of Applied Sciences.

Pardes, Mitchel
Program Officer, Internships Abroad, Cultural Vistas

“Cultural Vistas”
Funding Opportunities for U.S. and International Students and Faculty

As a nonprofit exchange organization promoting global understanding and collaboration among individuals and institutions, Cultural Vistas strives to provide opportunities that are accessible to students of all backgrounds. To that end, Cultural Vistas administers a variety of fully-funded fellowship programs and paid internship placement programs. This session will focus on the following opportunities available through Cultural Vistas: 1) Cultural Vistas Fellowship – Fully-funded by Cultural Vistas, this fellowship program provides an opportunity for students from demographics typically underrepresented in study abroad to participate in a professional development program. 2) IAESTE (International Association for the Exchange of Students for Technical Experience) – IAESTE, a global network comprised of over 80 member countries, provides STEM students with paid, international internship opportunities. 3) Alfa Fellowship Program – Fully funded by Alfa Bank, the Alfa Fellowship Program offers up to 18 young Americans, Britons, and Germans the opportunity to complete a high-level professional development program in Russia 4) Robert Bosch Foundation Fellowship Program - Fully funded by the Robert Bosch Stiftung, this fellowship is a distinguished transatlantic initiative that offers 15 Americans the opportunity to complete a comprehensive professional development program in Germany 5) YSEALI (Young Southeast Asian Leadership Initiative) – Launched in 2013, YSEALI is the U.S. government’s signature program to strengthen leadership development and networking in Southeast Asia 6) Cultural Vistas Scholarship Fund: Since 2013, Cultural Vistas has awarded over $200,000 to students participating in unpaid internship placement programs abroad.
Presenter Abstracts

Popham, Tari
Principal, Sinagua Middle School, Flagstaff United School District

Bronson, Rochelle
Assistant Principal, Sinagua Middle School, Flagstaff United School District

Cate Malone
International Baccalaureate Coordinator, Sinagua Middle School, Flagstaff United School District

“Building from the Bottom Up”
Fostering Pathways to International Engineering

It is advantageous to start students on the road to international-mindedness early in order to help students to become successful citizens. Flagstaff Unified School District is relentlessly working towards bridging student learning in the K-12 school system to transition easily to the university level. Sinagua Middle School (SMS) provides unique opportunities for students to flourish every day by tailoring their education to their unique interests. For many of our students this is accomplished through MITe, Puente de Hozho, and International Baccalaureate. SMS has had the Middle Schools Institute of Technology and Engineering (MITe) program since 2008. MITe is where students learn the basics of engineering. MITe’s project and inquiry based learning experiences make students academically competitive for the 21st Century. Puente de Hozo celebrates the diversity of people as well as focusing on second language acquisition and bi-literacy. SMS is now working towards candidacy in the International Baccalaureate Middle Years Programme. Sinagua Middle School creates a place where students can experience hands on problem solving in globally and culturally-relevant ways.

Rectanus, Mark
Director, Languages and Cultures for Professions, Iowa State University

Looney, Mark
Professor, Iowa State University

“Strategies for Developing Curricula in Languages and Cultures Across the Professions”
Language and Culture: Achieving Global Competency through Interdisciplinary Efforts

This presentation will provide an overview of cross-disciplinary strategies that address the challenges of developing language and culture courses as an integral component of programs in global professions (including engineering, STEM, agriculture, and business). As emerging programs in international engineering and global professions build their resources and capacity for courses in languages and cultures, they may consider a menu of course options that will foster cross-disciplinary learning, meet the needs of their students, and develop programmatic sustainability. The presentation will discuss a range of course formats and topics that can be adapted to diverse programmatic emphases and institutional priorities, including: language-specific courses for professions; language courses that focus on contemporary culture in a particular country or region; courses co-taught by faculty in languages and engineering or the professions (in English); study abroad courses and curricula with a focus on the professions (in world languages and/or English); cross-disciplinary, cross-cultural courses targeted to the professions (in English); and non-credit short courses in world languages and cultures.
Reynante, Brandon  
Lecturer in Design Engineering, University of California, San Diego  
“Teaching Design for Social Justice in Development Engineering  
Purpose Driven Missions: A Better World is Possible”

Development engineering is an emerging field in which interdisciplinary teams develop solutions to promote the well-being of underserved communities around the globe. Development engineers often use human-centered design (HCD) methods to uncover community needs in cross-cultural contexts, but HCD is incapable of addressing the underlying structural conditions — such as globalization — that create many of these needs in the first place. In contrast, design for social justice is an approach that challenges designers to explicitly confront structural causes of inequality in an effort to achieve improved outcomes. While it has been recognized that commitment to social justice is a key disposition for engineers as global citizens, scant attention has been given to student learning of established design for social justice principles. This presentation explores how design for social justice principles were (not) learned and utilized by students during several service-learning projects conducted as part of a development engineering program at the University of California, San Diego. Challenges encountered in teaching design for social justice are discussed, highlighting the need for more effective pedagogical practices.

Rowett, Matthew  
Director of Admissions, CRCC Asia  
“Exploring Why China is a Growing Destination for Engineering Internships”  
Employability of the Internationally-Prepared Engineer

This session will begin with an overview of China’s history and economy as it relates to the field of engineering. We will touch on issues such as pollution, water scarcity, and an aging population. We will explore how these issues are generating solutions within diverse engineering subfields from mechanical to biomedical to environmental. China’s engineers are becoming innovators within the field to solve problems the country is facing. With this groundwork laid, we will look at the current climate of engineering in China. This includes a look at companies, research and development, and higher education. We will compare the climate of the field in China to that in the U.S. This will help us understand the importance of gaining experience and knowledge in China. For example, we will discuss the number of students in each country who are receiving higher education degrees in engineering as well as the number of job openings. This presentation will go on to look at how an internship in China helps students find employment once they graduate. An internship in China gives students not only practical sector specific skills, but also the ability to navigate working in another culture. We will look at the internship program itself and provide a comparison of different models with analysis of benefits and possible issues for each. To conclude, we will open the session to the audience to allow for dialogue on what attendees currently do in the space of STEM in China and what challenges they’ve faced.
Schuler, Grant
Global Engineering Alliance for Research and Education (GEARE) Program Alumnus, Purdue University

Out of the Box: Examples of What the Internationally-Prepared Engineer is Poised to Do

Born and raised in Pittsburgh, Pennsylvania by an actuary and a stained glass artist. A combination that apparently creates an engineer. Attended Purdue University to pursue a degree in Mechanical Engineering. While there he was involved with the Purdue Marching Band, Chief Engineer of the Baja SAE team, a member of the G.E.A.R.E. program in both Spain and India, and also completed study abroad programs in Stuttgart (Germany) and Medellin (Colombia). He is currently working for Schlumberger, an oilfield services company, as a field engineer and is based in Dhahran, Saudi Arabia.

Scholz, Silke
Director, Spanish International Engineering Program (IEP), University of Rhode Island

“Project in Sustainable Design of Prosthetics”
Purpose Driven Missions: A Better World is Possible

The primary goal of this program is to create a new model of engaging engineering faculty and students from the United States and Colombia in collaborating on the creation of sustainable prostheses that will have an impact on social change. Sharing the complimentary expertise in sustainable prostheses engineering, joint teams across the two Americas will create affordable prototypes to address the enormous need for low-cost, lightweight prostheses in Colombia and the U.S. The program grows out of URI’s innovative and award-winning International Engineering Program (IEP) which combines two simultaneous Bachelor degrees, one in an engineering discipline and one in a foreign language. It requires a full year of study and internship abroad. The Spanish IEP has been growing steadily since its launch. This presentation will highlight our project as a whole, the various activities we pursued, and the outcomes and lessons learned. Focus will be the impact of this collaboration on learning new ways to apply engineering in a cultural and socially impactful way.
Presenter Abstracts

Stehling, Valerie  
Research Group Leader Academic Teaching and Learning,  
Faculty of Mechanical Engineering, RWTH Aachen University

“Entrepreneurship in Higher Engineering Education: Insights into the Challenges of International Program and Course Design”  
Entrepreneurship and Other Cross-Disciplinary Initiatives that Intersect with Economic Development

Engineering education is a subject influenced by many trends and developments such as digitalization, globalization, and the rise of entrepreneurship, especially among students and graduates. Many universities worldwide offer courses in order to foster entrepreneurial efforts of their students or even have centers for entrepreneurship or makerspaces. However, looking at entrepreneurship from an international perspective leads to special challenges both in curriculum and in course design. This presentation combines both perspectives by giving insights into the challenges of curriculum, as well as course design. On the one hand, a design example of an international master’s program on entrepreneurship in engineering, developed by the German RWTH Aachen University and the Hong Kong University of Science and Technology, will be presented with a special focus on cross-cultural entrepreneurship aspects. On the other hand, research results developed at TU Dortmund University (Germany) will be presented. These results cover the ambiguity students often face in entrepreneurial-thinking courses in terms of seeking good grades on the one hand and being highly innovative on the other. Results show that students tend to be less innovative if they feel a correlation between the quality of their inventions and their grades, even if it is made clear that the process and not the results are on focus for grading. The presentation will address a comprehensive view on entrepreneurship in international engineering education by discussing course details as well as program development on a meta level. Presentation contributions shared with Dominik May from TU Dortmund University and Tobias Haertel from TU Dortmund University in Germany.

Streiner, Scott  
Assistant Professor  
Experiential Engineering Education Department (ExEEd), Rowan University

“Developing an Operational Model for Global Engineering Programming: A Participatory, Mixed-Methods Approach”  
Assessment, Evidence, and Trends

Engineers in academics and industry are beginning to recognize the importance of preparing current and future generations of engineers to be successful in the new global economy. There is now a belief among educators that success in a global context requires students to acquire specialized knowledge to further augment their skills and attitudes. Although global perspectives and experiences may be achieved through a variety of programs and initiatives, engineering programs have been slow to integrate a cohesive strategy; and consequently are operating with limited knowledge regarding the effectiveness and likelihood of success of their global engineering programming strategies. As higher education institutions begin to invest in internationalizing their engineering programs, research is needed regarding programming target areas and their relationship to sustained programming efforts. This talk presents the results of a participatory, integrative mixed-methods study that combined both qualitative and quantitative data from engineering programs across the U.S.A. Thematic, qualitative analysis of semi-structured interviews was conducted with directors of study abroad and vice provosts of global education from ten universities regarding global programming strategies, intended outcomes, and organizational resources that support the internationalization process. Group Concept Mapping (GCM) was used in the development of an operational framework for global strategies, policies, and programs.
Tieke, Benning  
Lecturer of Spanish & Interdisciplinary Global Programs Mentor,  
Northern Arizona University  

"Preparing Engineers as Global Citizens through Long-Term Language and Cultural Immersion"  
Language and Culture: Achieving Global Competency through Interdisciplinary Efforts  

Global citizenship education is about “nurturing respect for all, building a sense of belonging to a common humanity, and helping learners become responsible and active global citizens.” The Interdisciplinary Global Programs (IGP) at Northern Arizona University prepare the next generation of global citizens through long-term language and cultural immersion. Core to IGP is the language and culture component of student development, which is accomplished through long-term immersion. Students double major in a language and a professional discipline (e.g. engineering) over five years, with their entire fourth year abroad. During their year-long immersion, students work in international internships abroad but receive language credit for the internship. Unique to IGP is the pairing of students beginning in their second year with language and culture mentors at NAU that work with the students throughout their academic career. These mentors work with students on an individual basis to determine which language and culture classes to take while abroad while also enrolled in engineering courses. Students also work with mentors in their professional disciplines at their host university. Thus, students are exposed to a broad spectrum of global perspectives. In this way, IGP students are prepared to become engineers who are truly global citizens who create solutions that benefit all humanity.

Tort, Joe  
Assistant Director, Global Professional Practice, Purdue University  

“Maximizing the International Experience through Training and Assessment”  
Assessment, Evidence, and Trends  

The Intercultural Development Inventory (IDI) is a popular assessment tool measuring intercultural competence. Numerous studies and program assessments have shown immersive study abroad experiences only produce minimal gains in IDI scores. However, pairing study abroad with effective intercultural training has produced greater development amongst program participants. For several years, Purdue University has used the IDI to assess intercultural development related to its study abroad programs. Recent enhancements to its approach to preparing and mentoring students throughout the international experience have produced larger gains in IDI scores. The Purdue GEARE program has developed a three-course model to prepare and mentor students throughout their international experience. The courses utilizes the IDI as both an assessment instrument and training tool. Students receive their IDI scores prior to studying abroad, meet with an IDI Administrator to debrief their results, and develop a plan for growth. Students complete reflection assignments during their international experience and receive feedback from an intercultural mentor. Students re-take the IDI upon their return and provide mentorship for GEARE students preparing to go abroad. This presentation will discuss results from previous Purdue IDI assessments, as well as results from the first cohort of students to participate in the enhanced intercultural training component of the GEARE program. Information regarding course content and coordination of the intercultural training will be discussed.
**Presenter Abstracts**

**Tracksdorf, Niko**  
Co-Director, German International Engineering Program, University of Rhode Island  
"A Change of Perspective: Developing Global Competencies through Interdisciplinary Collaborations and Problem-Solving Activities in the STEM-focused Language Classroom"  
Language and Culture: Achieving Global Competency through Interdisciplinary Efforts

This presentation showcases classroom projects that go beyond the traditional language course curriculum. Guided by situated learning theory, the presenter developed an interdisciplinary German-STEM course in which engineering students learned German while collaborating with German-speaking experts from STEM-related fields (e.g., the automotive industry) to solve authentic problems. This environment helped the students change their perspective to make them feel less like they were in a traditional language and culture classroom, but rather, immersed in a community of German-speaking professionals. The presenter will show how these interdisciplinary efforts to combine aspects of language learning, culture, and STEM could help students achieve global competencies and empower them for life-long learning beyond their college career.

**Walker, Mary Anne**  
Director, Global Engineering Office, Michigan State University  
"Curriculum Mapping to Strengthen Global Competencies: Your Future Employer Wants You to Have These Skills"  
Employability of the Internationally-Prepared Engineer

Michigan State University’s Global Engineering Office participated in an Assessment led by UPITT, et.al., “Collaborative Research: Assessing the Spectrum of International Undergraduate Engineering Educational Experiences” (NSF EEC-1160404) that demonstrated terrific results. It also served as a catalyst for our team to consider mapping all UG curriculum, by major, by semester, by class year. We mined partner catalogs and have pulled together comprehensive guides for our students. With a special target population of rising Sophomores, students can see where they can align courses/research/internships/service-learning abroad. We rolled out a new mapping & pathways tool during academic orientation programs in fall 2017 and we are seeing increased education abroad enrollments. This effort also turned our Academic Advisors into Ambassadors for the Global Engineering Office and has helped clarify the process of global engagement for our students. Most importantly, we have facilitated a growth opportunity for students to gain meaningful global experiences that has fueled talent acquisition with our employers and strengthened globally prepared engineers.
Presenter Abstracts

Weishaar, Adrienne
Ph.D. Candidate, Civil Structural Engineering, 2021, Worcester Polytechnic Institute

“Evaluation of the WPI Off-Campus Project System from a Student Perspective”
Curriculum Integration for Global Competencies

Worcester Polytechnic Institute (WPI) has a nationally unique project-based curriculum that reflects the motto “Lehr und Kunst” (theory and practice). Along with requirements to fulfill coursework, students are expected to complete three research-based projects focusing in the humanities and arts, social sciences, and a major related, technical project. The Humanities and Arts (HUA) project is completed through a practicum or seminar after students finish several courses in art, music, language, writing, history or theater. The Interdisciplinary Qualifying Project (IQP) is a socially based project carried out by interdisciplinary teams challenging students to use science and technology to help communities and people around the world. The Major Qualifying Project (MQP) is a senior capstone design experience focusing on specific technical challenges that professionals encounter. Students have the option to complete any of their projects abroad. Commonly, students finish their HUA and MQP on campus, and fulfill their IQP at one of the 45 global project centers available across six continents. In 2014, WPI received an NSF IRES grant to send underrepresented engineering students to conduct research at the Panama Canal to fulfill their MQP requirement. The objective of this research was to understand the interactions between the Panama Canal, the recently completed $5bn expansion project, and the local environment, ensuring both economic growth and maintenance of ecological health. Having completed an IQP in Bangkok, Thailand, and as an inaugural student selected to participate in the Panama Canal research experience, this paper reflects on the WPI project based curriculum and my global experiences. Furthermore, this paper discusses the pre-departure preparation coursework, project proposal development, involvement in global research, and working on a multicultural project team.

Zimmer, Karl
International Co-op Program Alumnus, University of Cincinnati

“Jet Engines to Peanuts, Across 6 Continents”
Out of the Box: Examples of What the Internationally-Prepared Engineer is Poised to Do

Karl Zimmer currently serves as President & CEO of Premium Peanut, a peanut shelling company in Douglas, Georgia, wholly owned by peanut growers. The company recently invested $50 million to build the largest peanut shelling plant in the world, and has commenced construction on a new facility to produce peanut oil. Prior to joining Premium Peanut as CEO in July 2015, Karl spent close to fourteen years with a Fortune 500 global manufacturer of copper and aluminum wire & cable products, where his last assignment was as Senior Vice President, Global Supply Chain. In this role, which was based in Barcelona, Spain, he had responsibility for supply chain activities covering the company’s operations in North and South America, Europe, Asia, and Africa. Mr. Zimmer received a Bachelor’s degree in Industrial Engineering from the University of Cincinnati in Ohio and resides in Douglas, Georgia with his wife Joan.
The 20th Colloquium on International Engineering Education

NAU Campus Map

We hope you enjoy your time on the Northern Arizona University campus. Please find below a campus map highlighting the designated conference locations:

- High Country Conference Center (HCCC—Building 58)
- Drury Inn & Suites (Building 58A)
- International Pavilion (IP—Building 50A)
- Center for International Education (CIE—Building 2)

Please note that the International Pavilion (50A) has no guest or metered parking. Please utilize the free campus shuttle bus with drop off at the Campus Heights Bus Stop or walk. We apologize for the inconvenience.
The 20th Annual Colloquium on International Engineering Education is hosted by the award-winning Interdisciplinary Global Programs (IGP) at Northern Arizona University. IGP offers a revolutionary approach to education through the combination of a degree in STEM, business, or hospitality with a second degree in language and cultural studies.

1. Declare a major and choose a language

**Sciences/Forestry/Engineering:** College of Engineering, Forestry, and Natural Sciences  
**Business/Hospitality:** The W. A. Franke College of Business

<table>
<thead>
<tr>
<th>Language</th>
<th>Spanish</th>
<th>Chinese</th>
<th>French</th>
<th>Japanese</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>español</strong></td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><strong>中文</strong></td>
<td>✗</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><strong>français</strong></td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><strong>日本語</strong></td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Deutsch</strong></td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
</tr>
</tbody>
</table>

2. Apply and start your program

**YEAR 1**  
Freshman  
Foreign language  
Cross-cultural programming

**YEAR 2**  
Sophomore  
Foreign language  
Cross-cultural programming

**YEAR 3**  
Junior  
Foreign language  
Cross-cultural programming

**YEAR 4**  
Study Abroad Semester  
Major Electives  
Language/CCS coursework  
Fieldwork  
Language/cultural immersion  
Professional fieldwork experience

**YEAR 5**  
Senior  
BS and BA Capstones  
Cohort peer advisor  
IGP Summit  
Graduation

3. Study in one of these countries

- Argentina
- Germany
- Mexico
- France
- China
- Japan
- Chile
- Spain

Learn more at NAU.EDU/IGP
We value your feedback. Please contact us with your comments about this year's colloquium at GlobalPrograms@nau.edu.

The 20th Annual Colloquium on International Engineering Education

November 2-4, 2017
Northern Arizona University
Flagstaff, Arizona

We couldn’t have done it without you. A special thank you to our sponsors:

Premium Sponsors:

DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

General Sponsors:

The Asia Institute
The Asia Institute | Philadelphia, Shanghai

The Arizona-Mexico Commission | Phoenix
Rubio Corporativo | Hermosillo, Sonora, México

We value your feedback. Please contact us with your comments about this year’s colloquium at GlobalPrograms@nau.edu