



OPEN Optics and Photonics Education News

Newsletter of the Optics and Photonics College Network

February 2017

From the Executive Director



For over ten years, OP-TEC has forged a partnership with two-year colleges that teach lasers and optics technicians. Our mission is to increase the supply of well-educated photonics technicians by building and strengthening the capacity and quality of photonics education in these colleges. We continue to add more photonics programs at colleges but recently we have focused more on helping them to increase student enrollment and retention. I'm proud to say that the Optics and Photonics College Network (OPCN) is successful because we enjoy beneficial cooperation with technical professional societies, the recently created regional photonics centers LASER-TEC and MPEC, and the Western Photonics Cluster based at Irvine Valley College. Last month we released the monograph ***Using Current Photonics Students to Recruit New Students***; six OPCN colleges are pilot testing this strategy and we plan to include a webinar on this topic at the next OPCN teleconference.

Some of the topics in this newsletter deal with the Photonics Systems Technician Skill Standard, OSA Travelling Lecturers, release of an NAE study on technicians, and several updates from our regional centers. If you have newsworthy items to share in the March newsletter please send them to us.

Dan Hull

OP-TEC Begins Industry Review of New Photonics Systems Technicians Skill Standards

In recent years many colleges have adopted a Photonics Systems Technician (PST) curriculum structure, built on a variety of technologies such as electronics, mechatronics, robotics, automation, and communications. The Photonics Systems Technicians Curriculum Guide explaining the curriculum structure, materials, and laboratory resources is available on the OP-TEC website. To support any colleges who have formerly had a program with a large number of specialized upper level photonics courses and now want to transition to PST programs, OP-TEC, with the help of our partner colleges and the regional photonics centers, has developed new PST Skill Standards.

The national skill standards are employer-validated statements of expectation of what technicians should know and be able to do on the job. They shape the content and requirements of courses and programs that produce technicians, ensuring that graduating technicians are well prepared for the challenges that await them in the workplace.

Skill standards cannot cover every aspect of all possible job opportunities for a category as broad as Photonics Systems Technicians; the goal of the skill standards is to provide

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Upcoming Events

2/01/17 - 5/02/17

NASA Scholars Program
Applications Deadline

3/12/17 - 3/15/17

Innovations Conference 2017
(MPEC Presentation and ATE
Joint Centers Exhibit)
San Francisco, CA

3/30/17

HI-TEC Award Nominees
Submission Deadline
Submit by 5:00 pm Central

6/19/17 - 6/21/17

Course 1 Faculty Capstone
Indian Hills Community College

6/21/17 - 6/23/17

Course 2 Faculty Capstone
Indian Hills Community College

7/17/17 - 7/20/17

HI-TEC 2017
Salt Lake City, UT

[View Events Webpage](#)

technicians with a working knowledge of a broad range of topics. With a solid foundation, technicians can be prepared for any number of specialties based on industry need.

After the national PST standards have been validated, colleges can update or change their photonics program content by using the PST Skill Standards and working with their advisory committee to tailor the courses to their applications.

OP-TEC is looking for employers and industry professionals who are willing to review and provide feedback on the applicability of the Photonics Systems Technician Skill Standards. If you would like to be involved in the review or if you can share contact information for such industry professionals, please email Taylor Jeffrey at tjeffrey@op-tec.org.

RELEASED FEBRUARY 15, 2017 Engineering Technology Education in the United States

National Academy of Engineering Report Describes Results of NSF ATE Sponsored Research on Technicians and Technologists in the U.S.

The vitality of the innovation economy in the United States depends on the availability of a highly educated technical workforce. A key component of this workforce consists of engineers, engineering technicians, and engineering technologists. However, unlike the much better-known field of engineering, engineering technology (ET) is unfamiliar to most Americans and goes unmentioned in most policy discussions about the U.S. technical workforce.

Engineering Technology Education in the United States seeks to shed light on the status, role, and needs of ET education in the United States.

This report can be accessed by viewing: <https://www.nap.edu/catalog/23402/engineering-technology-education-in-the-united-states>. It contains facts, figures and trends on the production and employment of engineering technicians and technologist in the U.S. This information will be useful to technician educators and colleges as they publicize their technician programs and seek grant funding.

The study, funded under a grant from NSF ATE, was conducted under the guidance and direction of the NAE Committee on Engineering Technology Education in the United States. Dan Hull (OP-TEC) and Mel Cossette (MAT-ED) served on this committee.

OSA Opens Traveling Lecturer Program to OPCN



Need a Speaker for Your Upcoming Event?

The Optical Society (OSA) may be able to help! OSA is a professional organization for members in the field of Optics and Photonics. OSA charters over 350 Student Chapters at colleges and more than 20 Local Sections in communities around the world. OSA strives to provide resources and a vast network of over 19,000 members to students, young professionals, and even

LASER-TEC Tools Support Photonics Outreach and Interactive Learning



LASER-TEC has improved the content and packaging of its Laser-Enabled Security System Kit. Equipped with a diode laser, photo sensor, sound alarm, and other necessary tools, this kit can be used for classroom activities and outreach events.

This kit helps students expand their knowledge of algebra, geometry, physics, optics, optical alignment, and laser safety, as well as critical thinking, problem solving, troubleshooting, and soft skills. If you have any questions about the kit or activities that can be hosted with it, please contact Dr. Chrys Panayiotou at cpanayio@irsc.edu, 772.462.7621 or visit www.laser-tec.org.

OP-TEC Provides Online Faculty Development for *Fundamentals of Light and Lasers and Laser Systems and Applications*

There is still plenty of time this semester to complete one of OP-TEC's online professional development courses that prepare faculty and laboratory staff to teach with *Fundamentals of Light and Lasers* (Course 1) or *Laser Systems and Applications* (Course 2). The open entry/open exit courses are available through the Canvas online learning management system 24/7 through May 31. Participants who successfully complete their online course will be invited to a hands-on laboratory capstone experience during the week of June 19-23 at Indian Hills

Nobel Prize Winners. One of these resources is the Traveling Lecturer Program, normally a benefit open only to the OSA Student Chapters and Local Sections. Over 600 OSA members with a vast array of experience are a part of this program. They are willing to travel to your location and give a talk based on technical or professional development topics for your students.

OSA would like to offer you the opportunity to invite a lecturer to your campus to speak to your students in 2017. You can select a lecturer to speak on topics in optics and photonics or in the physics field in general. OSA would be happy to assist you in finding the right lecturer for you. OSA will arrange and pay for travel costs (hotel and round-trip transportation) for your chosen lecturer to visit your campus. Your college would be responsible for local transportation and meals and for hosting an event or meal to welcome your lecturer. If you are interested, please email Jennifer Tedeschi, Education Program Manager, travelinglecturer@osa.org.

LASER-TEC Provides Professional Development for College Instructors in Advanced Manufacturing

As we move deeper into the 21st century, it becomes evident that the advanced manufacturing industry needs technicians with skills not only from their main discipline, but also in lasers, optics, and enterprise computing. LASER-TEC, in collaboration with two NSF ATE Centers, CARCAM and AMTEC, is providing professional development workshops in the applications of lasers and fiber optics in advanced manufacturing for college faculty across the United States.

The workshop attendees learn about the rapid advancements in integrated manufacturing solutions, as well as numerous applications of laser and optical systems in automotive/ aircraft manufacturing such as welding, cutting, drilling, etching, sensing, imaging, and other automated tasks. If you would like to learn more about the workshops, contact Dr. Chrys Panayiotou at cpanayio@irsc.edu or 772.462.7621.



IVC Photonics Student Selected for NASA Scholars Program

One of Irvine Valley College's (IVC) current students, Guillermo Rodriguez-Palacios (1st-year), has been accepted into the NASA Community College Aerospace Scholars (NCAS) Program! The NCAS gives the community college STEM students an authentic NASA experience and encourages them to finish a 2-year degree or transfer to a 4-year university to pursue a NASA-related field or career. The program consists of 5-weeks of interactive web-based activities involving participants across the country and NASA engineers/scientists, culminating in the students planning a mission to Mars. Once the online courses are completed Guillermo may be eligible for a one week onsite experience at NASA where he can, among other things, work on a team project

Community College in Ottumwa, Iowa.

For more information or to enroll in Course 1, visit www.op-tec.org/faculty.

For Course 2, please email cdossey@op-tec.org.

HI-TEC Conference Plans

The national and regional photonics centers will host the next annual in-person OPCN network meetings and photonics industry site visits at the HI-TEC Conference, July 17-20, 2017 in Salt Lake City.

The HI-TEC Conference provides a wonderful opportunity for educators to learn, network, give presentations, share best practices, and disseminate project resources with other STEM educators.

OPCN events are being planned for the HI-TEC Preconference on Monday and Tuesday, July 17-18 (read about last year's OPCN activities at <http://www.op-tec.org/2016-hi-tec-report-2>). The general conference keynotes, presentation sessions, and exhibits will take place on Wednesday and Thursday, July 19-20.

As in previous years, OP-TEC, MPEC, and LASER-TEC will be offering conference registration codes for up to 40 representatives. OPCN Coordinators and Members will receive priority for these free registrations but the centers will also take requests to consider additional college faculty members or partners. As in previous years, OPCN Coordinators will be reimbursed for their airfares post-conference.

Interested educators at colleges with LASER-TEC or MPEC partnership agreements or subawards, should contact Chrys Panayiotou or Greg Kepner to request a free registration. All other OPCN Members should contact Christine Dossey at OP-TEC.

mentored by NASA engineers, tour the facilities, and compete in a rover competition.

Guillermo began IVC's courses as a High School student last Spring, and performed so well in the introductory course that he was hired as the lab manager. Below is a photo of Guillermo at a high school Career Fair. He designed and arranged the entire outreach setup pictured, as the lab manager for the IVC Laser and Photonics Technology Program.

Community College students can apply for the NASA Community College Aerospace Scholars Program by submitting an application online at nas.okstate.edu/ncas/. For more information about the NASA Scholar Program, please visit nas.okstate.edu/ncas/.

Important Dates for Fall 2017 NASA Scholars Program

Applications accepted February 1-May 2, 2017

Online Session June-July 2017

Onsite Student Selections August 2017

Onsite Workshops September/October 2017



Indian Hills Community College Hosts Alumni & Friends Reception at SPIE Photonics West Conference



Indian Hills Community College held an Alumni & Friends Reception on February 1, 2017 in conjunction with the SPIE Photonics West Exposition in San Francisco. The event was held at Jillian's, a popular gathering place in the Metreon, next to the Moscone Center. Attendees included alumni, students, and instructors from IHCC, Midwest Photonics Education Center representatives, as well as friends from companies such as

We hope that all OPCN members will be able to attend July 17-20 in Salt Lake City!

2017 HI-TEC Awards



Nominations Deadline
March 30, 2017
5:00 pm CST

The HI-TEC Conference annually recognizes outstanding educators and industry representatives who make significant contributions to the training and education of today's technology workforce.

HI-TEC is now accepting award nominees for the following awards: Educator-of-the-Year, Industry Recognition, and Innovative Program. Nominations can only be submitted by NSF ATE Centers or Projects, and/or their partners, and HI-TEC sponsors. A nominator may submit no more than one application for each award category. Nominees must be affiliated with an NSF ATE Center/Project or HI-TEC sponsor.

The awards will be presented at the HI-TEC Awards Luncheon on Wednesday, July 19, 2017 at The Grand America Hotel, Salt Lake City, Utah. HI-TEC will provide the airfare, registration, and two nights lodging for each winner in addition to their prestigious award recognition.

For information and entries, please visit http://www.highimpact-tec.org/award_nominees. For questions about the award, contact Pamela Silvers, HI-TEC Awards Chair, psilvers@abtech.edu.

For assistance with the nomination form, contact Sheila Wilson swilson@cord.org.

TRUMPF Inc., Thorlabs, RPMC Lasers Inc., LightPath Technologies, Amplitude, Electro-Optics Technology Inc., Lightel, Optimax Systems, and the Lawrence Livermore National Laboratory. IHCC Alumni in attendance ranged from the earliest graduating classes of 1987 (Brad DeBok, Jim Tracey), 1988 (Bill Holtkamp), and 1989 (Frank Reed) to the most recent graduating class of 2016 (Lori LaPoint, Elissa Emberton, Chris Myers, Austin Linder) and several classes in between such as 2000 (Shawn Smith), 2009 (Michael Shay), 2010 (Derek Roland), 2011 (Jared Mills), and 2012 (Clint Miller).

Attendees enjoyed refreshments while making new friends, renewing old friendships, reliving past times, and discussing new opportunities. Alumni in attendance are now working in a wide range of careers including Program Managers, Business Development Managers, Sales Managers, Product Managers, Applications Engineers, Sales Engineers, and Engineering Technicians. MPEC Director Greg Kepner thanked everyone for coming and for their continued support of IHCC through hiring program graduates, donating equipment, funding scholarships, partnering in events, and providing company tours, field experiences, and equipment at reduced prices. IHCC Instructor Michael Shay vowed to continue the IHCC tradition of providing a quality education for students at the highest level to meet industry needs.

OPCN Working Groups

Professional Development Working Group
Anca Sala, Chair
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Student Recruiting Working Group
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Program Assistance Working Group
Gary Beasley, Chair
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Equipment Working Group
Frank Reed, Chair
frank.reed@indianhills.edu



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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