

ADVANCED LASER COURSE FEATURES NEW HANDS-ON LABS

After three years of looking for the "ri format, the Advanced Laser Topics course (PHO 290) for Spring 2004 included hands-on lab experiences with advanced instrumentation, field trips to industry sites, and guest speakers as well as a few traditional instructor-led lectures. The goals of the course are to provide an opportunity for students to see how the principles learned during their first three semester courses find practical use in the photonics industry and to prepare students with practical skills and knowledge for the job market.

A grant from the National Science Foundation Course Curriculum and Lab Improvement program (NSF-CCLI #0126665) provided equipment for several new lab experiments in the first half of the semester, which was devoted to Wavelength Division Multiplexing (WDM). After an introduction and overview of modern fiber optic communication systems, students used an optical spectrum analyzer to characterize active and passive devices for fiber optic networks. In a second hands-on exercise, they constructed a coarse WDM system using commercially available devices and studied its characteristics. The third new lab exercise strengthened student knowledge of laser principles through guided explorations of an erbium doped fiber amplifier (EDFA).

A site visit to Nufern (East Granby, CT) allowed students to learn first-hand how optical fiber is manufactured and tested. Students were also introduced to the non-telecommunication use of doped glass fiber as the medium for high power lasers for manufacturing. A trip to IPG Photonics in Oxford, MA provided students with a look at new applications of fiber laser technology.

Optical design and manufacturing were the focus of the course after spring break. Using OSLO-EDU, optical design software from Lambda Research, students worked through a lens design tutorial, which prompted a review of geometric optics concepts from the first semester. To explain how components go from design to completion, guest speaker Flemming Tinker, an engineer with Zygo (Middlefield, CT), presented a look at state-of-the-art processes for manufacturing and testing precision optical components. Mr. Tinker's first three-hour presentation was so well received that students invited him to return for a second guest lecture on the applications and manufacture of thin film coatings.



Students use purchased and donated components to fabricate and test a WDM system at two wavelengths.

A student evaluation of course components revealed a high level of satisfaction with the topics and methodology. It is planned to keep the same format for future offerings of Advanced Laser Topics, changing the specific topics as needed to fit the current photonics job market. For example, a module on laser materials processing will be added to the course in Spring 2005.

Faculty Presentations

Three Rivers Photonics program activities were presented at several national conferences including

- *Development of an advanced laboratory for lightwave communication*, J. Donnelly, R. Seebeck, B. Kennedy. CCLI Conference, April 2004, Crystal City, VA.
- *Evolution of an advanced topics course*, J. Donnelly and R. Seebeck. Photonics North, September, 2004, Ottawa, ON
- *Collaboration in photonics education and training*. M. Stroup, M. Valentin, B. Gladue, J. Donnelly, R. Seebeck. Photonics North, September, 2004, Ottawa, ON

In addition, program coordinator Judy Donnelly performed *Optics Magic from the PHOTON Project* at the Optical Society of America's Educators' Day in Rochester, NY (October 2004). She will also present *Materials for photonics education developed by PHOTON and PHOTON2* at the American Technical Education Association annual meeting in New Orleans, LA, in March, 2005. PHOTON and PHOTON2 are funded in part by NSF. (PHOTON NSF-ATE #0053284; PHOTON2. NSF-ATE #0302528)



Members of the "Optics in the Summertime" class pose with instructor Charles Margolies, sixth from left, and Stuart Cohen, Technology Lab Technician, at right.

NON-CREDIT LASER TRAINING OFFERED

Three Rivers has developed laser training courses for employees of companies that use lasers as well as companies that build lasers. Working with the CT Business and Industry Association (CBIA) which funded the courses through grants, six 44-hour non-credit courses were offered to employees of Trumpf and Coherent/DEOS, both manufacturers of carbon dioxide lasers. These unique courses featured hands-on experiences including basic physics labs as well as alignment exercises. A specialized 24 hour course was also created for Joining Technologies, emphasizing the use of lasers for welding and material processing. These new courses complement a series of fiber optics courses which have been taught on campus and in companies throughout Connecticut and Massachusetts since 1995.

For further information visit the photonics page website at <http://webpages.charter.net/laseroptics>

SPIE GRANT BRINGS HIGH SCHOOL STUDENTS TO TRCC

For the third consecutive summer, students from area high schools received scholarships to take PHO 101 Introduction to Photonics at Three Rivers through a grant from SPIE, the International Society for Optical Engineering. Students were chosen through a competitive application.

Tuition and fees for the four credit laboratory course as well as the cost of the text and lab manual, were covered for each of the nine high school students attending. The instructor for the course, Charles Margolies, has taught the popular offering for the past four summers. Several of the students from the previous summer's SPIE supported course are now full time students in the Three Rivers Photonics Engineering Technology associate degree program.

SPIE CHAPTER NEWS

Dustin Laro and Heather Wade, 2003-2004 SPIE officers, took part in the SPIE annual meeting in Denver in August. A travel grant from SPIE paid for transportation and lodging and the student chapter voted funds to help with meals and incidentals. The TRCC students attended technical meetings as well as gatherings of international students during the week-long conference.

The SPIE educational light show continues to be an ongoing attraction for visiting groups. New effects were added this year and the show was performed several times on both the Thames Valley and Mohegan Campuses. The chapter also sponsored industry trips and speakers throughout the year.

PHOTONICS ET STUDENTS RECEIVE NEFC SCHOLARSHIPS

Three Rivers Community College students Dustin Laro, Ariel Thomas and Greg Butler each received a \$1000 scholarship award from the New England Fiber Optic Council (NEFC). Along with the money, each student received a free year's membership in NEFC and the opportunity to attend NEFC's monthly dinner meetings for the 2004-2005 academic year at no cost. The NEFC is an industry organization "committed to the promotion of the regional fiber optic industry and the dissemination of information about fiber optics to the general public."

OPTICS COURSES ONLINE!

Online optics/photonics courses resume in Spring 2005 with PHO101, Introduction to Photonics. PHO 121/122 Introduction to Fiber Optic Technology will be offered in Fall, 2005, followed by a new laser technology course in Spring 2006. For information visit <http://webpages.charter.net/laseroptics>.



A.S. Photonics Engineering Technology

Robert Bernier
Jason Gironimi
Doreen Riggott

Todd LaPointe
Shawn Paradis
Kevin Shortoff

Certificate in Fiber Optics Technology

William Beckert
Alvin Lee
Paul Perez
Elizabeth Schlitter
Michael Soto

John Blood
Keri Olah
Carmen Roman
Jerry Smith
Olga Zazzarino

