

OPEN Optics and Photonics Education News

Newsletter of the Optics and Photonics College Network

July 2017

From the Executive Director



OP-TEC, LASER-TEC, MPEC and the Western Photonics Cluster will be hosting OPCN members next week at the annual HI-TEC Conference in Salt Lake City. This will be an enjoyable and useful time to work together, learn from each other and make further plans on the continued development of faculty leadership for the Optics and Photonics College Network (OPCN).

This month's newsletter highlights several new publications, as well as accomplishments of photonics colleges and centers.

I look forward to meeting with you at HI-TEC!

Dan Hull

Educational Pathways for Engineering Technicians

Educational Pathways for Engineering Technicians: High Schools and Community/Technical Colleges



In 2015 NSF/ATE awarded a grant to the National Academy of Engineering (NAE) to conduct a study on Engineering Technology Education in the United States. The study sought to shed light on the status, role and needs of ET education in the U.S. The study included engineering technicians (2 year completers) and engineering technologists (4-year completers). The report of this study was released in early 2017 and can be accessed at

<https://www.nap.edu/catalog/23402/engineering-technology-education-in-the-united-states>.

This summer NAE released a document entitled *Engineering Technology Education*, which commented on several aspects of the study. One of the papers (developed by Hull and Mel Cossette) is entitled *Educational Pathways for Engineering Technicians: High Schools and Community/Technical Colleges*. It contains the following sections:

- The Need for Engineering Technicians
- Efforts to Broaden the Engineering Technology Workforce
 - Recruiting & Preparing High School Students
 - Postsecondary Internships
 - Recruiting & Preparing Adults
 - Students at 2-Year Colleges Who have Not Declared a major
 - Working adults Who Require more Education or Updated Knowledge & Skills



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Upcoming Events

7/17/17 - 7/20/17
HI-TEC 2017
Salt Lake City, UT

10/16/17 - 10/19/17
SPIE Optifab
Rochester, NY

10/19/17 - 10/20/17
National Coalition of Advanced
Technology Centers (NCATC)
Fall Conference 2017
Portland, OR

10/23/17 - 10/25/17
ATE PI Conference
Washington DC

10/26/17 - 10/27/17
National Career Pathways
Network (NCPN) Annual
Conference
Saint Louis, MO

[View Events Webpage](#)

2017 HI-TEC Conference

- o Returning Veterans Preparing for a New Career
- Issues in Articulating AS Degree Technicians to BS Engineering Programs

A copy of this document can be obtained by contacting OP-TEC or accessing www.nae.edu/19582/Bridge/172998.aspx.

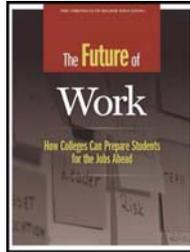


The Future of Work

How Colleges Can Prepare Students for the Jobs Ahead

The Chronicle of Higher Education recently released a report on a study which features predictions from economists and technology experts on the labor market; insight from employers on the skills they are looking for among recent college graduates; thoughts from college administrators on how career services must change; and more.

The Future of Work: How Colleges Can Prepare Students for the Jobs Ahead, contains sections on 1) *Jobs of the Future*, 2) *Voices of Employers*, 3) *The Future of Higher Education Career Centers*, and 4) *A Conversation with Phillip Gardner*. The concluding section, "The Path Forward" contains the following recommendations:



- Elevate the Career Center
- Break Down Silos
- Focus on Retraining
- Build Campus Programs Relevant to the Workplace

I strongly recommend that you examine this report, which speaks to all institutions of higher education. For further information contact: <http://www.chronicle.com/specialreport/The-Future-of-Work/108>.

Optics & Photonics Technology INnovation-OPT IN!

OPT IN!

A grant for the **Optics & Photonics Technology INnovation-OPT IN!** project was recently awarded by The NSF ATE program to Monroe Community College in Rochester, NY. This project, led by Principal Investigator Dr. Alexis Vogt, will strengthen the regional precision optics and photonics workforce and provide students with employment opportunities in precision optics industries to fill high skill, high demand positions.

The project has two goals:

- 1) Strengthen the Optical Systems program and academic pipeline at MCC through the creation of enriched curriculum using OP-TEC precision optics skill standards and curriculum, dual enrollment opportunities, articulation agreements with high schools and four-year universities, and faculty professional development;
- 2) Broaden industry and community partnerships through expansion of experiential learning opportunities and development of marketing and outreach initiatives to strengthen the precision optics and photonics network.

The program has been designed to bridge the gaps among high schools, MCC's academic programs, and the regional precision optics and industries. It will create new courses and revise existing courses with curriculum that meets the necessary skills and competencies as identified by OP-TEC and industry partners.

OPT IN! will provide professional development to high school teachers and MCC faculty. It will broaden awareness of opportunities in optics and photonics education and the labor market by developing a recruiting, retention and outreach program and conducting presentations to the general public and

OPCN Members and Coordinators from more than 20 colleges with photonics education programs will be attending the 2017 HI-TEC Conference in Salt Lake City. We will be meeting in the Grand Ballroom D room of the Grand America Hotel at 6 PM Monday, July 17. Tuesday, OPCN members and invited guests will leave the hotel at 8 AM for a tour of nearby photonics facilities; returning for a second OPCN meeting late in the day.

The main, two-day conference will convene July 19, with over 500 educators attending general sessions, exhibits and technical education presentations.

This is a very special annual occasion for technical educators to network and share best practices.

Questions about HI-TEC attendance, registration and travel assistance may be directed to your regional center principal investigator or Christine Dossey at OP-TEC (cdossey@op-tec.org).

We are looking forward to a great conference and hope to see you there!

PACT Alumni Spotlight



Chris Moulton had gone back to college to study computer animation after a downsizing at the propane delivery company where he worked. During his studies he realized that the computer animation labor market was oversaturated and he began looking for a different career field. Chris learned that Baker College in Flint, Michigan was starting a new program called Photonics and Laser Technology. He was interested and signed up almost

targeted audiences including low income and underrepresented racial and ethnic populations, veterans and women. The program will strengthen alliances with the regional precision optics and photonics networks, to include: AIM Photonics, the Finger Lakes Regional Economic Development Council, the Rochester Museum & Science Center, New York Photonics, the Rochester Regional Photonics Cluster, pre-collegiate educators, 4-year universities, and regional industry partners. Monroe Community College will provide professional development to 12 high school teachers and 6 MCC faculty and projects an impact of 850 high school and college students including underrepresented groups.



Western Region Photonics Education Collaboration



Last semester, Irvine Valley College faculty coordinated several teleconferences and college visits to advance the developing Western Region Photonics Education Collaboration.



Trenton Berg walking Stephanie Bostwick through the electronics laboratory at Gallatin College

Desiré Whitmore from IVC, and Stephanie Bostwick from Lake Washington Institute of Technology (LWTech), visited Judy Irwin at Spokane Community College (SCC) and traveled to Bozeman, Montana to visit Trenton Berg at Gallatin College on the Montana State University campus. While in Montana, Trenton took Desiré and Stephanie for a tour of the Gallatin campus and local companies: Blackmore and Quantel Laser. The Spokane visit resulted in a donation of several optical breadboards to the SCC photonics program from LWTech. Through these visits, Desiré and Stephanie were able to assess the needs of each of these programs and learn about their respective industry partnerships.



Tour of Starrett Kinematic Engineering Facility in Lake Forest, CA

At the end of June, the IVC Laser and Photonics Technology Program hosted faculty and administrators from Idaho State University and Pima Community College (Tucson, Arizona). The participants toured local photonics companies: Advanced Systems & Technologies, II-IV Optical

Systems, Starrett Kinematic Engineering, and Precision Optical.

These purposeful, organized activities allowed faculty and administrators from several colleges in the Western region to learn more about each other's programs and how they can all work together to teach photonics across the Western U.S.

Nuts, Bolts & Thingamajigs Camp at IHCC

immediately. "It was new, it was exciting, and it was something I could see myself doing," he recalls.

The most difficult part, he says, was the newness of the program and the fact that his was the inaugural class. Chris found his coursework interesting. His first year of classes emphasized electronics and built a foundation for the second year, by which time lasers and optics played a role in nearly every class. Chris graduated from Baker College with an associate of applied science degree in photonics and laser technology in 2015.

After graduation, Chris went to work for IPG Photonics as an Applications Technician setting up different applications in the labs for the engineers, and learning to work with the automated parts of the facility. Chris sees himself moving forward in his career with IPG as an Applications Engineer.

Chris believes that Baker's photonics and laser technology program gave him a strong groundwork for a career because it touched on many different aspects of photonics technology. He recommends a degree in photonics and has seen for himself how marketable and hireable technicians are. "There are job opportunities anywhere and everywhere," Chris says.

Read more about Chris and other successful technicians in [Success Stories in Photonics Careers](#).

OPCN Working Groups

The Working Groups of the Optics and Photonics College Network are dedicated to sharing expertise, best practices, resources, and advice on issues of importance to photonics technician educators at colleges throughout the United States.

Professional Development Working Group
Anca Sala, Chair
anca.sala@baker.edu



Student Recruiting
Working Group
Christine Dossey
cdossey@op-tec.org

Program Assistance
Working Group
Gary Beasley, Chair
gbeasley@cccc.edu

Equipment Working Group
Frank Reed, Chair
frank.reed@indianhills.edu

Summer Manufacturing Camp

MPEC hosted 14 campers at IHCC the week of June 19th for the Nuts, Bolts & Thingamajigs Summer Manufacturing Camp. Campers ranging in age from 12-16 participated in a four-day hands-on camp utilizing the engineering design cycle as they designed and built their very own mini indoor quadcopter. Led by Liz Whitewolf of the Carnegie Science Center, campers used digital fabrication tools and CAD software to design a chassis and then utilized an Epilog 75 watt laser cutting system to cut the parts. Campers then assembled their quadcopter electronic controls using a soldering iron.



Pictured: NBT campers with laser cut name tags.

In addition to the quadcopter activity campers toured seven of the advanced manufacturing programs at the Advanced Technology Center and participated in various hands-on activities including robotic welding, virtual welding, designing and CNC machining fidget spinners, building circuits,

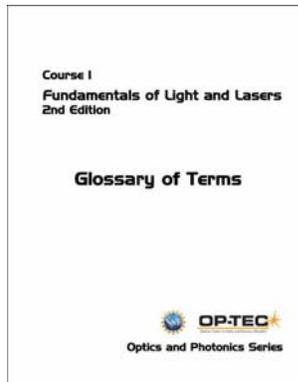
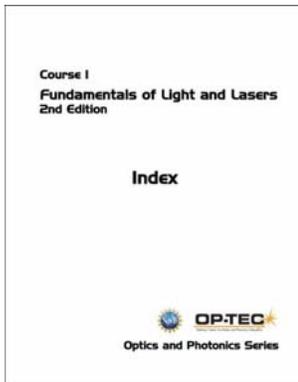
programming robots, building hoses for hydraulic pumps, bending and cutting conduit and experimenting with various laser and optics labs. Campers also had the opportunity to tour Agri-Industrial Plastics Company in Fairfield, a local plastic blow molding manufacturer, where they learned about manufacturing processes.

Nuts, Bolts & Thingamajigs was sponsored by the Midwest Photonics Education Center and funded by a grant from the Foundation of the Fabricators & Manufacturers Association and MPEC. Partnerships between MPEC of Indian Hills Community College, Agri-Industrial Plastics Company and the Carnegie Science Center made the camp possible.

Instructor Resource of the Month

New Index and Glossary of Terms for Course 1, Fundamentals of Light and Lasers

OP-TEC recently completed an Index and a Glossary of terms for the Fundamentals of Light and Lasers textbook. These components will be available very soon as PDF downloads from the Teaching Resources page in the OP-TEC store at <https://www.optecstore.org/product-category/teaching-resources>. If you would like access sooner, please email your request to Rachel Haferkamp, rhaferkamp@op-tec.org.



Photonics Career Video of the Month

Students searching for careers need to understand what they may be doing in the workforce. Students are also motivated and focused when they can identify with a role model and understand why they have to learn certain areas of mathematics, science and technology.

Mike Bass, Laser Optics Technician at Bright View Technologies, shares his personal insight.



2017 HI TEC

HIGH IMPACT TECHNOLOGY EXCHANGE CONFERENCE
July 17-20 Salt Lake City, Utah
Grand America Hotel

Sponsored by a consortium of NSF ATE centers and projects

highimpact-tec.org

Join the Conversation

We hope you enjoyed this edition of the OPEN newsletter. We would really like to hear from you. If there is some subject that you would like us to discuss or look into, please let us know at prmanager@op-tec.org.

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