AmeriCOM

Ecosystem Training Model for the Precision Optics Manufacturing Industry

Partnership Opportunity with Santa Ana College

March 11, 2024

Agenda

Introductions

Current landscape

- AmeriCOM mission
- Workforce development ecosystem model
  - Current ecosystems and industry partnerships

The path forward with Santa Ana College

- Industry need in southern California
- Program model options and timelines
- Santa Ana College new program development process

Q&A, next steps, and action items

Introductions

Santa Ana College

Michael Buechler, Professor
Manufacturing Technology Department

Lorena Chavez, Dean
School of Continuing Education,
Instruction and Student Services

Larisa Sergeyeva, Dean
Human Services & Technology

Nick Singh, Chair & Professor
Manufacturing Technology Department

AmeriCOM

Rosalie Clemens
VP Workforce Development &
Community Engagement

Kirsten Nobel (participating online)
Program Manager

SoCal Optics Evangelists & Volunteers

Gene Dempsey
Precision Optics Manufacturing Engineer
and Instructor

Donn Silberman
Director, Optics Institute of Southern California

Current Optics Manufacturing Landscape

- AmeriCOM mission
- Workforce development ecosystem model
  - Current ecosystems and industry partnerships

AmeriCOM – Nationwide effort to build and sustain the Optics Defense Industrial Base

High precision optics are pervasive in the military. Our national security is directly tied to the capacity of the optics industrial manufacturing base.

AmeriCOM is:

- An independent, neutral, not-for-profit funded through the DoD Industrial Base and Sustainment (IBAS) Program.
- Partnering with American Precision Optics Manufacturers' Association (APOMA) and other optics organizations throughout the U.S.
- Supported by the Congressional Optics & Photonics Caucus, a bicameral, bipartisan advocate for policies that promote the use of light-based technologies
    - Founders & Co-chairs: Reps. Joe Morelle, NY 25th & Brian Mast, FL 18th Congressional Districts
    - Caucus Member: Rep. J. Luis Correa, CA 46th Congressional District

AmeriCOM is a Workforce Training Initiative and a Defense Precision Optics Consortium

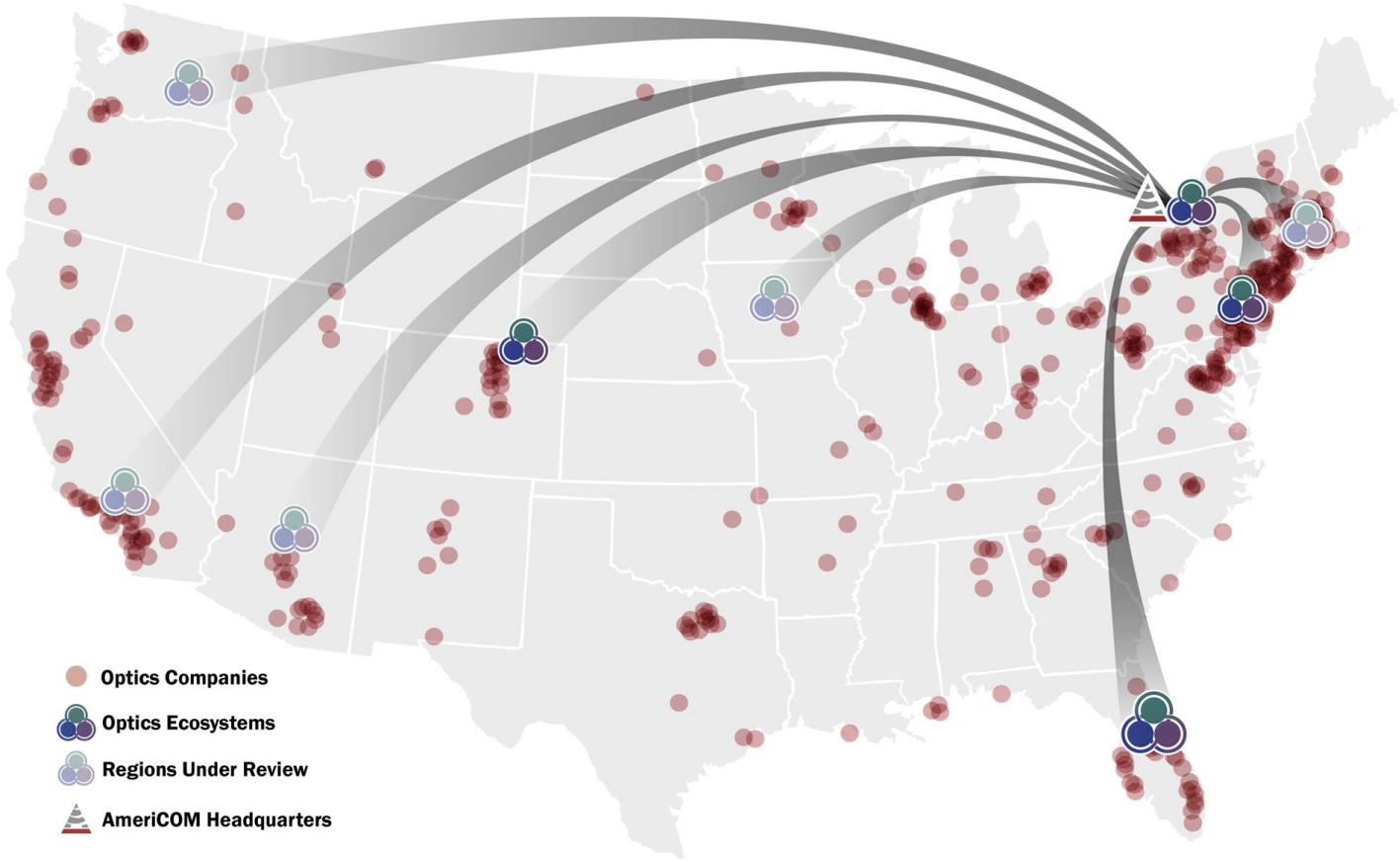
Our dual mission:

- Design and execute precision optics workforce training programs that support the nation's optics industry and deliver trained personnel to industry.
- Develop advanced optic manufacturing technologies, testing equipment, and specialized materials needed by the DoD, and transition these from research into the Defense Industrial Base.

AmeriCOM
CENTER FOR OPTICS MANUFACTURING

Workforce Development Ecosystem Partners

Establish and maintain a national network of regional optics training ecosystems



Current training ecosystems

Monroe County Community College (New York)	Sussex County Community College (New Jersey)	Front Range Community College (Colorado)	Valencia Community College (Florida)
Flagship program w/ model framework	$1.25M equipment investment Launched 2022/23	$1.5M equipment investment Launched 2022/23	$1.2M equipment investment Launched 2023/24
• Currently ~130 students enrolled • Two-year associate degree, one-year certificate, micro-credentials, and apprenticeship prgm	• Fall 2023: 13 students • Spring '24: 17 students • Two-year associate degree, one-year CNC certificate and metrology certificate	• Fall 2023: 16 students • Spring '24: 21 students • Two-year associate degree and a one-year certificate	• Graduation of 12 students in February • Next ~14 students • 15-week long Accelerated Skills Training program

Several more regions across the country in the pipeline!

Path forward with Santa Ana College

Industry need in southern California

Program model options and timelines

Santa Ana College new program development process

Q/A & Discussion

Assessing need

Southern California precision optics manufacturing industry

Technician hiring needs data

Profile of Companies

Based on data from responding validated companies.

Does your company manufacture lenses or sell products/solutions requiring the work of technicians trained on lens fabrication?
YES: 100%. NO: 0%

Do you have a shop floor?
YES: 91%. NO: 09%

Is your company either ITAR-registered and/or a supplier to a prime contractor?
YES: 77%. NO: 23%

Database

Includes all types of organizations that are related in some way to the optics industry including companies, schools/colleges, nonprofit organizations, and government officials.

Total Records 75

Validated Companies 35

61% of validated companies submitted hiring needs data.

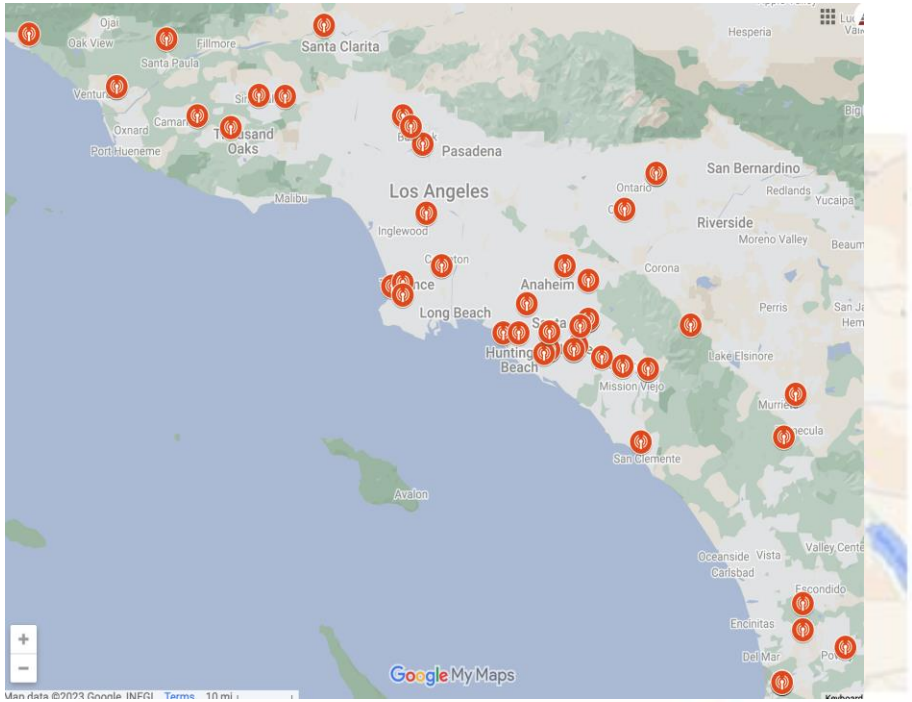
Hiring Needs Data

Based on data from responding validated companies.

Number of optics technicians to hire...

... right now: 50

... per year, in the future: 47



Supporting organizations – regional and national

OPTICA | Formerly OSA

SPIE. The international society for optics and photonics

LASER-TEC NSF
A National Science Foundation Center

vital link

WHAT WE DO

Our Programs

Academies | Career Exhibits and Events | Competitions | Educator Programs

Internships & Apprenticeships | Pathways Days | Site Tours | Skills Workshops

UCI Division of Continuing Education

Optical Engineering & Optical Instrument Design

OSSC
Optical Society of Southern California

The Optics Institute of Southern California

Optics Education & Outreach

NATIONAL PHOTONICS INITIATIVE

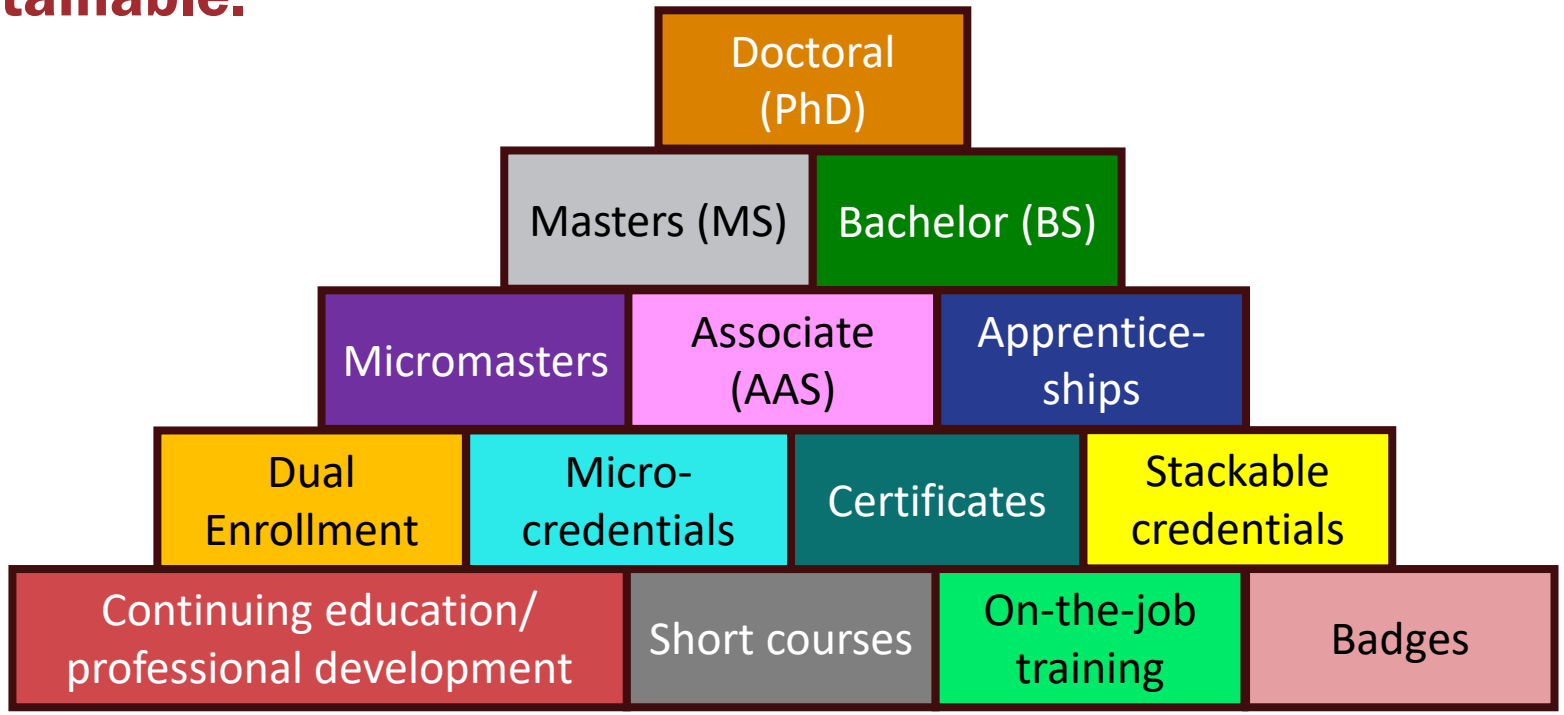
CONGRESSIONAL OPTICS & PHOTONICS CAUCUS

Developing an academic plan

The training portfolio must meet industry needs to be successful and sustainable.

AmeriCOM's charge:
*"increasing **capacity** and **quality** fo r meeting the nationwide demand for **skilled optics technicians"***

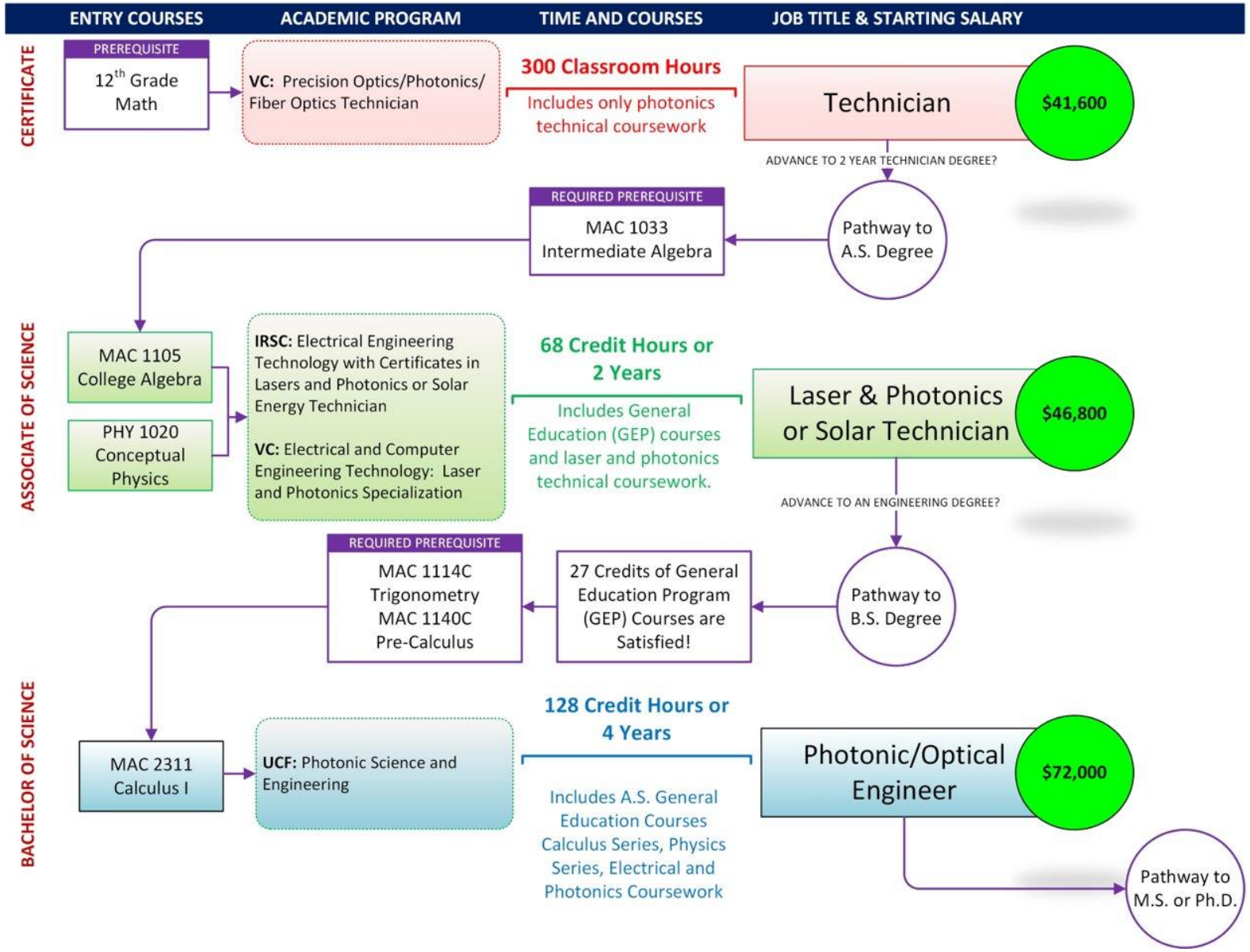
A range of program offerings are being developed or are in place.



Developing an academic plan

Optics manufacturing career pathways

Diagram shows one-year certificate as starting point and options for training that build up from that point.



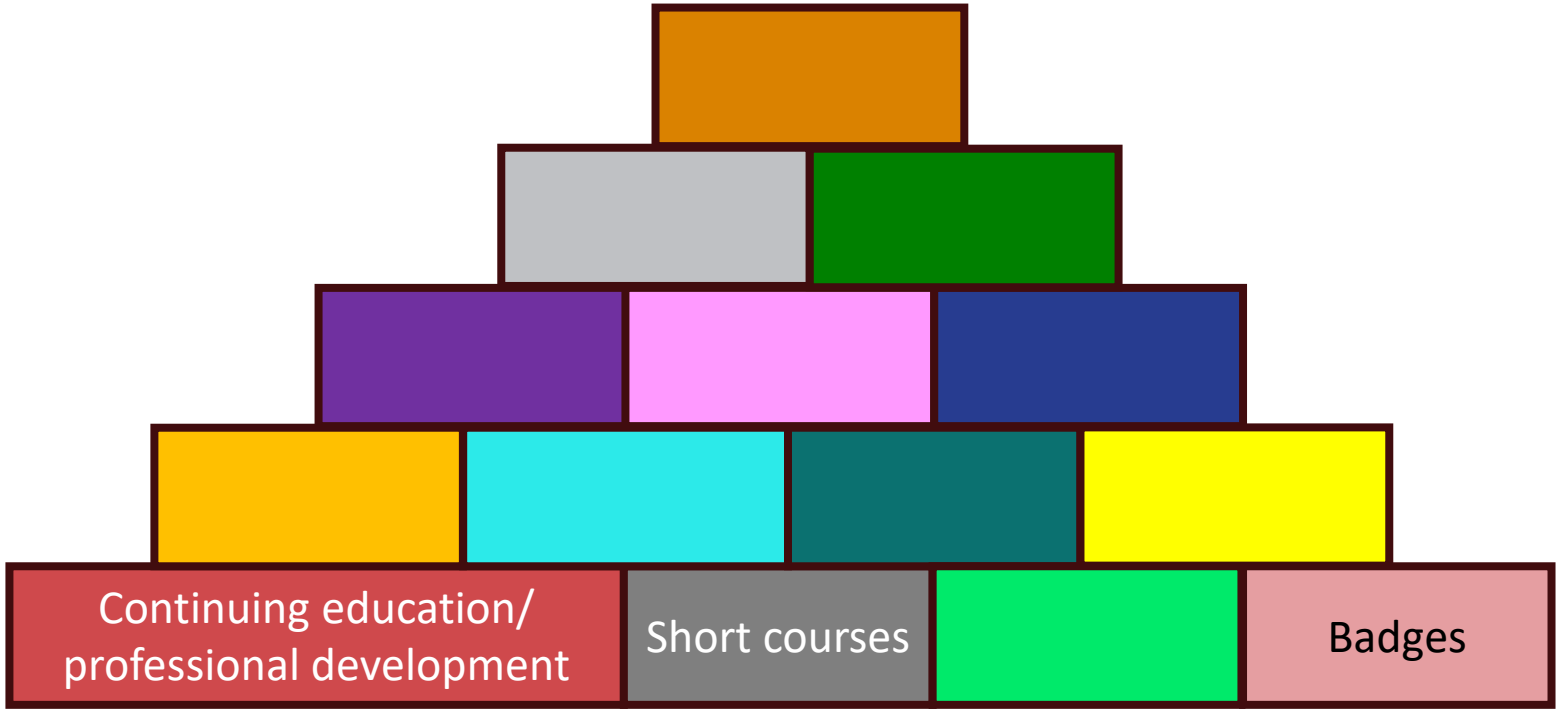
Source: MIKE MCKEE | UNIVERSITY OF CENTRAL FLORIDA, NATALIA CHEKHOVSKAYA | INDIAN RIVER STATE COLLEGE, CAROLYN MCMORRAN | VALENCIA COLLEGE. Photonics Ecosystem Advising Forum

Developing an academic plan

Starting simple – “soft launch” option

As Santa Ana College and AmeriCOM are assessing their long-term engagement, can we start by offering basic courses that do not require major capital investments or time commitments?

These include non-credit-bearing professional development courses or other introductory-level classes.



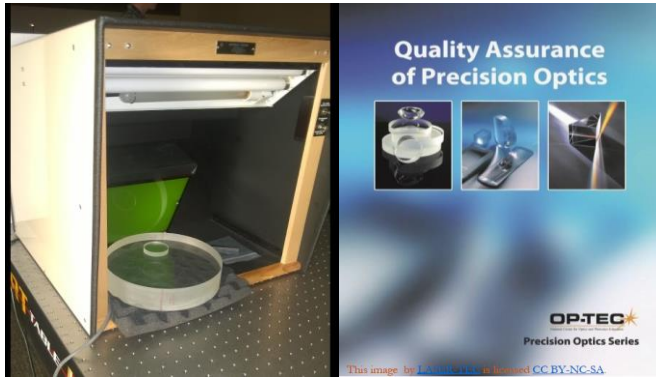
Developing an academic plan

Basic course options

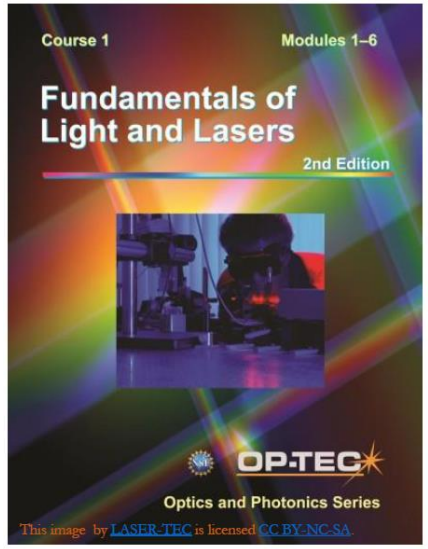
Most optics training programs have a set of basic, introductory classes that do not require significant lab space or capital investment.

Introduction to Geometric and Physical Optics

Introduction to Precision Optics Manufacturing



Quality Assurance of Precision Optics



Introduction to lasers, fiber optics, etc.

Instructor availability

- Gene Dempsey
- Donn Silberman

Developing an academic plan

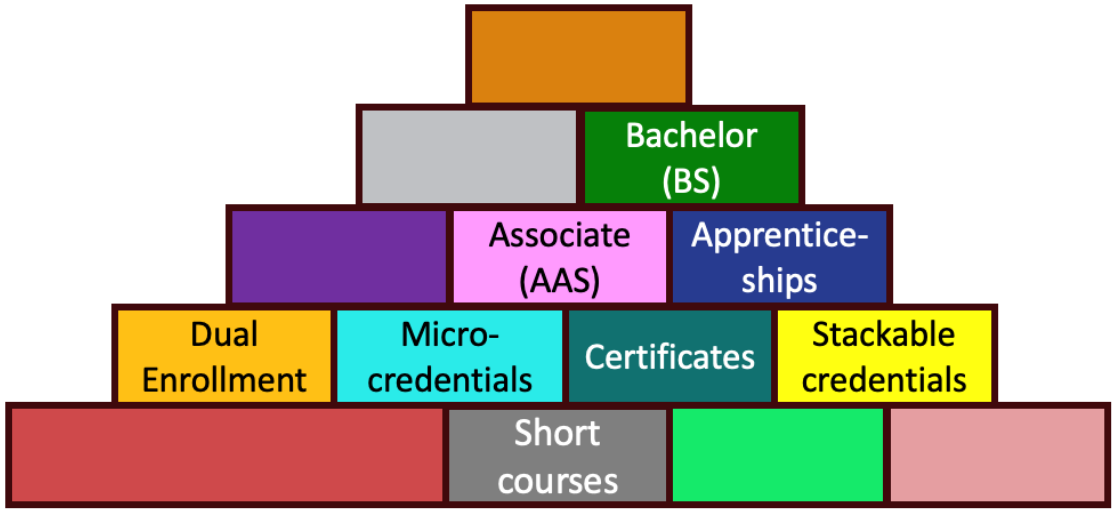
Growing the academic program over time

Fast-Track Skills Training:
- Duration 12 – 15 weeks
- Modular format
- Grants industry-recognized credentials

Microcredentials:
- Shorter programs (< 6 months)
- Narrow in focus
- Can be stackable

Certificates:
- Duration 6 – 12 months
- Somewhat broader focus
- Can be credit-bearing

Associate degree
- Comprehensive training at college
- Typically, 2-year program
- May have a 2+2 option to proceed to Bachelor's degree

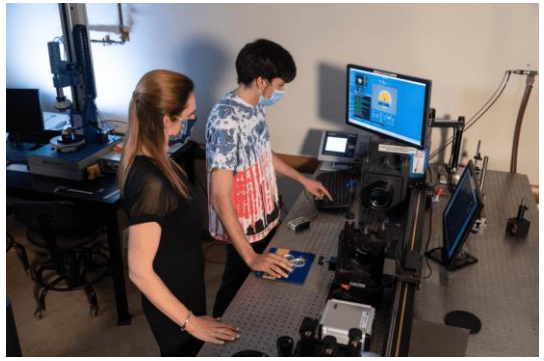


Dual enrollment programs with local high schools:
- Revenue generators
- Fill the pipeline
- Spread the instructor pool

Apprenticeships:
- Combination of OTJ-training and on-campus training
- Typically, 3-year program

Advanced and specialty courses

Many advanced or specialty classes need space and larger equipment.



Metrology: Interferometry

Metrology: Lens testing

Thin film coatings

Precision diamond turning

Precision Optics Manufacturing

Curriculum development resources

LASER-TEC:

- AmeriCOM works with LASER-TEC to support new curriculum development.
- LASER-TEC (and previously OP-TEC) has developed a comprehensive library of courses in the optics field.
- All existing LASER-TEC courses are Open Educational Resources.

Courses from other ecosystems and partners:

- AmeriCOM has access to curricula from other ecosystems that are made available for free.
- AmeriCOM is also able to provide limited training material by equipment manufacturers.

Curriculum development:

- AmeriCOM supports new curriculum development at colleges in their programs.

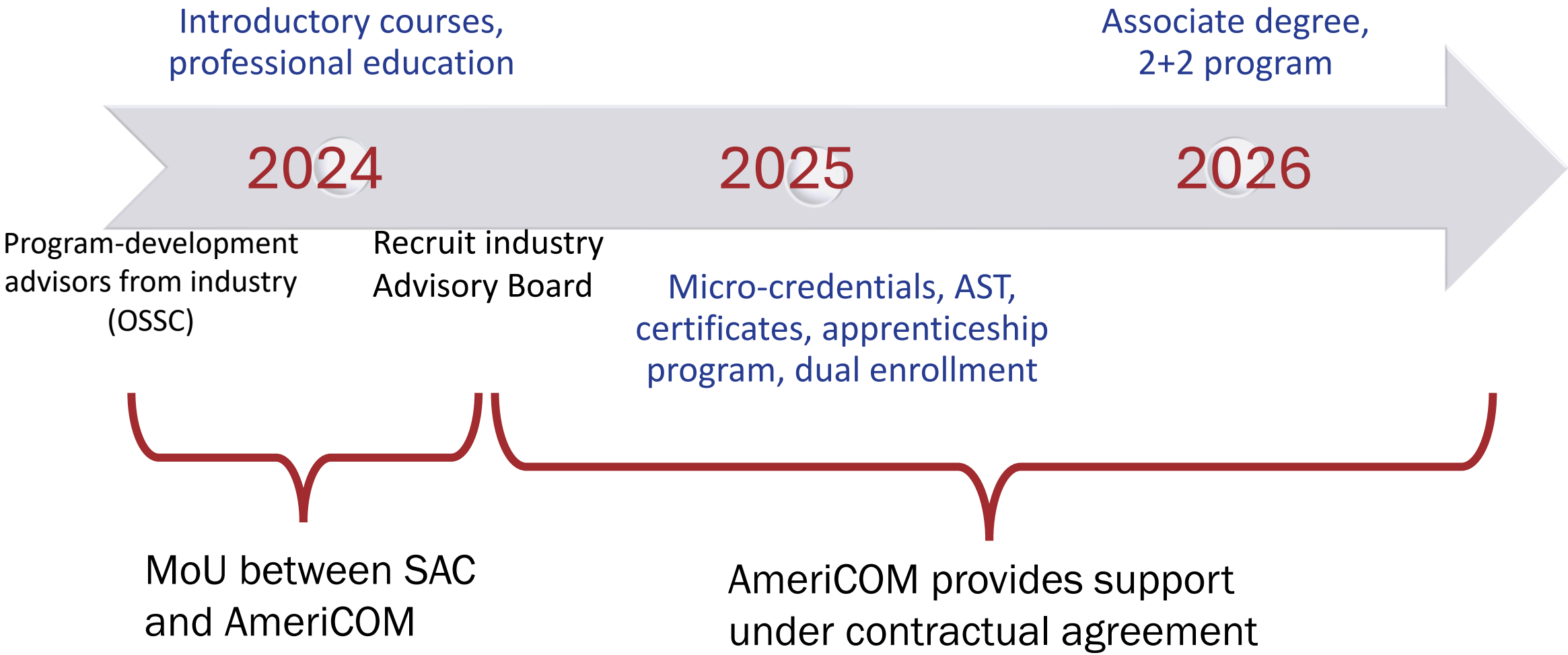
AmeriCOM support to partner colleges

AmeriCOM

- Advise on program design and start-up
- Curriculum development
- Equipping training facilities
- Comprehensive marketing and PR
- Industry engagement
- Ongoing academic and program support

…and much more

Possible timeline for Santa Ana



Q&A

Important next step:

Santa Ana College completes self-assessment, covering:

- Relationship with industry
- Advanced manufacturing & workforce training program portfolio
- Availability of program lead and instructors
- Degree of institutional support to a start-up program and over time
- Capacity to delivery on-line and hybrid programs
- Dual-enrollment (with HS) regulations
- Student recruitment and marketing overall and per program

Next steps and action items

Santa Ana College:

- ....

AmeriCOM:

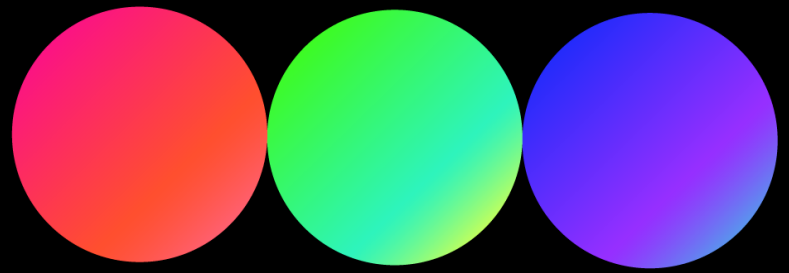
- ....

Donn and Gene:

- ....

Thank you!

Light Up Your Future With Optics



TheFutureIsOptics.com

Digital Marketing Campaign Builds Awareness and Drives Inquiries to the College

People in Optics Long-Form Website Video

Felicity–Website Video

Jimmie-Website Video

Jaiden-Website Video

Sarah-Website Video