

USM: Advancing STEM programs and the Technical Workforce

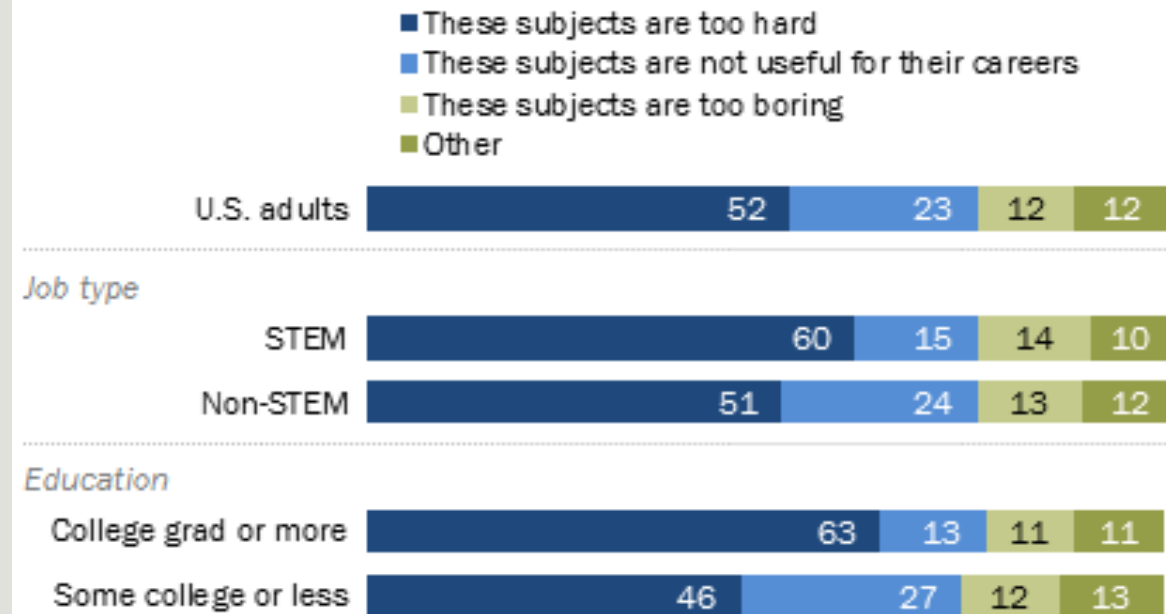
The University of Southern Maine (USM) is a regional liberal arts comprehensive public university with campuses in Portland, Gorham, and Lewiston, Maine. The University is charged with addressing both Maine's workforce challenges and serving the higher education needs of northern New England. From an educational and STEM pathway perspective, USM is faced with a number of opportunities and challenges. In this presentation, Dean Qualls will provide an assessment of trends in STEM education as well as introduces new programs and initiatives that USM is advancing.



2/26/2020

Half of Americans say more people don't pursue STEM degrees because of the difficulty of the subjects

% of U.S. adults who say the main reason many young people don't pursue college degrees in science, technology, engineering and mathematics is that they think ...



Note: Respondents who did not answer are not shown. Some college includes those with an associate degree and those who attended college but did not obtain a degree.

Source: Survey of U.S. adults conducted July 11-Aug. 10, 2017.

PEW RESEARCH CENTER

Science is perceived as Hard

<https://www.pewresearch.org/fact-tank/2018/01/17/half-of-americans-think-young-people-dont-pursue-stem-because-it-is-too-hard/>

HS Science Education Quality Questioned

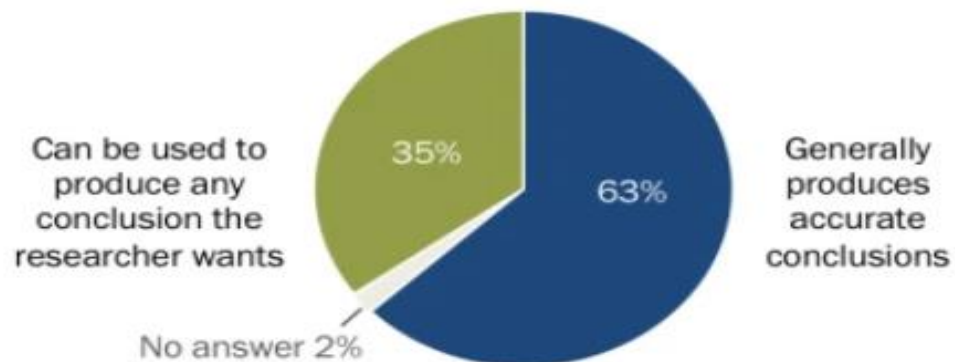
Programme for International Student Assessment (PISA)

The US Compared to 64 countries

	MATH Rank	Reading Rank	Science Rank
2015	35 th	15 th	17 th
2018	30 th	8 th	11 th

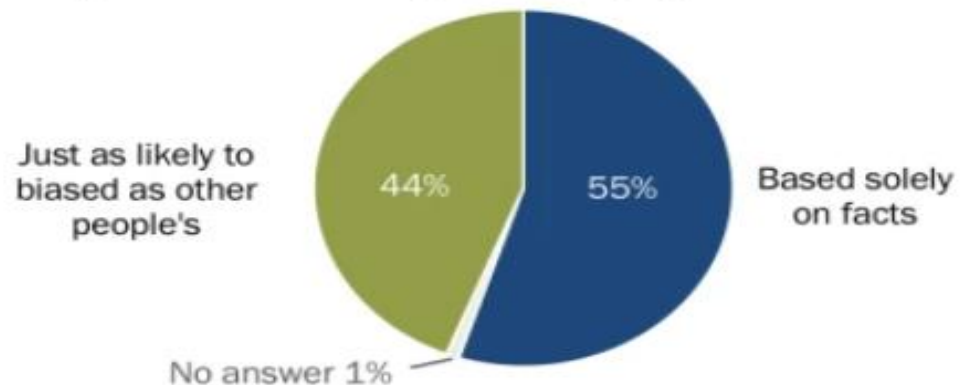
Roughly six-in-ten Americans trust the scientific method

% of U.S. adults who say the scientific method ...



A majority says scientists' judgments are based solely on facts

% of U.S. adults who say scientists' judgments are ...



Source: Survey conducted Jan. 7-21, 2019.

"Trust and Mistrust in Americans' Views of Scientific Experts"

PEW RESEARCH CENTER

Science is Questioned

Trust and Mistrust in Americans' Views on Scientific Experts

<https://www.pewresearch.org/science/2019/08/02/partisanship-influences-views-on-the-role-and-value-of-scientific-experts-in-policy-debates/>

Students are Fully Wired

The Common Sense Census:
Media Use by Tweens and
Teens, 2019

<https://www.commonsensemedia.org/sites/default/files/uploads/research/2019-census-8-to-18-key-findings-updated.pdf>

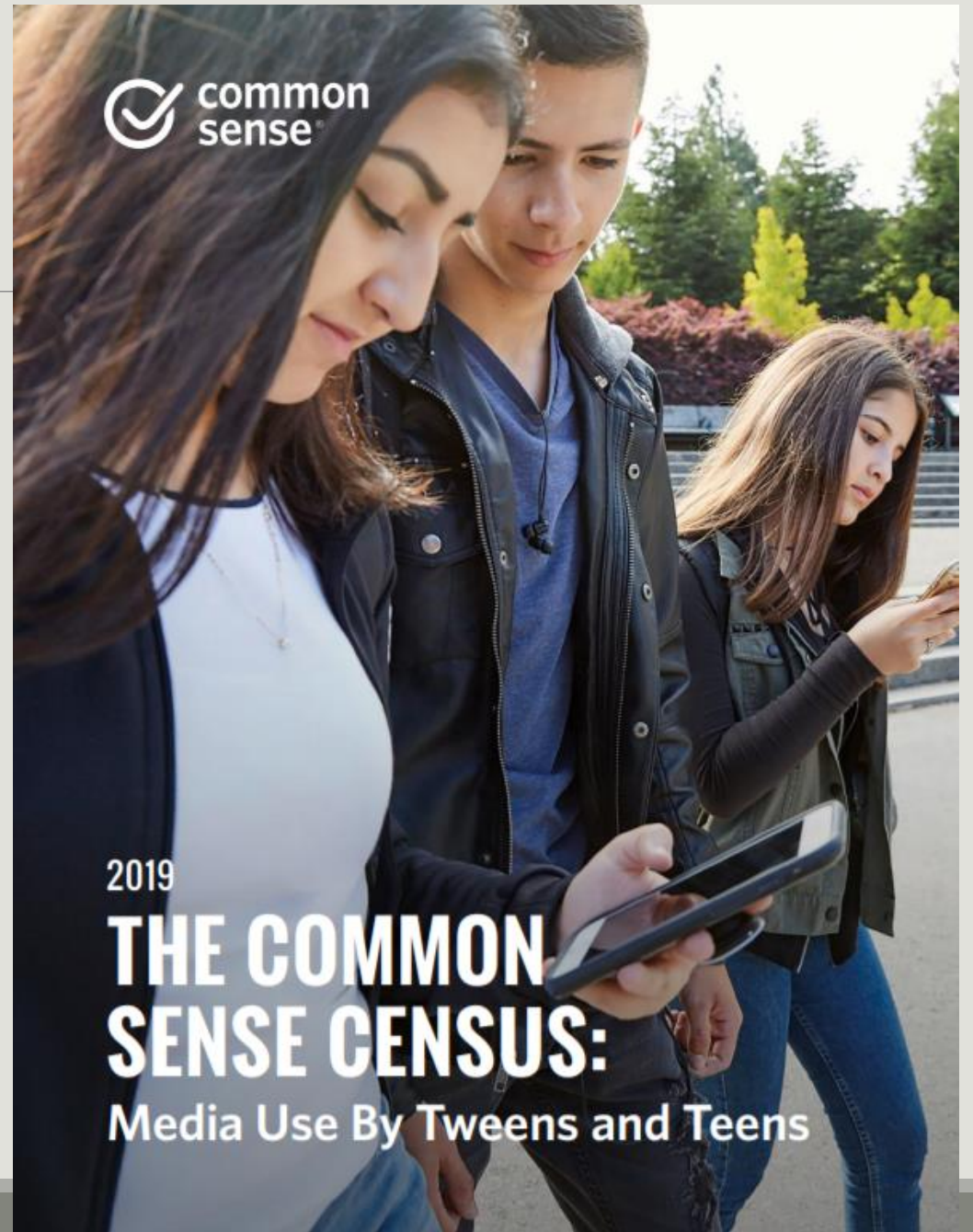


FIGURE D. Smartphone ownership, by age, 2015 vs. 2019

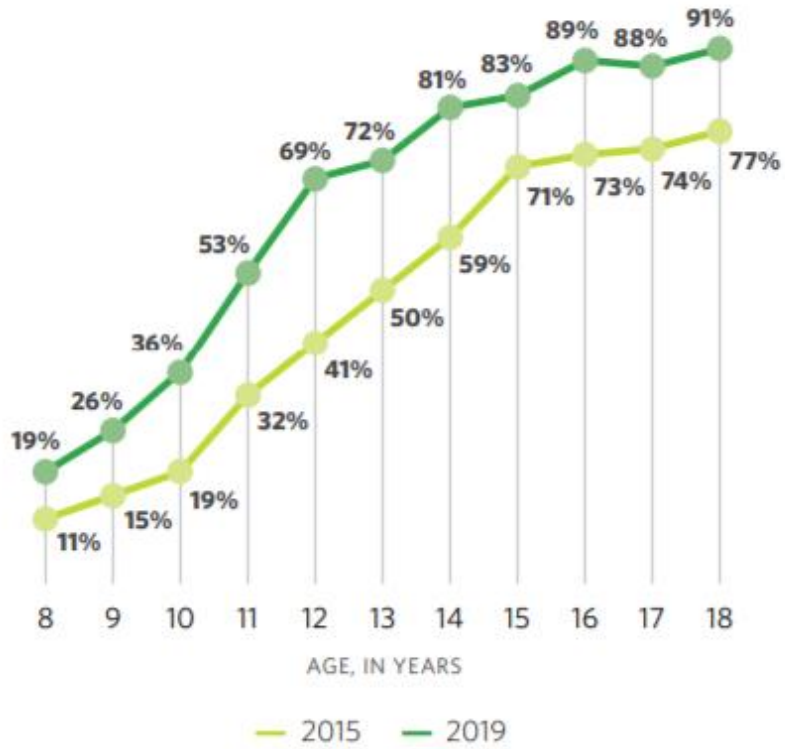
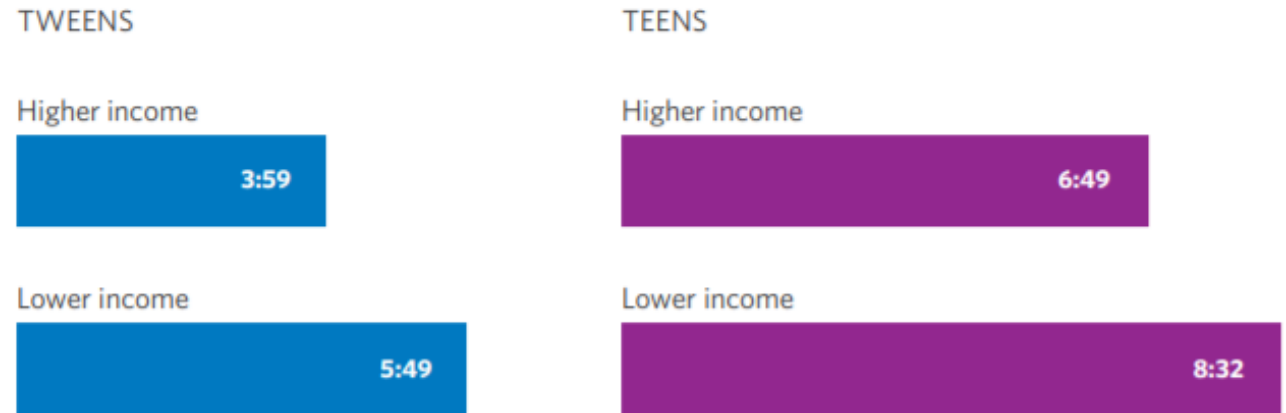


FIGURE F. Average daily screen media use among tweens and teens, by household income, 2019



Note: "Lower income" is <\$35,000; "higher income" is \$100,000+ per year.

Students Select College Based on Few Key Factors

WHAT FIVE THINGS ARE MOST IMPORTANT TO YOU WHEN CHOOSING A UNIVERSITY?

	1	2	3	4	5
It offers high-quality teaching	30.0%	22.4%	19.4%	15.7%	12.5%
It offers scholarships	29.9%	22.7%	18.4%	15.4%	13.7%
It is well ranked	23.5%	20.6%	18.6%	18.2%	19.1%
It is welcoming to international students	19.5%	21.9%	21.5%	19.7%	17.4%
It has a prestigious brand	16.1%	19.1%	18.3%	21.0%	25.5%
I have friends or family who have been to that university	14.3%	17.5%	17.2%	22.1%	28.9%
It was recommended to me	12.9%	15.1%	18.4%	21.6%	31.9%
It has a high graduate employment rate	12.8%	18.2%	20.9%	23.9%	24.2%
It has affordable university-owned accommodation	12.1%	18.6%	20.5%	23.7%	25.0%
It has a good careers service and links with employers	11.8%	18.2%	21.6%	23.6%	24.8%
Make friends with people from different countries	10.3%	15.3%	18.1%	24.3%	31.9%

Notes: Percentage of times each item was ranked 1 to 5, where 1 is most important. Source: Hobsons

1. Academic Excellence
2. Cost
3. Ranking

<https://www.timeshighereducation.com/student/news/why-do-students-go-university-and-how-do-they-choose-which-one>

UNIVERSITY OF MAINE SYSTEM – FALL 2019 ENROLLMENT REPORT

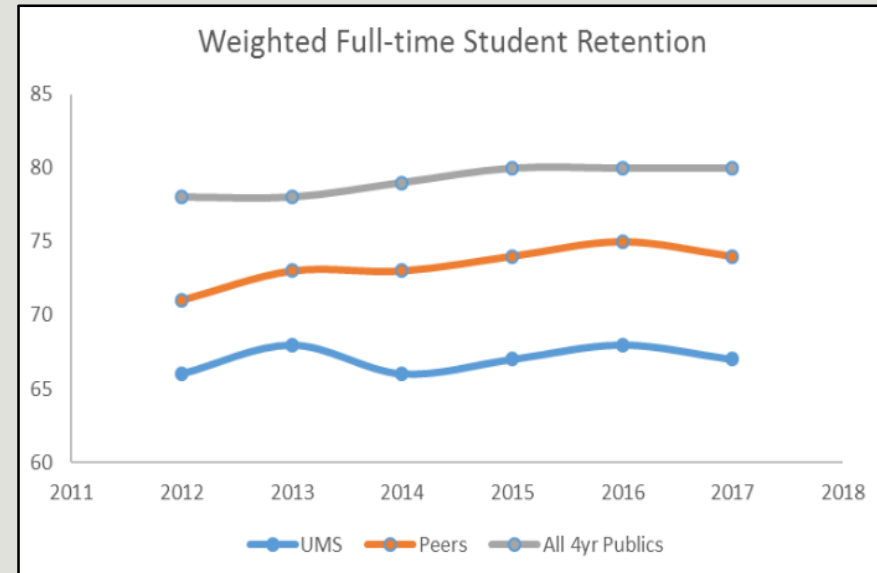
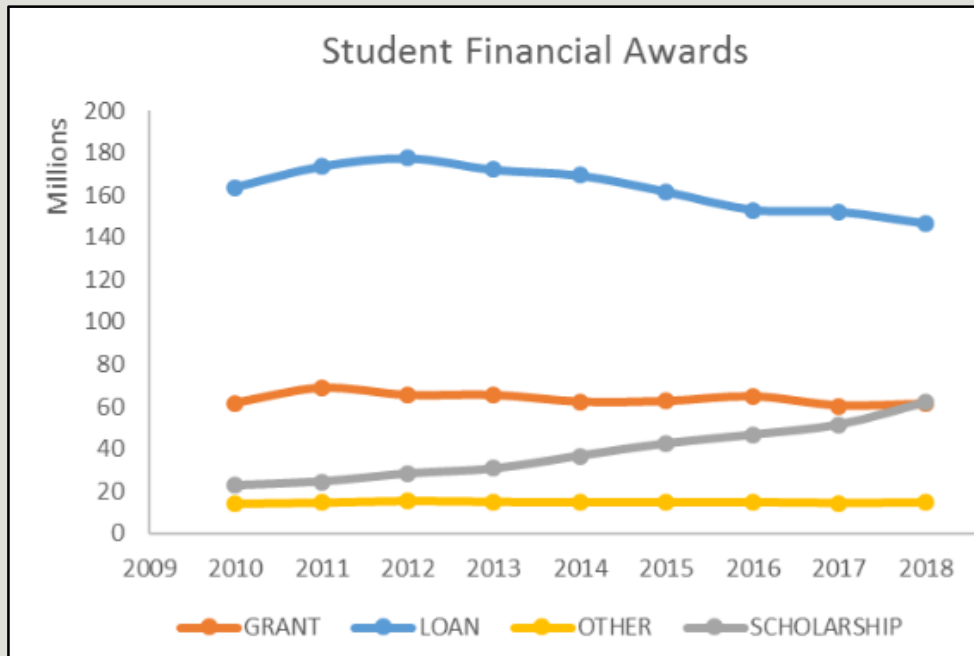
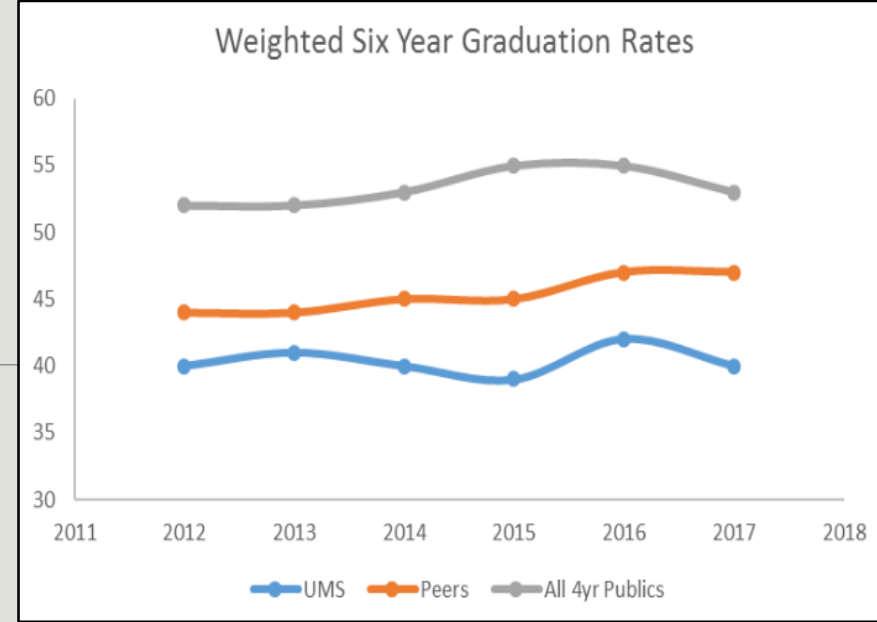
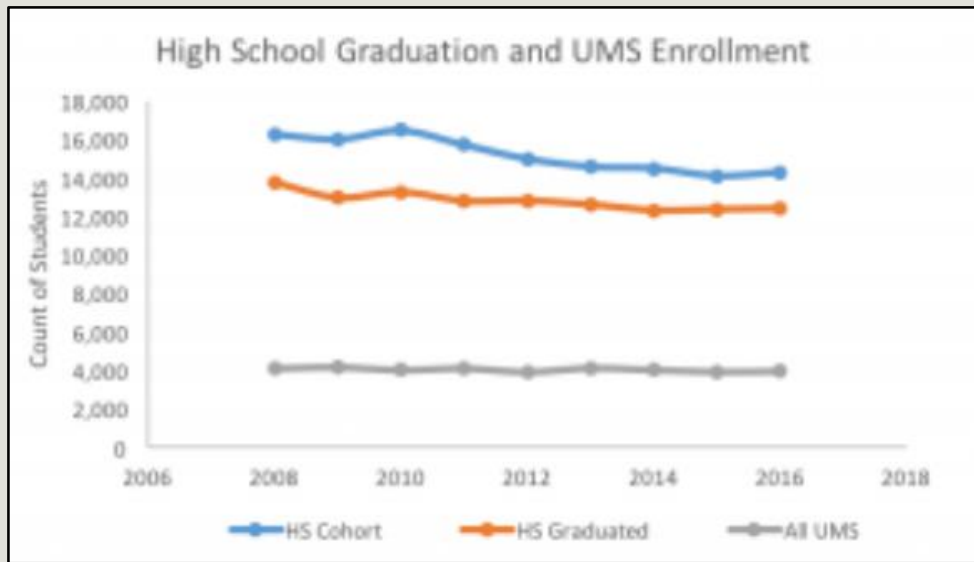
HEADCOUNT BY CAMPUS AND STUDENT LEVEL

Undergraduate Headcount by Campus

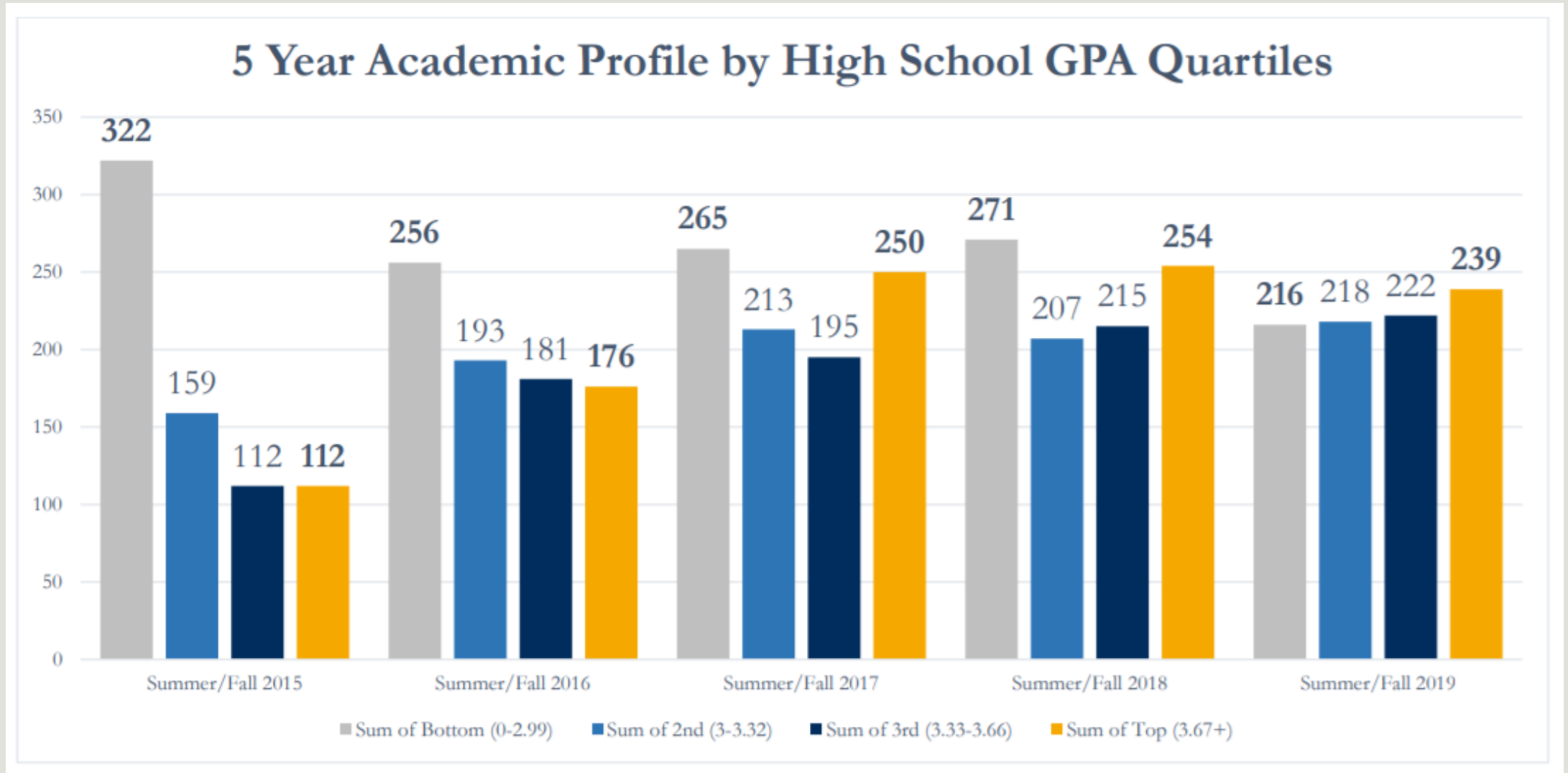
Campus	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	% of Total	1-year Change	5-year Change
UM	9,297	9,323	9,279	9,365	9,430	36.5%	0.7%	1.4%
UMA	4,683	4,416	4,014	4,128	4,361	16.9%	5.6%	-6.9%
UMF	1,795	1,782	1,811	1,736	1,674	6.5%	-3.6%	-6.7%
UMFK	1,559	1,904	1,760	1,794	1,589	6.2%	-11.4%	1.9%
UMM	786	745	701	675	659	2.6%	-2.4%	-16.2%
UMPI	1,289	1,326	1,408	1,554	1,445	5.6%	-7.0%	12.1%
USM	6,126	6,189	6,110	6,390	6,675	25.8%	4.5%	9.0%
Total	25,535	25,685	25,083	25,642	25,833	100.0%	0.7%	1.2%

Graduate Headcount by Campus

Campus	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	% of Total	1-year Change	5-year Change
UM	1,625	1,896	1,961	2,039	2,131	54.9%	4.5%	31.1%
UMF	221	218	269	304	256	6.6%	-15.8%	15.8%
USM	1,359	1,424	1,443	1,497	1,497	38.5%	0.0%	10.2%
Total	3,205	3,538	3,673	3,840	3,884	100.0%	1.1%	21.2%



USM Academic Profile



Academic Programs in 12 Departments

1. *School of Nursing*
2. *Department of Biological Sciences*
3. *Department of Chemistry*
4. *Department of Computer Science*
5. *Department of Engineering*
6. *Department of Environmental Science and Policy*
7. *Department of Exercise, Health, and Sport Science (includes Athletic Training and Rec/Leisure)*
8. *Department of Linguistics*
9. *Department of Mathematics and Statistics*
10. *Department of Physics*
11. *Department of Psychology*
12. *Department of Technology*

<https://usm.maine.edu/college-of-science-technology-health/degrees>

Boyne Family Advanced Simulation Center and Interprofessional Education Facility



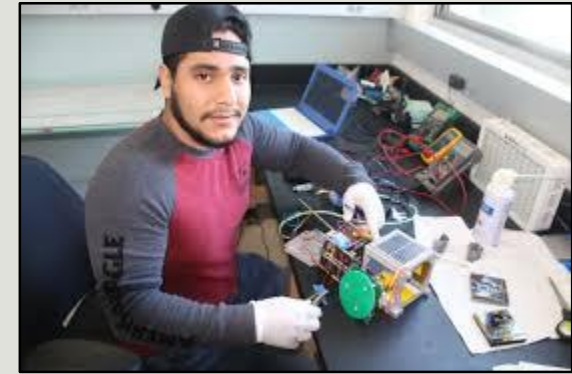
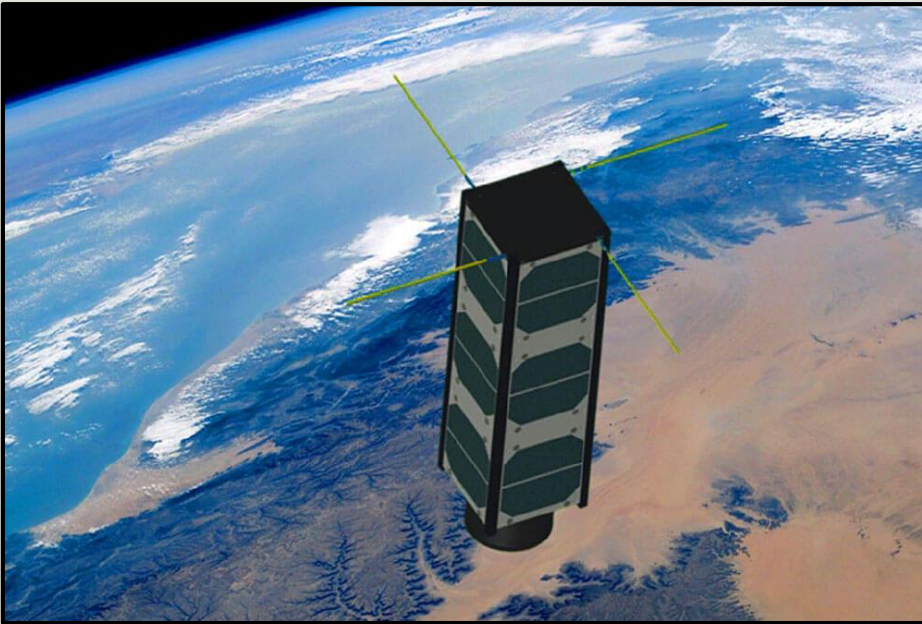
Aquaponics Research



Environmental Entomology



Cube Satellite Program

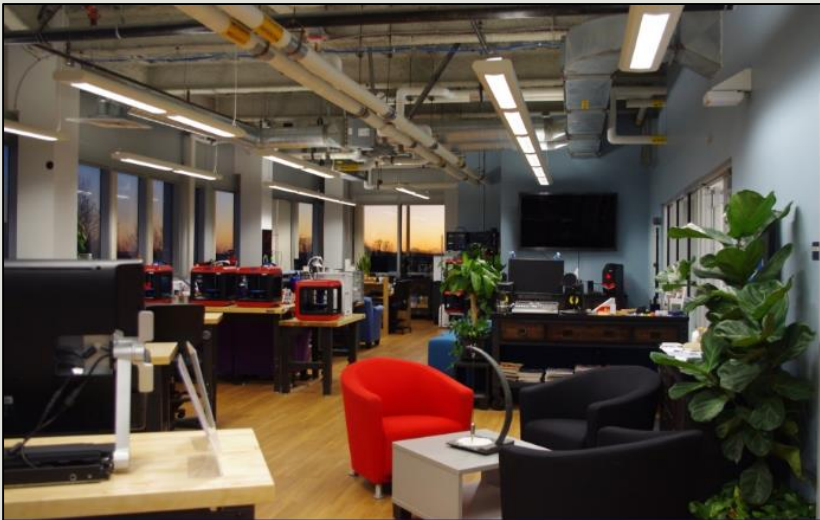


Replicating and Building on CubeSat program from Sonoma State University

<https://umaine.edu/news/blog/2020/02/24/nasa-selects-maines-first-small-research-satellite-for-launch-in-next-three-years/>

Maker Innovation Studio (MIST)

<https://usm.maine.edu/maker-innovation-studio>



The MIST is now open

The MIST is a place to prototype, learn new technology & software, and meet and collaborate on digital, STEAM, and Entrepreneurial projects.

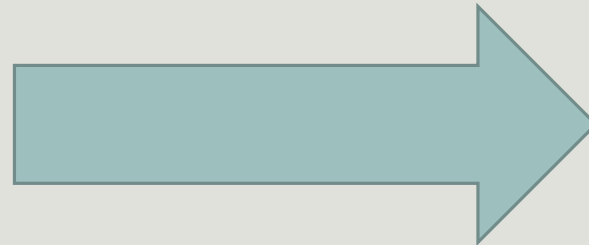


MIST: Digital Immersion Lab

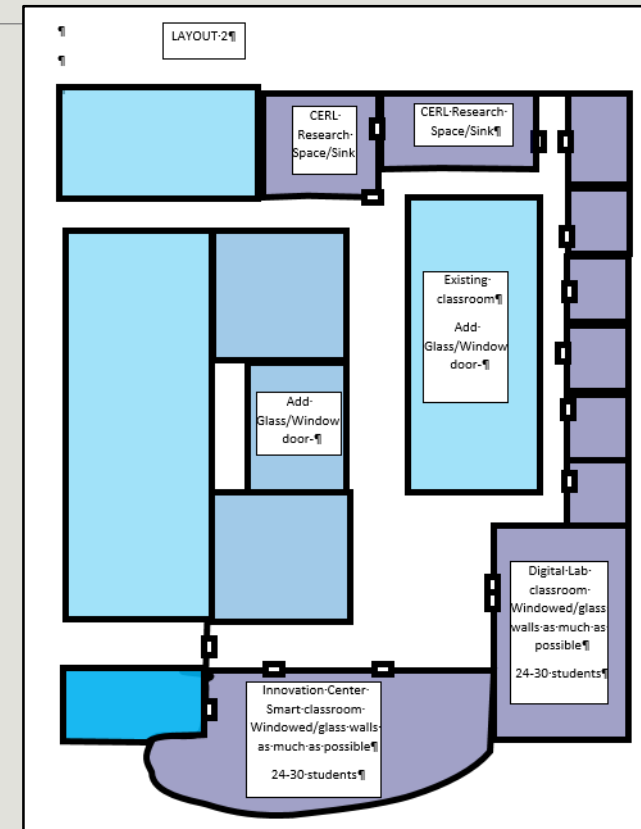
We are excited to introduce the MIST: Digital Immersion Lab. (C592) Virtual & Augmented Realities, software application for Mobile devices, e-contents development.

- Makerspace Studio –
- Digital Immersion Lab
- Media Design Lab
- Cube-Sat Lab
- CT (Commercialize & Test Lab)
- STEP up STEM

Michael E. Dubyak Center for Digital Science and Innovation

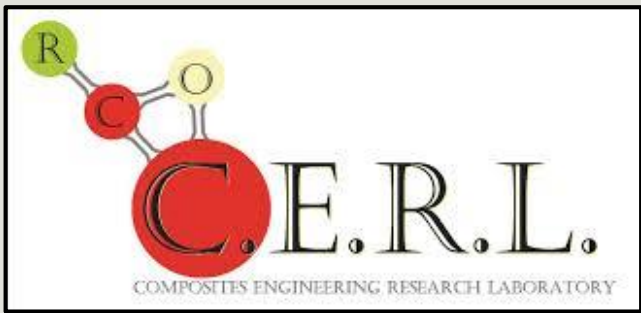


2nd Floor Science
Building 6,000
sqft



New Digital Sciences Programs

1. Master's degree in computer science (exists- needs faculty hires to implement)
 2. Master's degree in statistics (exists – needs integrated)
 3. Master's degree in cyber security (start Fall 2020 – Online partnering with UMA)
 4. Bachelor's degrees in computer science, cyber security, mathematics, physics, statistics, and technology.
-
5. Master's degree in data science (ITP stage – needs one more faculty and director)
 6. Undergraduate innovation major (in development)
 7. Integrated Business Specific Certificates (in development)
 8. Undergraduate major – Computer Engineering (in development)



Maine Robotics and STEM Camps



Tom Bickford

Advanced Biological and Medical Research



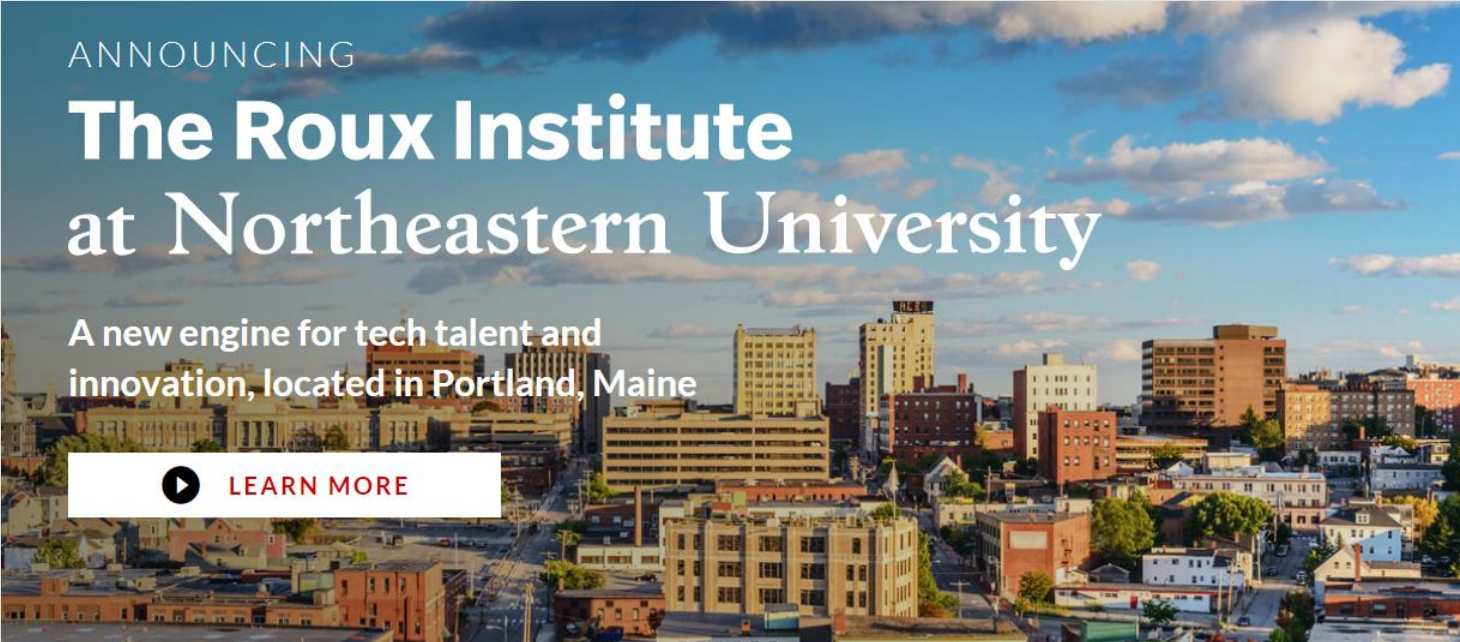
Libra Scholar: Ilka Pinz – Joint Position with MMCRI

Lipotoxic cardiomyopathy: Ilka's research focuses on mechanisms leading to lipotoxic cardiomyopathy. With the growing incidence of obesity, and the burden it puts on the health care system, we must understand the mechanisms by which certain fatty acids and their metabolites change signaling pathways in cardiac muscle cells that cause a decline in contractile performance.



Maine Medical Center
Research Institute

New Neighbors



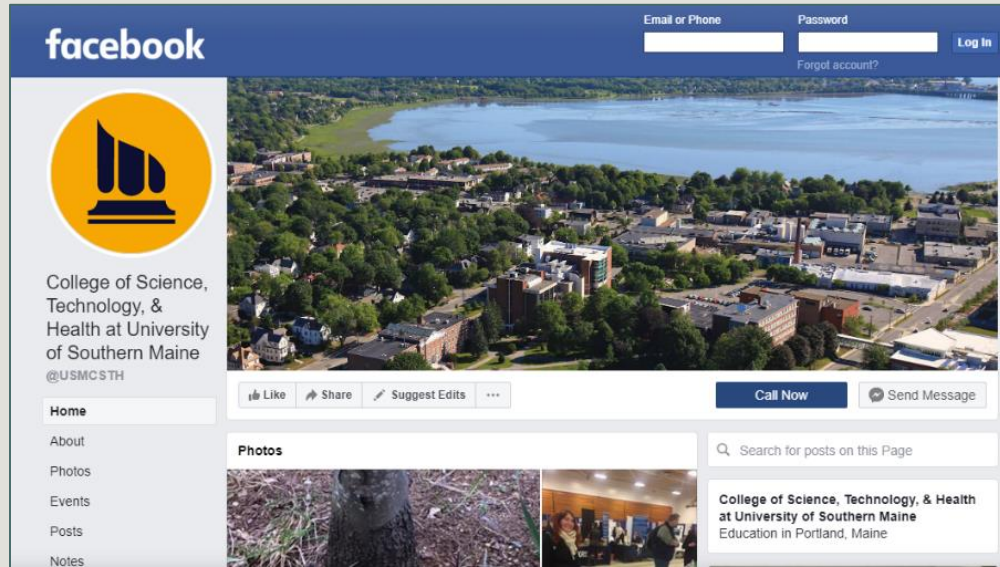
ANNOUNCING

The Roux Institute at Northeastern University

A new engine for tech talent and
innovation, located in Portland, Maine

[▶ LEARN MORE](#)

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