

Report of the National Visiting Committee
LASER-TEC: The Laser and Fiber Optics Regional Center
Meeting Date: April 29, 2016

NVC Members

1. Daniel Hull, PI, Exec. Dir. OP-TEC, the National Center for Optics and Photonics Education
2. Fran Korosec, ICAMR
3. Don Hawkins, VP Operations, Precision Contracting Services (PCS)
4. Ron Darbee, Lawrence Livermore National Labs
5. Glenn Rustay, Principal, St Lucie School District
6. Michael Bass, CREOL, University of Central FL
7. Alan Doctor, Laser Components Pyro Group

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
Dorian McIntire, CoPI Program Coordinator, Tri County Technical College, SC

Evaluator

Fraser Dalglish, Optical Engineering Manager, Harbor Branch Oceanographic Institution

Others Attending: LASER-TEC Staff & Partner Colleges

Natalia Chekhovskaya Program Manager, LASER-TEC, IRSC
Lauren Hays Program Coordinator, LASER-TEC, IRSC
William Keiser, Laboratory Technician, LASER-TEC, IRSC
Nicky Wingfield, Recruiter, IRSC
Ed Massey, President, IRSC
Tina Hart, VP IRSC
Jose Farinos, VP, IRSC
Kevin Cooper, Dean, IRSC
Moamer Hasanovic, Professor, IRSC
Constance Boahn, Chairperson, CCCC

Overview

The mission of LASER-TEC is to *develop a sustainable pipeline of qualified laser and fiber optic technicians to meet industry needs in the Southeastern United States.*

Goals

1. Assist colleges with existing LFO programs by providing support, professional development, and equipment.
2. Assist colleges without LFO programs to create courses and programs by providing startup support.
3. Provide professional development for K-12 STEM teachers to bring LFO career awareness to students to create a high-school-to-college student pipeline.
4. Create awareness of LFO careers and a clear pathway for returning veterans to recruit

them for participating regional college programs.

5. Develop, expand, and strengthen partnerships between LFO industries and all regional colleges.
6. Expand the membership of the Industrial Advisory Board (IAB), and monitor the supply, demand, and skill-set needed by LFO technicians in the Southeast region through a strong Industrial Advisory Board.

LASER-TEC is completing its 32nd month with initial NSF grant funding received in August 2013. The Center engages a consortium of two-year colleges, high schools, universities, industry partners in the states of FL, SC, NC, MS, TN, KY, GA, AL, and PR. The participating entities have committed to join forces in creating a secondary-to-postsecondary “pipeline” of highly qualified and strongly motivated students and empowering community colleges to meet the urgent need for technicians in lasers and fiber optics. LASER-TEC also has national responsibility for curriculum, teaching materials, technical assistance and faculty training in fiber optics and spectroscopy.

LASER-TEC serves two types of two-year postsecondary programs (and partner high schools):

1. Those devoted to lasers and fiber optics technology, and
2. Those devoted to technologies that are enabled by lasers and fiber optics technology

Commendations

General:

1. LASER-TEC is commended for the commitment and involvement of the competent management team (PI, CoPIs, Partner Colleges, etc.) involved in the project and the administration and staff involved at each partner college.
2. LASER TEC is commended for the excellent and competent staff, including the addition of Nicky Wingfield as a recruiting and employment specialist and Moamer Hasanovic, Assistant Professor, Electronics Engineering Technology.
3. IRSC is commended for the strong Institutional support to the LASER-TEC Center, particularly Dr. Massey’s (President of IRSC) championing of the program at the national level.
4. LASER-TEC has excellent laboratory facilities that continue to expand with significant industry support, including the recent addition of high-power solid state laser laboratory.
5. LASER-TEC developed a new laser applications lab and taught the Laser Applications course in spring 2016.
6. LASER-TEC is commended for outreach/communication of program existence, goals, value etc., including professionally marketed via flyers, brochures, websites, and social media for student recruitment.
7. LASER-TEC is commended for excellence in developing curriculum material in Light and Optics Exploration Demonstration Lesson Plans and Experiment Book.
8. LASER-TEC is commended for excellence in developing the Fiber Optics for Technicians Textbook & Lab Manual, as well as obtaining industry review and concurrence.
9. The Center is well focused on its overall mission to *develop a sustainable pipeline of*

qualified laser and fiber optic technicians to meet industry needs.

10. LASER-TEC is commended for the partnerships with Corning, Synoptics, Florida Solar Energy Center (FSEC), PCS, Megawatt Lasers, Wasach Photonics, Ocean Optics, and its aggressive pursuit and leadership in fiber optics technician education.
11. LASER-TEC PI Chrys Panayiotou is commended for cooperative and complementary partnerships with OP-TEC (the National Center) and MPEC (the Midwest Regional Center), to maximize breadth and impact on photonics education, not only in the Southeast, but throughout the country, as well.
12. LASER-TEC is commended for creating a balance between the exemplary program and curriculum development practices at IRSC and supporting other regional colleges in advancing their programs.
13. LASER-TEC is commended for its outreach, collaboration and leadership with other ATE centers and projects including the 2015 HI-TEC Conference and International Year of Light events, in the region and throughout the country.
14. LASER-TEC is commended for developing active industry partnerships to provide specific training required for regional employers.

Under Goal 1

15. LASER-TEC efforts in the development of solar energy, spectroscopy, and high-power LED manufacturing curriculum and certification programs are timely and appropriate.
16. The Center, with the strong assistance of Jim Pearson, has established an effective Industrial Advisory Board, building on the Florida Photonics Cluster, as well as the industrial contacts of partner colleges in other states.
17. The Center has the appropriate amount of delegation of responsibility and accountability to partner colleges – allowing flexibility to the sub-region to tailor programs to their individual area needs.
18. The Center has pilot tested the materials and curriculum infusion guides for strengthening electronics programs by including a photonics specialty
19. LASER-TEC's effort to educate and train incumbent workers in the use of fiber optics at Florida Power and Light and other organizations is significant.

Under Goal 2

20. LASER-TEC is commended for outreach efforts to support colleges throughout the country in establishing new LFO programs. Examples: Genesee Career Institute – MI, Capitol View Center – MN, Northwestern Michigan College – MI, Monroe CC – NY, Tennessee College of Applied Technology Convington – TN, Tennessee College of Applied Technology Livingston – TN
21. The Center is providing visibility to the program and offering valuable assistance to regional colleges through the use of presentations, student/teacher camps, and good use of media.

Under Goal 3

22. LASER-TEC is commended for its use of the International Year of Light events as national and community student outreach strategies.
23. The updated *Light and Optics Exploration* lesson plan guide and its correlation with the

upgraded affordable kit are excellent. It is important to note that these kits have been aligned with appropriate education standards.

24. Dorian McIntire and TCTC are commended for their use of social media to support instruction and student outreach.
25. LASER-TEC's expansion into a variety of social media for student outreach is timely and appropriate.
26. LASER-TEC is commended for developing an outstanding outreach program to increase student interest in photonics careers and teacher training in elementary and middle schools.

Under Goal 4

27. LASER-TEC is commended for active efforts to increase overall veteran student enrollment among partner colleges.

Under Goal 5

28. LASER TEC is commended for its use of industry volunteers to help champion industry and regional college partnerships. Justin Jensen of Laser Components participated in an informational session for prospective students. Richard DeSalvo of Harris Corporation spoke at the International Year of Light event. Brian Farnell of Witron Corporation, spoke to our students about employment opportunities at Witron. Tom Wouters of TamLite Lighting gave students a tour of their manufacturing facility. Michael Enis from Harris Corporation, gave students a tour of the Malabar manufacturing plant.
29. The Center has leveraged its grant funds by obtaining donations of time, money, and materials from industry partners.

Under Goal #6

30. The Center is commended for maintaining and demonstrating growth in the number of participants in industry training programs.

Recommendations

General

1. LASER-TEC has a well-organized, well-qualified team. The NVC recommends LASER TEC continue to pursue its goals including:
 - Center organization and partner development
 - LFO course development
 - Visibility and outreach efforts
 - New College recruitment
 - Building cooperative relationships with national and other regional centers
2. Continue providing support in fiber optic and spectroscopy course/program development to all interested colleges throughout the U.S.
3. Continue providing assistance in retraining the employed and unemployed.
4. Continue to provide professional development for faculty at colleges in the Southeast region.
5. Document successful student recruitment practices, using industry reps to accompany recruiter.
6. The Evaluator is using highly accepted methodology and the report clearly states the process and results to date.

7. The NVC believes that the Center progress for less than three years of operation is substantial, and the Evaluator Report should continue to show the broader impact of Center activities and strategies, in order to develop a strong proposal for continued funding in Years 4-6.
8. The Center should prepare for submission of their renewal grant by accomplishing the following:
 - a. Consider rewriting goals to reflect the advanced stage of the Center
 - b. Provide more hard data to demonstrate/substantiate trends, growth, accomplishments and impacts.
9. Leverage NVC members to support LASER-TEC initiatives by requesting action items from them as appropriate.

Under Goal 1

10. Work to encourage technical support from LASER-TEC Partner College, and provide the Partner College resources to assist other colleges within the region.
11. Continue to provide and support professional development of college faculty within the region.
12. Continue providing a list of available webinars and other useful training resources to LFO partner colleges and others in the SE region and throughout the country.
13. Substantially support enrollment and student recruitment for colleges in the region.
14. Organize and participate in a conference at IRSC with cooperation from OP-TEC and MPEC to promote and demonstrate how to infuse Photonics into EET
15. Continue to work with IRSC President, Dr. Ed Massey, to promote electronic curriculum infusion strategies to college leaders at the AACC and other national conferences.
16. Make available to photonics colleges nationally, the posters created by IRSC that describe its laboratory activities
17. Document and disseminate the successful learning strategies developed by Mo Hasanovic

Under Goal 2

18. Cooperate with the national and regional photonics centers to create a common database for outreach and support to colleges
19. Continue the campaign to inform all community colleges in the SE region about the Center and its purpose. Invite them to participate in Center activities.
20. Continue outreach to employers of the region and encourage them to contact colleges close to them to start LFO and PST courses or programs with assistance from the Center.
21. Assist interested colleges with information on funding sources and grant writing.

Under Goal 3

22. The Center should continue to document and broadly disseminate the successful strategies for K-12 outreach, including kits, guides, curriculum, summer camps, etc.
23. Consider creating a series of short demonstration videos to supplement the Light and Optics Exploration Lesson Plans.

Under Goal 4

24. Continue to emphasize a strategy to increase enrollment of returning veterans.

25. Increase efforts to improve student enrollment of women and under-represented populations in LFO programs.

Under Goal 5

26. Continue to pursue strategies to develop and expand training opportunities, partnerships, and industry awareness.

Under Goal 6

27. Continue to expand and strengthen partnerships with the Industry Advisory Board (IAB) and educational institutions.

Conclusion

The NVC is impressed with the hard work, dedication, and quality contributions of the LASER-TEC team. Our impression is one of committed and innovative people who believe strongly in the Center vision and mission.

LASER TEC has achieved remarkable progress during the first three-year grant period. We note particularly the hard work and commitment of Chrys Panayiotou and the other PIs, as well as staff members Natalia Chekhovskaya, Lauren Hays, Nicky Wingfield, Moamer Hasanovic and Will Keiser.

The NVC concludes that confidence in LASER TEC is high, and we will strongly support efforts for LASER-TEC to apply for an NSF/ATE Years 4-6 renewal grant.

Respectfully submitted,
LASER TEC National Visiting Committee,
Dan Hull Chair