

CREOL, THE COLLEGE OF OPTICS & PHOTONICS
B.S. IN PHOTONIC SCIENCE AND ENGINEERING

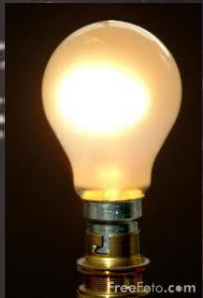
Mike McKee

Associate Director

Undergraduate Degree Programs

Lighting

Incandescent



1 year, \$10.95/yr

Compact Fluorescence



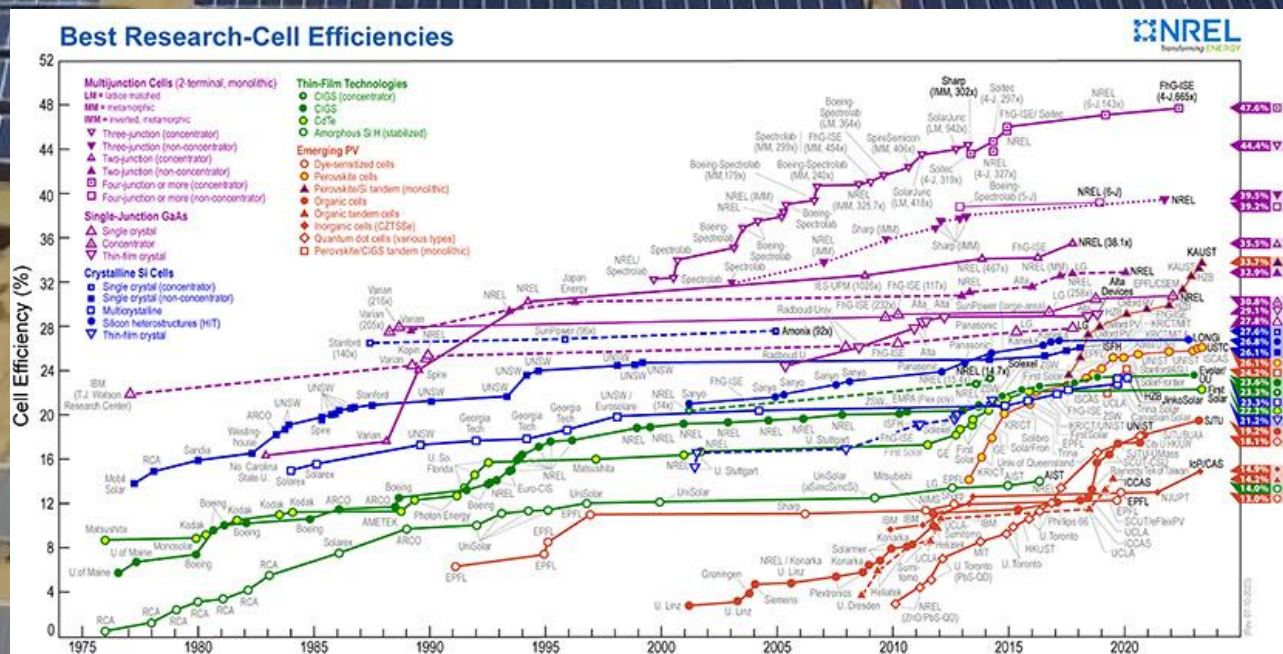
10 years, \$2.56/yr

LEDs



20 years, \$1.83/yr

Solar Energy



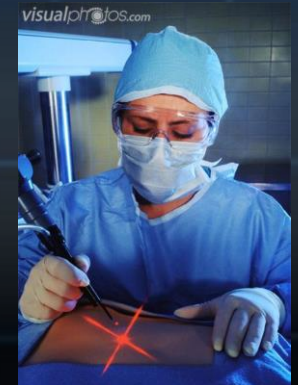
Medicine



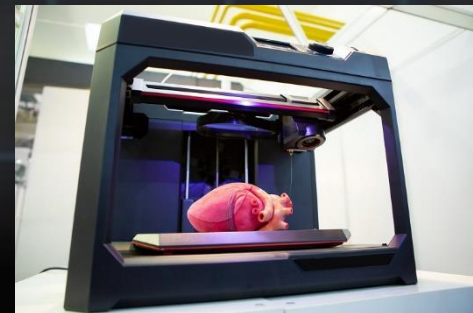
Optical Medical Sensors



Surgery



3-D Bioprinting



Photonic Integrated Circuits



Industry

Laser Cleaning



Imaging and Sensing

Autonomous Vehicles

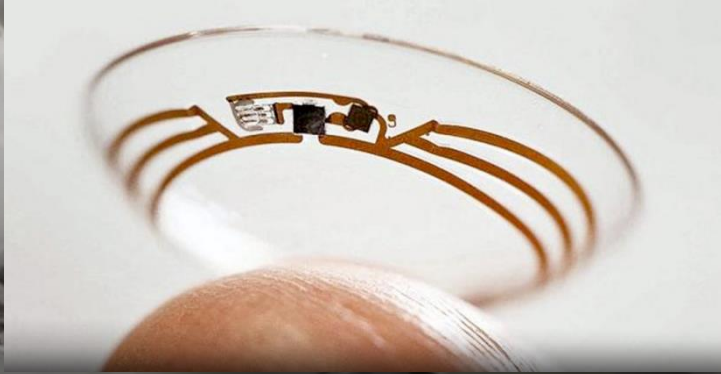


PolyOculus



National Defense

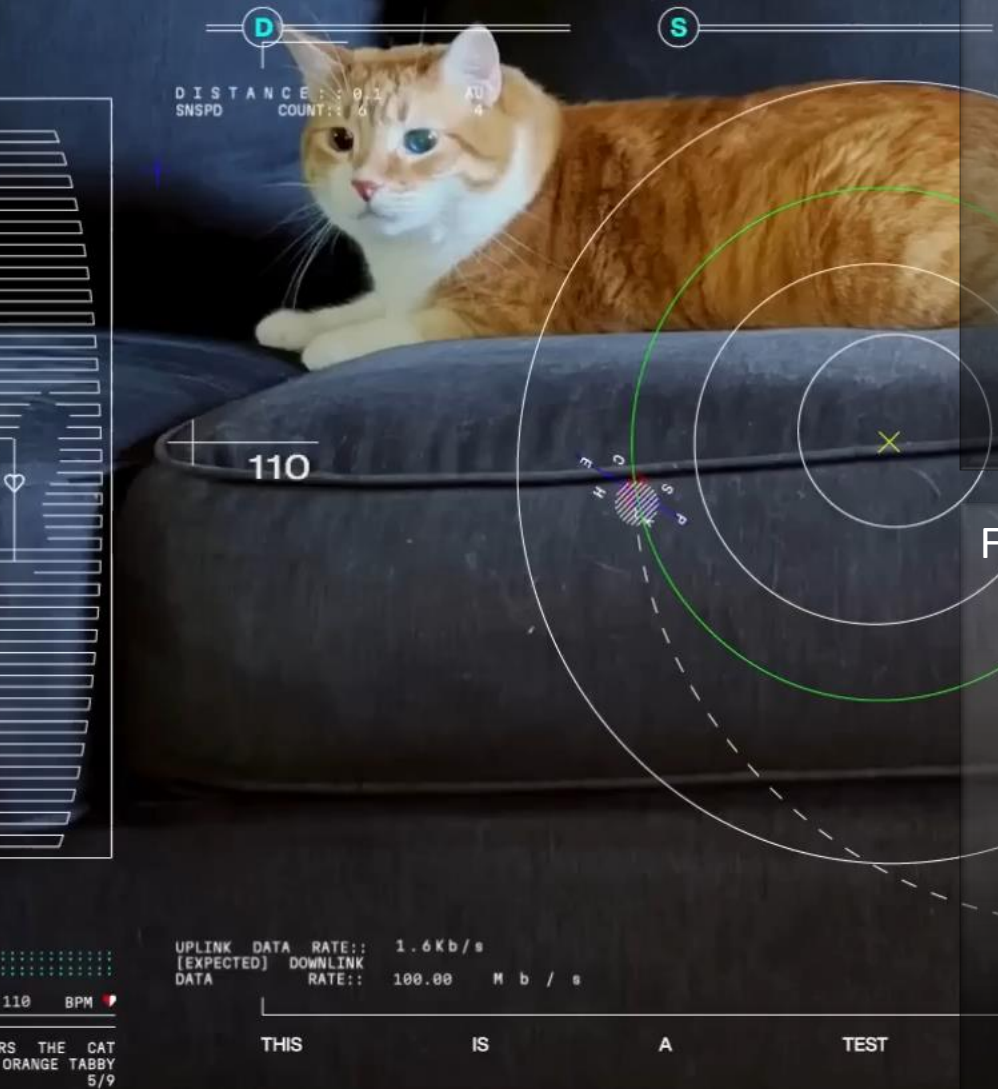
Night Vision



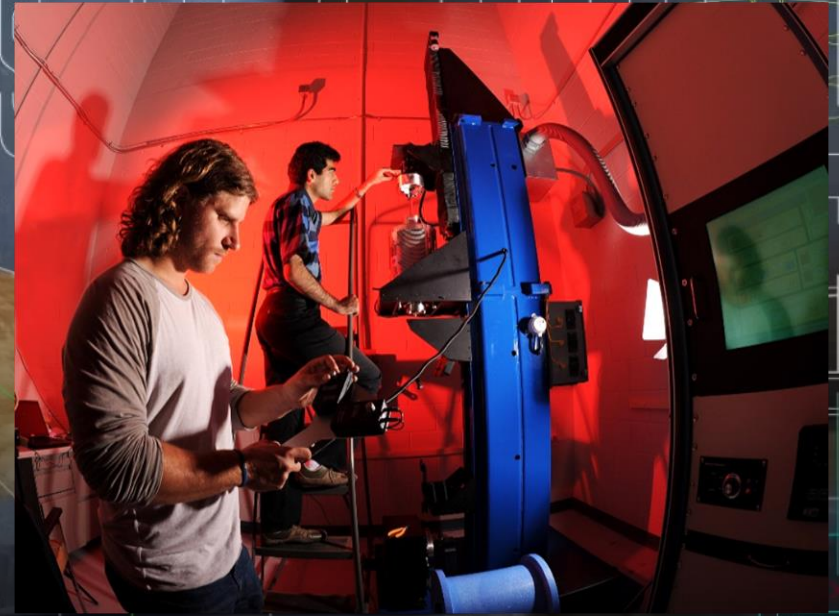
Satellite Reconnaissance



Communications



Fiber Draw Tower



Free Space Optical Communication



Entertainment

AR/VR



Flexible Display



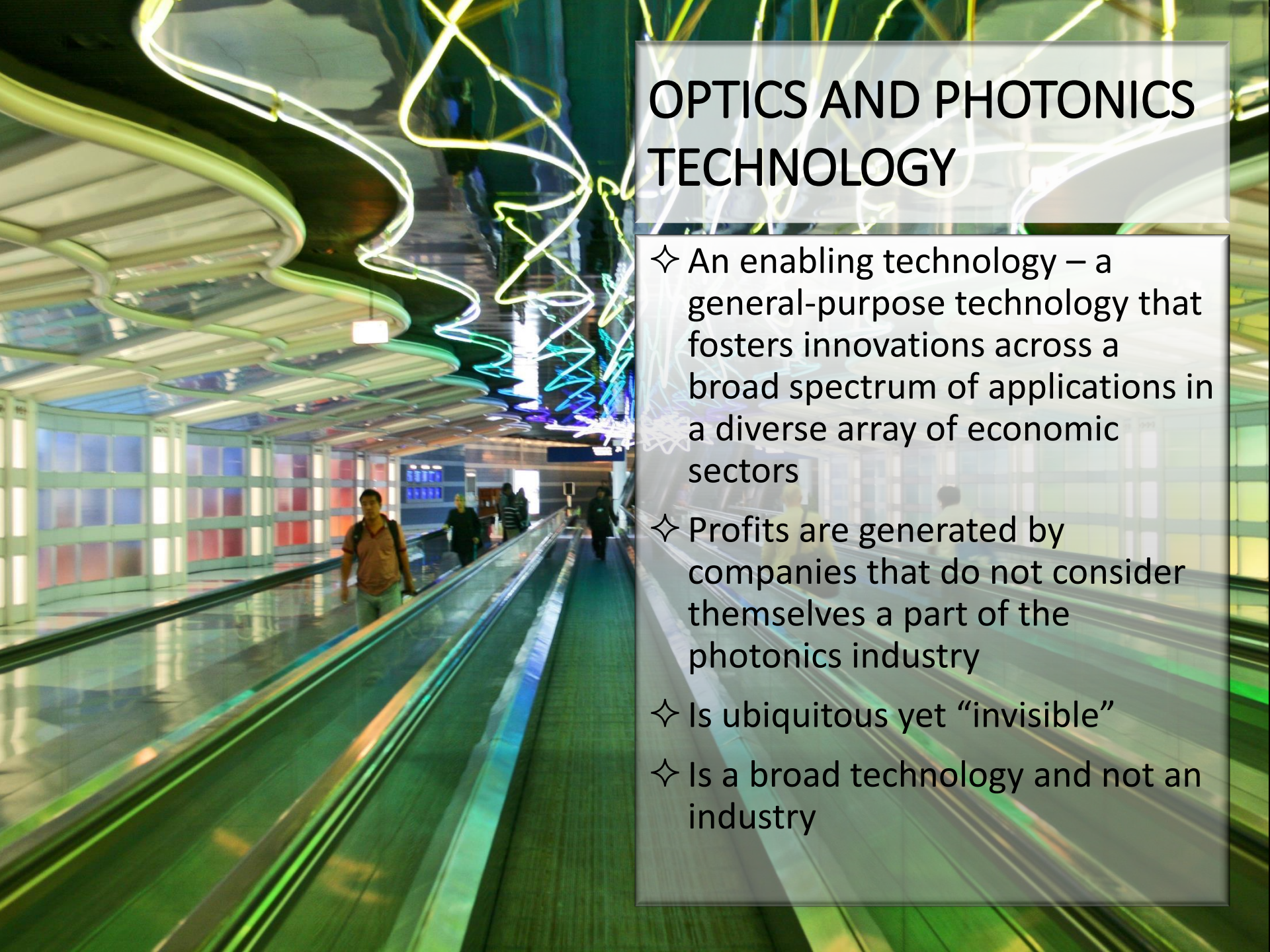
Aviation

Electrochromatic Dimming



LED Lighting





OPTICS AND PHOTONICS TECHNOLOGY

- ✧ An enabling technology – a general-purpose technology that fosters innovations across a broad spectrum of applications in a diverse array of economic sectors
- ✧ Profits are generated by companies that do not consider themselves a part of the photonics industry
- ✧ Is ubiquitous yet “invisible”
- ✧ Is a broad technology and not an industry

JOB MARKET

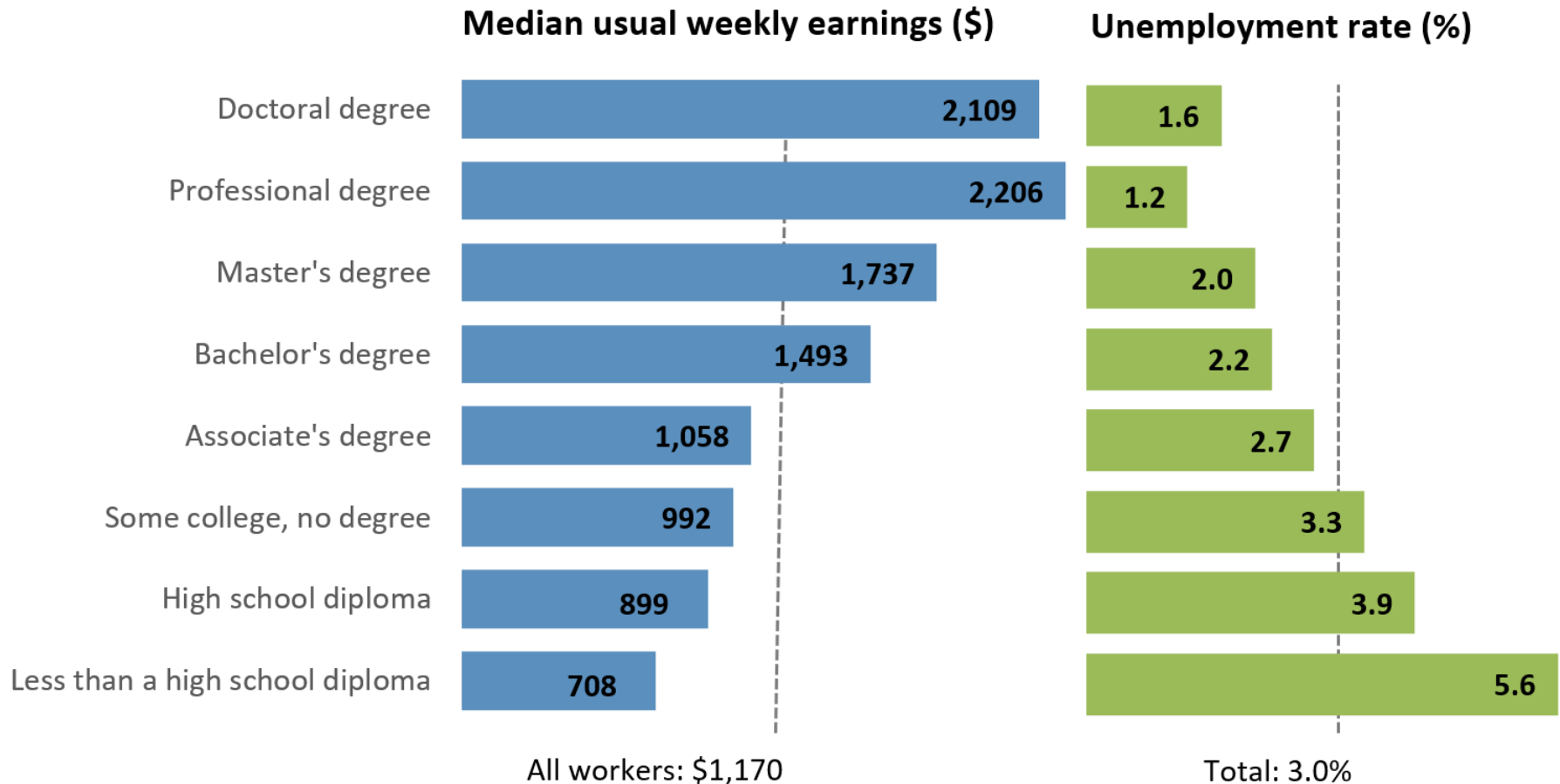
- Estimated job market for photonics engineers:
 - ✧ U.S. – 10,400 job openings/year*
 - ✧ Florida - 700 job opening/year
- U.S. graduates per year: 80-100
- Median Salary in Photonics in the US is \$135,000 per year.**
- Economic impact of Florida photonics industry is \$3.6 billion (>270 companies)
- Photonics impact from private companies:
 - ✧ \$3.085 TRILLION in revenue (vs. \$29.7 trillion national total)
 - ✧ 7.4 million employed (vs. 120 million employed)

*2023 www.onetonline.org

**2023 SPIE Optics and Photonics Global Salary Report

SALARIES AND JOB MARKET

Earnings and unemployment rates by educational attainment, 2023

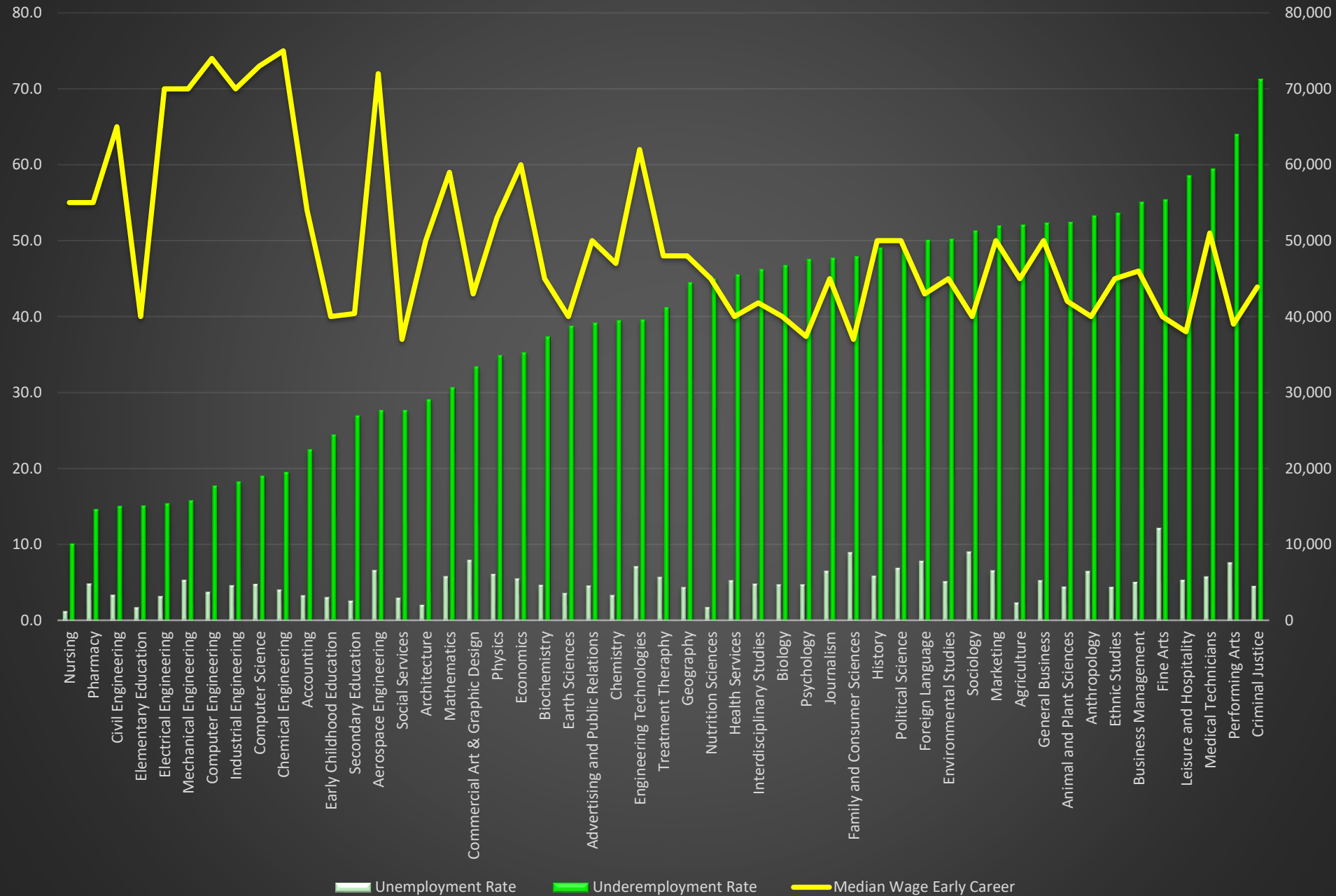


Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: U.S. Bureau of Labor Statistics, Current Population Survey.

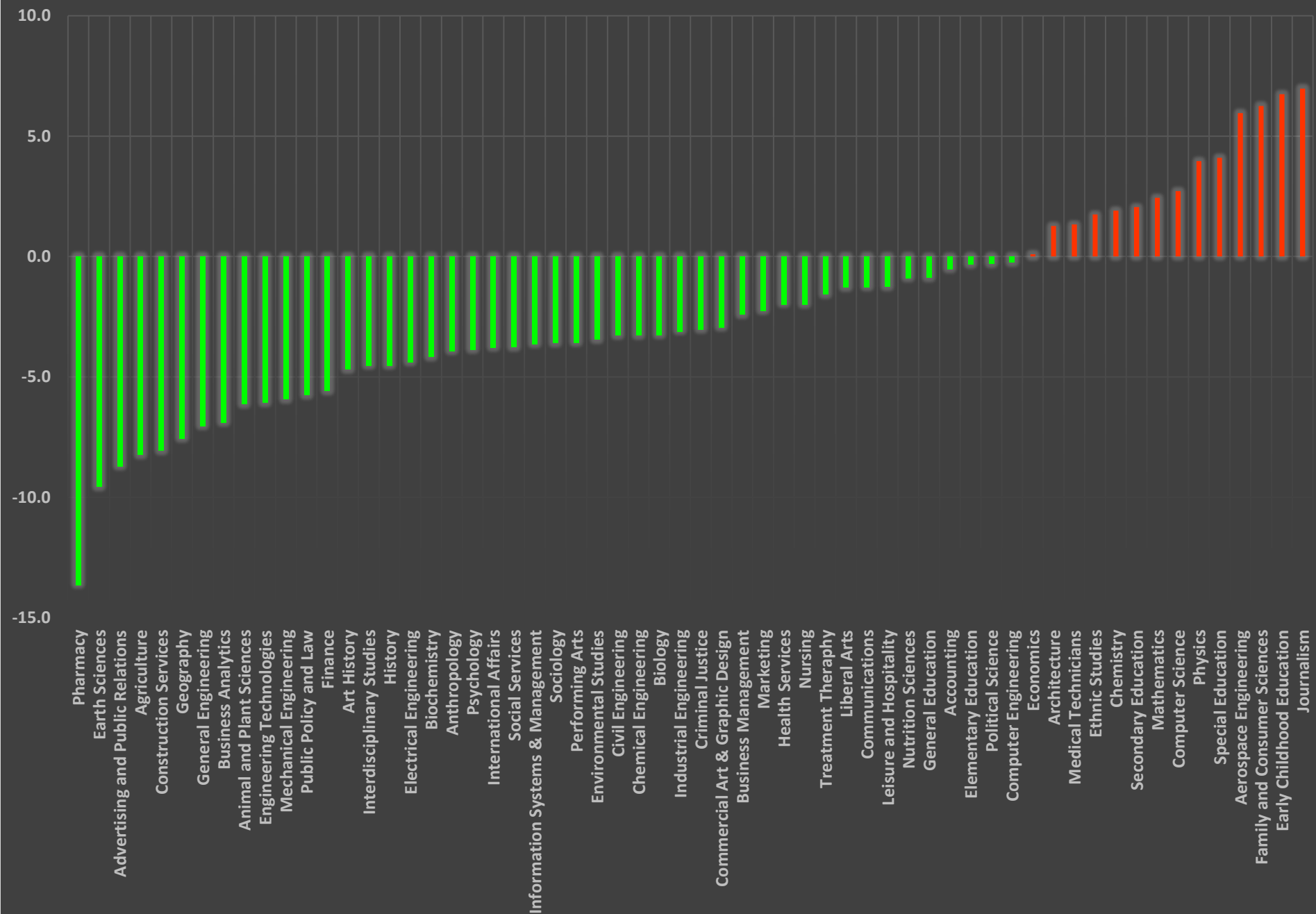
Educational Attainment vs. Income and Percentage of People Employed



2023 Recent Graduate Labor Market



Underemployment Difference (%) 2020-2023



PHOTONIC SCIENCE & ENGINEERING

- The BS Photonic Science and Engineering (BS-PSE) is a degree jointly offered by **COP** and the **College of Engineering & Computer Science**.
- Only B.S. Program in Florida, one of only 5 accredited in the nation.

By the Numbers:

- 175 Students
- 220 graduates
- 30% Female (highest among eng. majors)
- 51% Minority
- \$83K Average Starting Salary



Engineering
Accreditation
Commission

Valencia Pathway AS-STEM Program

<https://creol.ucf.edu/academics/undergrad/valencia-pathway/>

Valencia AS-STEM Photonics Science and Engineering

Major Courses Flowchart*

www.creol.ucf.edu
undergrad@creol.ucf.edu

Core Courses (40):

SLS 1122 New Student Experience (3)
ENC 1101 Freshman Composition I (3)
ENC 1102 Freshman Composition II (3)
SPC 1608 or SPC 1017 Speech (3)
Social Science Core: POS 2041 or AMH 2020 (3)
Social Science Institutional (3)
Humanities Core (3)
Humanities Institutional (3)
MAC 2311 Calculus w/ Anal. Geo. I (4)
MAC 2312 Calculus w/ Anal. Geo. II (4)
CHM 1045C Chemistry w/ Qual. Anal. I (4)
PHY 2048C Physics w/ Calculus I (4)

Photonics Specialization (24)

EGS 1006C Intro. To Engineering Prof. (1)
MAP 2302 Differential Equations (3)
PHY 2049C Physics w/ Calculus II (4)
EGS 2004C Electrical Networks (3)
ETS 2215 Geometric Optics (3)
ETS 2215L Geometric Optics Lab (1)
ETS 2212 Found. of Photonics (3)
ETS 2212L Found. of Photonics Lab (1)

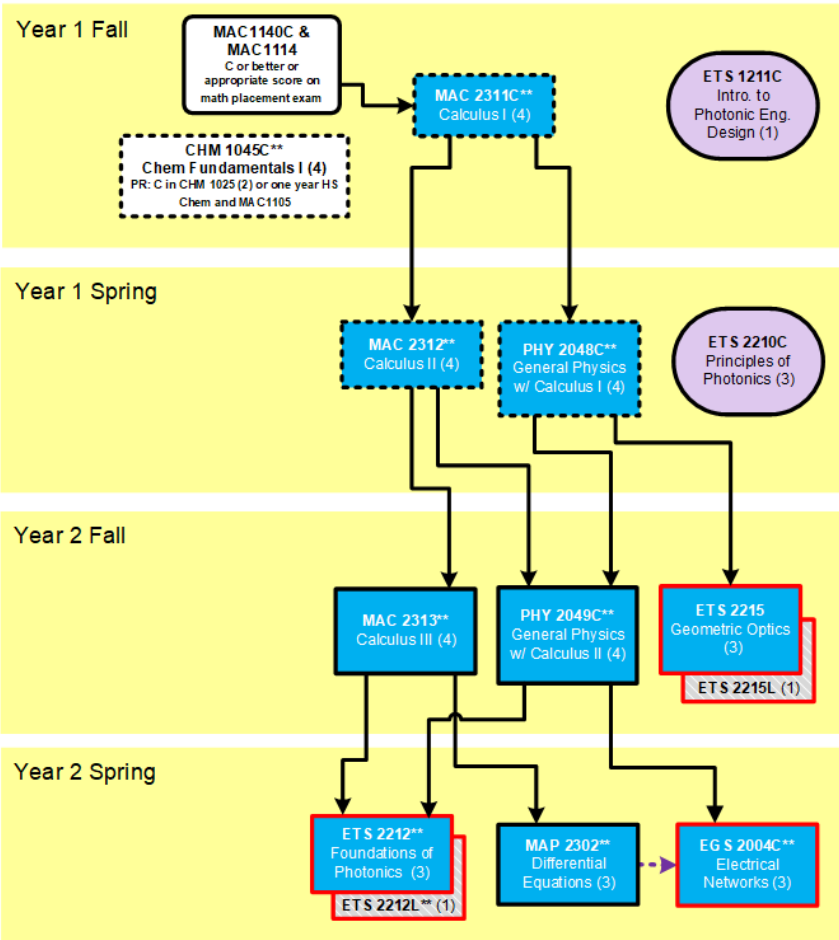
Restricted Electives (4):

ETS 2210C Principles of Photonics (3)
ETS 1211C Intro. to Photonics Engineering Design (1)

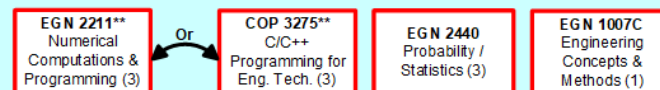
Additional Math Course (1/4):

MAC 2313 Calculus w/ Anal. Geo. III (4)
(1 credit used toward AS-STEM Specialization, remaining 3 credits will transfer to UCF)

Total Credits: 64



Additional Courses Eligible for Transfer to PSE Program



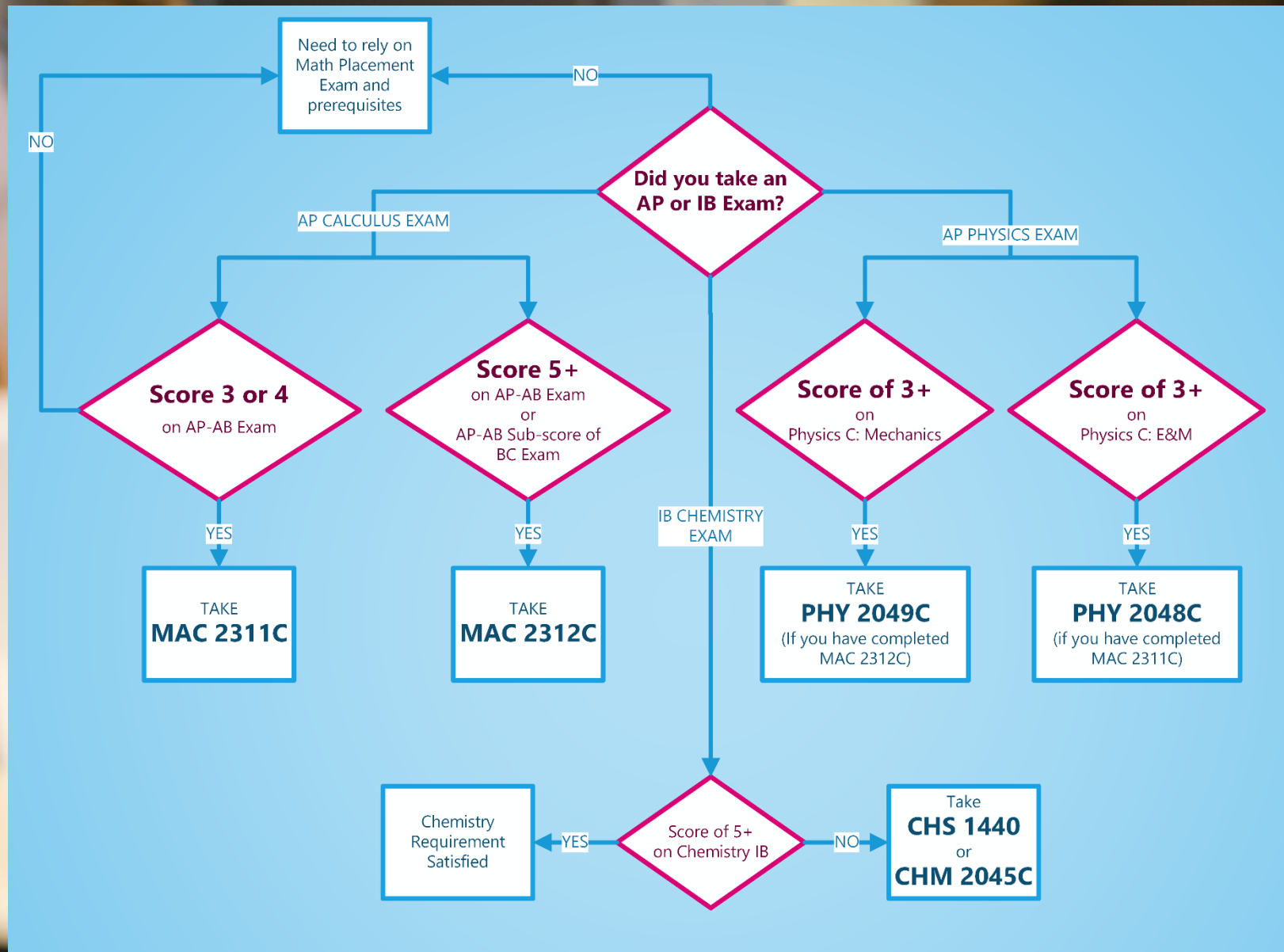
EARN AS-STEM AND
AA DEGREE

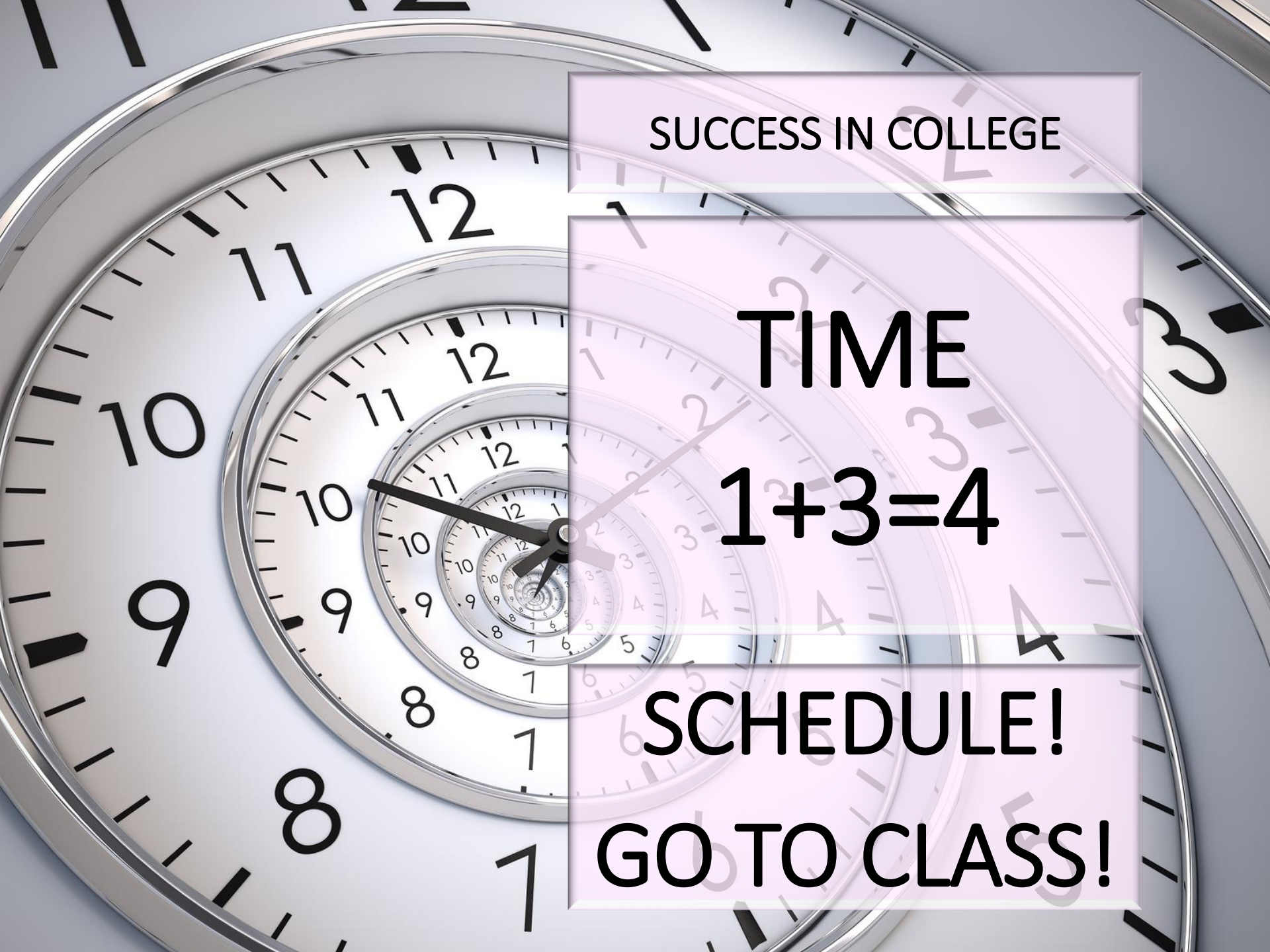
TAKE PHOTONICS
COURSES

67 CREDITS WILL
ULTIMATELY
TRANSFER

COMPLETE
BACHELOR'S AT UCF
IN 3 ADDITIONAL
YEARS

DUAL ENROLLMENT VS. AP VS. IB





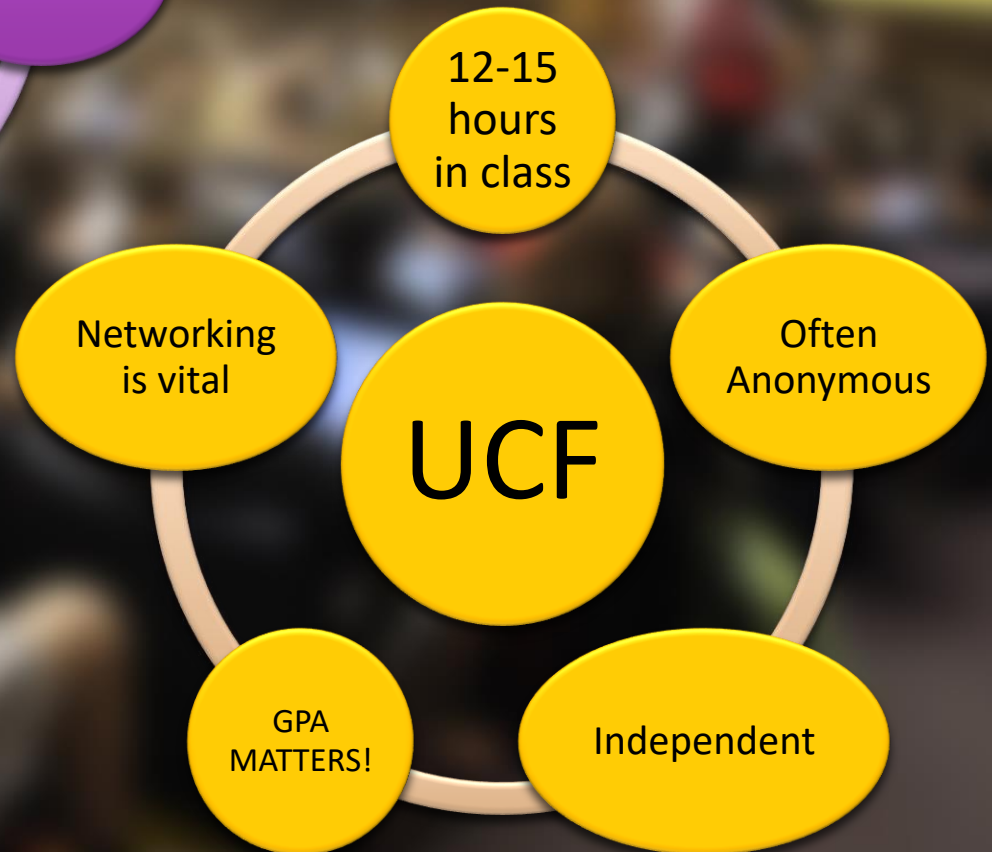
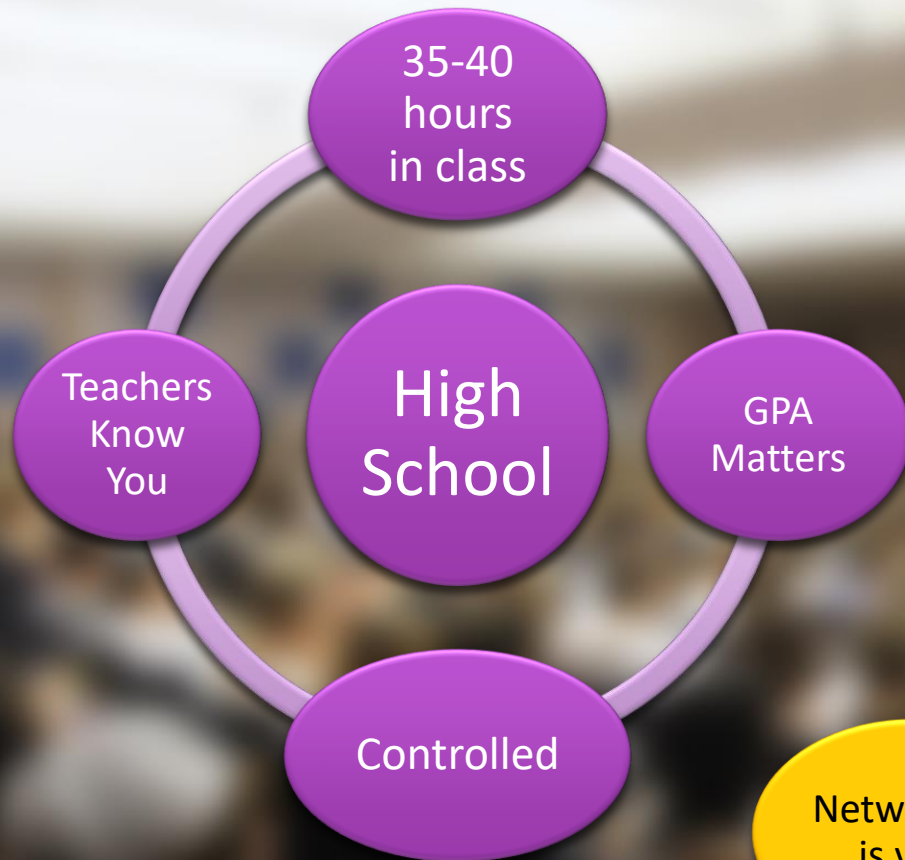
SUCCESS IN COLLEGE

TIME

$$1+3=4$$

SCHEDULE!

GO TO CLASS!



SUMMER INTERNSHIP OPPORTUNITIES



LOCKHEED MARTIN 

HARRIS[®] 

LUMINAR

STUDENT & PROFESSIONAL ORGANIZATIONS

Get involved with various student organizations. These help you network and meet others on campus. And its not limited to just photonics based organizations.



Society of
Optics
Students



JOBS IN PHOTONICS

Agilent

U.S. Air Force

Audi

Apple

Ball Aerospace

Corning

Facebook/Meta

Goodrich

L3/Harris

GE

Google

HP

IBM

Intel

Lockheed Martin

Microsoft

NASA

Northrup Grumman

Verizon

Acacia Communications, Inc.

Aerodyne Research, Inc.

Akonia Holographics

ASML

Aurrion, Inc.

BEAM Corp.

Bioptigen,

Coherent

Continuum

Control Laser

Diamond USA

Diemat, Inc.

Elbit

Everix Optical Filters

Fiberguide Industries

General Cable

General Photonics

Gooch & Housego

Hamamatsu Corporation

Hellma USA

Infinera Corporation

IMRA America, Inc

JENOPTIK

Kotura, Inc.

Lightpath

LaCroix Optical Co

Luminar Tech.

MKS/Newport Corporation

NAVAIR

Nufern

Nuphoton Technologies

Optics Technology

Ocean Insight

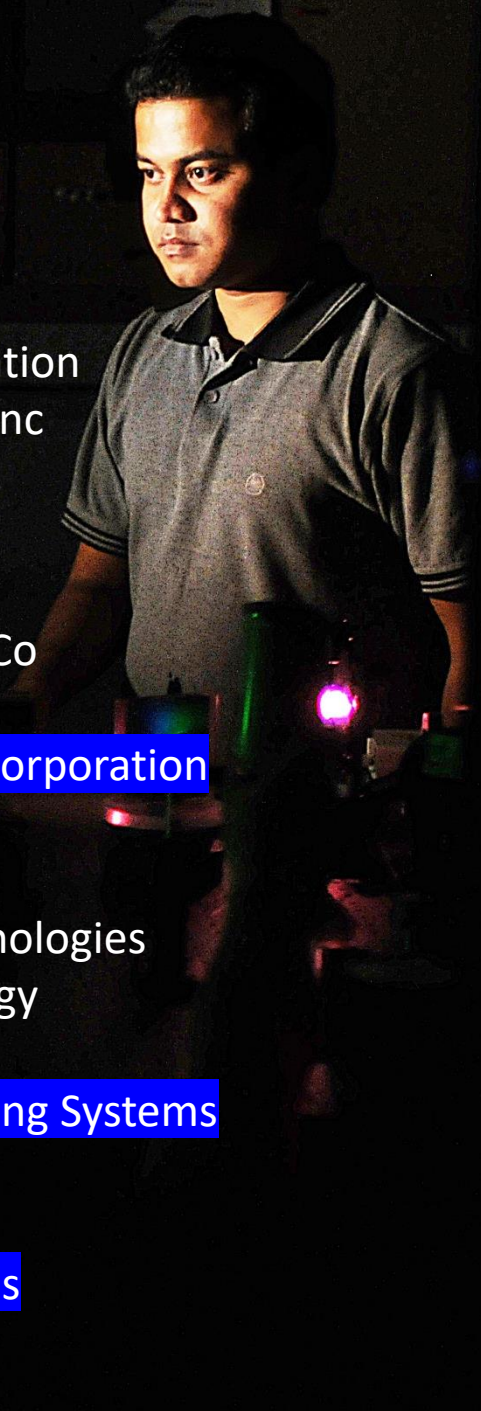
Particle Measuring Systems

Synoptics

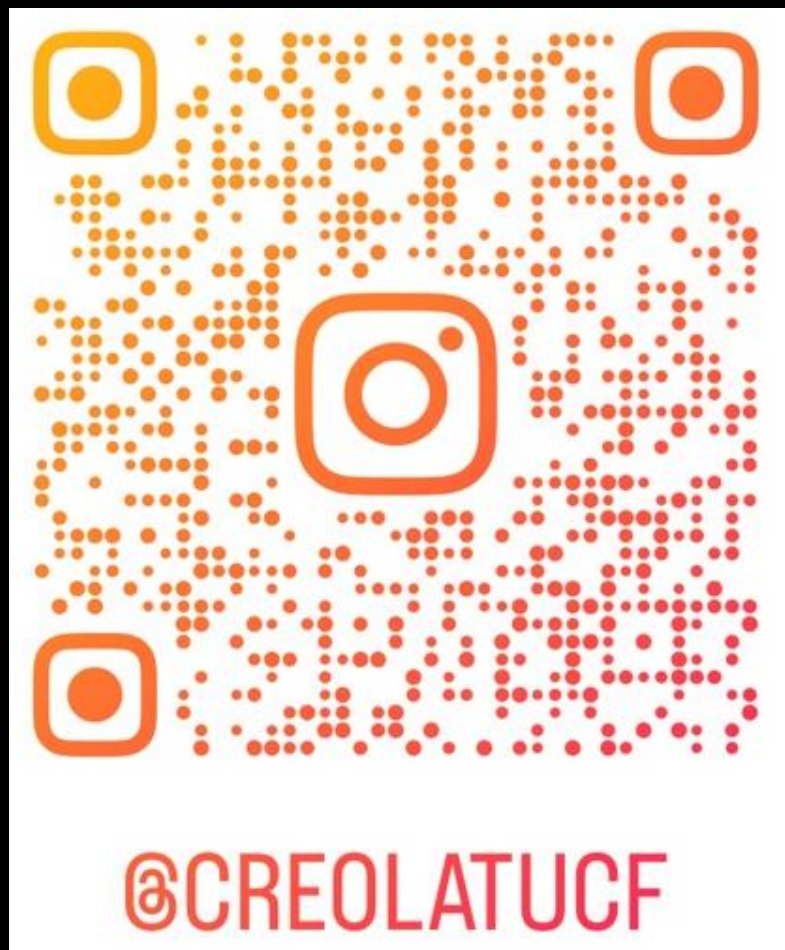
Trumpf

Ultrafast Systems

Yokogawa



FOLLOW CREOL ON INSTAGRAM AND YOUTUBE



LEARN ABOUT PHOTONIC SCIENCE AND ENGINEERING

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