

Report of the National Visiting Committee
LASER-TEC: The Laser and Fiber Optics Regional Education Center
Indian River State College, Fort Pierce, Florida
Conducted remotely from June 28 to July 9, 2020 due to COVID-19

NVC Members

1. M.J. Soileau, Founder of CREOL, University of Central Florida, FL
2. Don Hawkins, VP Operations, Precision Contracting Services (PCS)
3. Yvette Mattley, Principal Applications Scientist, Ocean Optics, FL
4. Frank Caimi, Chief Scientist, SkyCross USA, FL
5. Justin Jensen, Sales Manager, Infratec Infrared, FL
6. Glenn Rustay, Principal, Northport K-8 School, FL
7. Rob Campbell, Division Superintendent, Lawrence Livermore Lab, NIF, CA
8. Michael Bass, Emeritus Professor, CREOL/UCF, FL
9. Gregg Kepner, Director, MPEC/Indian Hills Community Coll., IA
10. Desire Whitmore, Senior Physics Educator, Exploratorium, SF, CA

LASER-TEC PI's

Chrys Panayiotou, PI, Director LASER-TEC, Indian River State College, Ft. Pierce, FL
Gary Beasley, CoPI, Lead Photonics Instructor, Central Carolina CC, NC
James Pearson, CoPI, Executive Director, FL Photonics Cluster, FL

Evaluator: Fraser Dagleish, Senior Scientist, Space and Intelligence Systems Division,
L3Harris Corporation, FL

Others Attending: LASER-TEC Staff & Partner Colleges

Natalia Chekhovskaya, Program Manager, LASER-TEC, IRSC
Lauren Hays, Program Coordinator, LASER-TEC, IRSC
William Keiser, Photonics Technologist, LASER-TEC, IRSC

Moamer Hasanovic, Professor, IRSC
Paul Godfrey, Professor, IRSC
Constance Boahn, Chair, CCCC, NC

Summary of Findings

LASER-TEC is an innovating, productive, and pro-active laser-photonics education Center. It is leading the Optics and Photonics College Network (OPCN), consisting of 43 US colleges, collectively producing more than 800 well trained technicians for the US photonics industry. Through its monthly newsletter, and collaborative projects with Photonics Spectra, and the LIA Today magazines, LASER-TEC reaching the global photonics industry and respond to its

continuous and fast changing technological needs by placing 95% of their graduates in the advanced technology workforce. With guidance from industry and the NVC, LASER-TEC developed a five course series for training incumbent workers with a blended online and onsite delivery format. LASER-TEC and NSF are applauded for their quick action to build and ship Light and Optics Experiment Kits to 800 photonics students who are studying from home due to COVID-19.

Success in involving women and underrepresented minorities in the program is extraordinary (44% in the 2019 cohort), however this issue is a difficult one (as is experienced in STEM fields in four year programs as well) and demands continuing attention and focus. Laser-Tec has re-doubled recruitment efforts and has been receptive to entertaining new approaches to this problem. Overall the program is well position for its last year of support to finish polishing the curriculum, the new spectroscopy course, and incumbent worker approaches, as it prepares for the next funding cycle.

Their overall assessment of excellence is evident by the excitement of the Laser-Tec mission, and exemplary progress in each of its five goals.

Specific Commendations

- *President Massey, administrators, faculty and staff at Indian River State College are commended for the strong commitment and continued support of LASER-TEC.*
- *LASER-TEC is commended for the commitment and involvement of the management team and staff (PI, CoPIs, Curriculum Director, Center Coordinator, etc.) involved in the project and the administration and staff involved in each partner college.*
- *LASER-TEC is commended for its ability to adapt during COVID-19 with the production and distribution of the Light and Optics Experiment Kits (LOEKS).*
- *LASER-TEC is commended for increasing and strengthening outreach programs to students and educational faculty.*
- *LASER-TEC is commended for continuing professional development programs for faculty through SPIE, OSA, LIA, Hi-TEC, as well as the National Science Teachers Association.*
- *LASER-TEC is commended for working with the leading professional societies (SPIE, OSA, and LIA) and industry partners in developing instructional materials and delivery options for incumbent worker training.*
- *LASER-TEC is commended for the substantial marketing effort of the program through a monthly newsletter, partnership with Photonics Spectra Magazine, and industry interviews in two national publications (Laser Institute of America and BioPhotonics).*
- *We commend the continued outreach efforts to recruit veterans and the award of credit to knowledge gained during their military service.*
- *LASER-TEC is commended for leading the Optics and Photonics College Network and expanding its membership to 41 US colleges.*
- *LASER-TEC is commended for the monthly publication of the Optics and Photonics Education News (OPEN) newsletter connecting all OPCN member colleges with industry*

and facilitating the recruitment of new photonics technicians.

- *LASER-TEC is commended for its collaboration with Power America, a DOE Manufacturing Innovation Center, to co-develop a wide bandgap semiconductor laser energizing system and technical materials for teaching photonics instructors and technicians.*
- *LASER-TEC is commended for its leadership and initiative to visit Germany and establish beneficial relationships with global photonics companies such as Trumpf Lasers, Fraunhofer Laser Institute, Jenoptik, Optonet, and the German Federal Department of Education – Dual VET system.*
- *LASER-TEC is commended for the development of its outreach programs including low cost kits and tools for K-12, Boot Camps, YouTube videos, and educational posters.*
- *We commend the Center for reach out to the NVC and industry partners for technician skill sets, internships, field trips, employment of graduates, and for support and guidance.*

Recommendations by the NVC

- *Standard format for reporting data for each participation that can generate a summarized view of overall program achievement.*
- *Continue to focus on the content management within the program website, this access will be critical for future growth.*
- *Keep attention on expanding the professional development workshops and job resources within the newsletter and website.*
- *Continue to emphasize LASERS in promotional materials because of the unfamiliarity of the general public with the word “photonics.”*
- *Headline the average starting salary of graduates of \$63,000 and +90% placement of graduates. Punctuate with phrasing to note very inexpensive (less than \$10,000), two year program with math only to the level of algebra.*
- *Expand the lasers and photonics professional society outreach effort to include the American Society of Lasers in Medicine and Surgery. Opportunities related to medicine should be particularly helpful in recruitment of women students.*

Conclusion

The NVC is impressed by LASER-TEC’s excellent work and will continue to support Laser-Tec’s mission for three more years as a National Resource Center. The NVC concludes that confidence in LASER-TEC is high, based on our observations of this NSF funded Regional Center. The NVC is confident that LASER-TEC will continue to be a valuable resource for expanding technician training at other colleges and incumbent worker training, and will be an ever more valuable contributor to the growth of the nation’s photonics industry.

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