



OPEN Optics and Photonics Education News

Newsletter of the Optics and Photonics College Network

April 2017

From the Executive Director



With the Winter/Spring term rapidly coming to an end, most faculty are busy completing their course deliveries, recruiting new students and helping grads find jobs. It's hard to reserve the time to plan new initiatives, examine current practices and plan for summer professional development, but these efforts are necessary as you plan for the future.

This April OPEN encourages you to quickly review these issues, and offers information and resources to assist you to consider changes in laser safety, student outreach/recruitment strategies and student retention. OP-TEC's new instructor tools are also introduced, as well as SPIE grant opportunities.

To benefit from networking and professional development, plan now to attend the OPCN meetings, workshops and technical presentations at the HI-TEC Conference in July.

Dan Hull

Photonics Student Retention



Tackling the Problem of Student Attrition Can Lead to More New Photonics Technicians

Together, we are slowly closing the supply-demand gap for new photonics technicians: approximately 800 needed each year and about 400 completers in 2016. For 35 colleges, that's an average of 12 new technicians per college. In the last eight years we have more than tripled the number of new photonics programs; and in recent years many colleges have doubled their enrollment through new, effective, recruitment strategies. We can close the supply/demand gap even faster if we do a better job at retaining the students we have.

A poll of faculty from well-established photonics programs at seven colleges revealed that most of them initially experienced drop-out rates from first year students that exceeded 50%.

Some of the causes of high attrition are due to:

- Inadequate screening and counseling of student applicants
- Inappropriate testing and academic remediation of incoming students.
- Lack of student commitment; immature students.

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Upcoming Events

5/02/17

NASA Scholars Program
Application Deadline
www.nasa.gov

5/05/17

Laser & Fiber Optics
Educators Workshop
Fort Pierce, FL
www.laser-tec.org

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

06/25/17 - 06/28/17

ASEE Annual
Conference 2017
Columbus, OH
www.asee.org

7/17/17 - 7/20/17

HI-TEC 2017
Salt Lake City, UT
www.highimpact-tec.org

- Failure to remain motivated, due to lack of exposure to photonics applications during the first two semesters.
- Lack of a *support group* of fellow students which can provide teamwork, technical engagement and mentoring.

These colleges have reduced their dropout to less than 10% by addressing the attrition issues and aggressively implementing strategies that help retain students. OP-TEC is developing a monograph that incorporates these ideas and provides additional resources that have been proven to reduce attrition. It will be available in May.

Do you need help in reviewing/updating your laser safety equipment, facilities or lab procedures?

The ANSI Z136.5 Standard for the Safe Use of Lasers in Educational Facilities is currently in the final stages of a revision which should be published by the end of 2017. The revision will contain several elements that may affect educational lab operations.

- New and revised definitions
- New Laser hazard classifications
- Updated Maximum Permitted Exposures (MPEs) for current and added wavelengths
- Updated Nominal Ocular Hazard Zones
- Color and added Safety signs with detailed explanations
- Updated and color enhanced laboratory layouts
- Added information for Fiber-Optic safety



At the March ANSI meeting, Dr. Fred Seeber was reelected as chair of the ANSI Z136.5 Committee. [Read more](#) about why this Standard is vitally important for the safety of students, teachers, professors and administrators in middle schools, high schools and colleges using lasers and laser systems.

If you are in need of Fred's assistance, contact him at fredpseeber@comcast.net

Astounding Inventions Fair

Astounding Inventions™ is an invention fair hosted by Irvine Valley College, which highlights handmade inventions by students from the Irvine and Tustin School Districts in kindergarten through eighth grade. Every year hundreds of student inventions are showcased and judged. This event was established to promote student interest and learning in math and science. IVC's Laser and Photonics Technology program had a hands-on activity booth for the hundreds of fair participants and their families to visit and learn about important inventions related to light and optics. Below is a tweet showing IVC's booth at the event featuring instructor Desiré Whitmore and President Glenn Roquemore demonstrating the fun of Fresnel lenses to students.

[View Events Webpage](#)

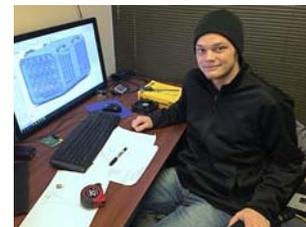
SPIE Education Outreach Grants Program



SPIE's Education Outreach Grants Program offers small grants twice a year to non-profit organizations and educational institutions for photonics education outreach activities. This is a potential funding source for OPCN colleges planning summer camps, teacher workshops, and similar outreach activities. Proposed activities must take place sometime between August 2017 and July 2018. Applications will be posted soon and are due by May 31, 2017.

Please visit the [SPIE Education Outreach Grant Program webpage](#) for more information about what is funded.

Colt Dudley



In high school, Colt Dudley knew he wanted to work with some kind of technology but didn't have a clear career goal. He declined a scholarship at a far-away private university to explore mechanical engineering technology in a community college transfer program closer to home.

During his orientation at Central Carolina Community College, he learned about the Laser and Photonics Technology associate degree program there and decided to enroll.

At CCCC, Colt learned technical skills as well as a



IrvineValleyCollege
@MyIrvineValley



#AstoundingInventions activities taking place at IVC today. @IVCPres engages with the student inventors during a laser activity. #ivcai30



new way of solving problems and viewing the world. Colt believes that technical associate degree programs teach students to think "in a common-sense way," something he says is rare today.

Upon graduation, Colt received three job offers! He chose Aqueti, Inc. in Durham, NC to work with q360 camera arrays used to record sporting events seen on national television. Colt is now using his skills to design new camera technologies in his rapidly advancing field.

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

Women in Demand



Central Carolina Community College is offering female students generous incentives to study Lasers and Photonics Technology and increase enrollment in areas typically dominated by males. In this ATETV produced video titled "Women in Demand", Central Carolina students and department chair Gary Beasley describe the program, and how to recruit women into STEM programs.



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
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Student Recruiting Working Group

Taylor Jeffrey
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Program Assistance Working Group

Gary Beasley, Chair
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Equipment Working Group

Frank Reed, Chair
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Photonics Bootcamps



Offering summer photonics camps leads to a strong fall enrollment. In March 2017, LASER-TEC successfully kicked off a series of boot camps for middle and high school students.

LASER-TEC is currently offering a brand new **Arduino 2 Bootcamp** covering advanced projects using photonics and telecommunications modules.

Another new camp is the **Electronics Maker Bootcamp** that introduces students to the intricacies of electronic components and circuits using bread boarding and soldering. The students also get to learn how to use the signal generator and oscilloscope to observe basic sinusoidal and square waves.

LASER-TEC is gearing up to offer multiple camp sessions across the Southeast during summer 2017 anticipating to impact directly about 500 students. Photonics bootcamps using LASER-TEC curriculum and Light and Optics Exploration kits will be offered at Indian River State College, Central Carolina State College, Tri-County Technical College, and Central Alabama Community College.

If you need any assistance in starting up a photonics camp at your college, LASER-TEC staff members will be happy to share their experiences and lessons learned. The kits are available at a discounted price of \$55 for OPCN members; the educator manual is offered at \$45. More details are available on the LASER-TEC website www.laser-tec.org.

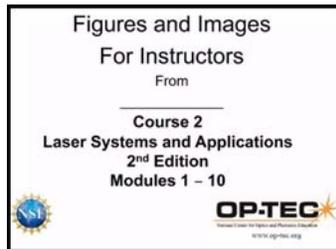
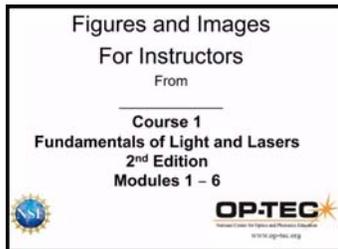
For questions and comments, please contact Dr. Chrys Panayiotou at 772.462.7621 or cpanayio@irsc.edu.

Instructor Resource of the Month

Did you know? OP-TEC has made PowerPoint slides for Instructors containing the figures and images from the Course 1 and Course 2 textbooks.

Figures and Images for Instructors (PowerPoint and PDF):

One download contains separate files for each module, allowing for easy use and organization.



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.

Tyler Parker is a Technical Sales Engineer for Newport Corporation.



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.

OPEN is published by the National and Regional NSF Advanced Technological Education Centers for Optics and Photonics Education.

This material is based upon work supported by the National Science Foundation under Grant No. DUE-1303732. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

