



SMART Act Presentation

SB18-086 Cyber Coding Cryptology For State Records

Joint Business Committee Presentation

January 23, 2023



COLORADO STATE UNIVERSITY
SYSTEM

Colorado State University • Colorado State University - Pueblo • CSU - Global Campus



WESTERN
COLORADO UNIVERSITY



PIKES PEAK
STATE COLLEGE



**NATIONAL
CYBERSECURITY
CENTER**

UCCS's Impact Through the CO Cybersecurity Initiative: AY2022-23

- In partnership with the NCC & Space ISAC, UCCS **consistently exceeds** Legislative requirements using 20% of funding for scholarships. UCCS has awarded **198 student scholarships** in cybersecurity programs in 5 of 6 UCCS colleges
- More than **650 UCCS undergrad and graduate students and NCC program participants** and various members of industry earned cybersecurity degrees, minors or industry certificates
- Five of six UCCS Colleges now offer **20 cybersecurity degrees/programs**: Engineering, Business, Public Service, Letters, Arts and Sciences, and Education
- UCCS cybersecurity faculty and students, in partnership with NCC and Space ISAC, completed **more than 300 cybersecurity presentations, research papers and seminars**
- UCCS cyber faculty leveraged state funds to obtain **over \$20M in additional cyber funding** (over 100% increase from 2021)
 - EAS obtained over \$2.5M in new cybersecurity grants in the AY (with almost \$8.2M in on-going funding)
 - UCCS obtained additional NSA funds for GenCyber K-12 teacher and student summer cybersecurity camps
- **UCCS leads the Mountain West Cybersecurity Consortium (MWCC)**, over 40 post-secondary institutions across 8 states, and has both won and applied for NSF and DoD grants on behalf of MWCC
- In 2020, UCCS developed long-term dynamic Cybersecurity POWER Strategy to maintain and expand cybersecurity programs. ***The state's investment is critical for sustainability.***
 - Outreach: Five Faculty Seed Grants awarded to faculty in the Colleges of Engineering, Public Service, and Letters, Arts & Sciences
 - Education: Cybersecurity psychology and sociology programs are being developed in College of Letters, Arts and Sciences
 - Research: Four undergraduate students were provided summer Cybersecurity research projects and scholarsh



University of Colorado Colorado Springs

SB 18-086 Report, UCCS and NCC (combined) as of September 2023

	FY 19	FY 20	FY 21	FY 22	FY 23	Total
Total SB 18-086 Appropriation	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$14,000,000
Student Scholarships Awarded (\$\$)	\$585,675	\$694,400	\$663,890	\$1,240,158	\$910,000	\$4,094,123
Total # Scholarships Awarded	448	373	272	337	499	1929
Baseline Against 15% Requirement	21%	25%	24%			
Baseline Against 20% Requirement				44%	33%	29%
Faculty/Adjuncts Hired						
Faculty/Adjuncts Hired	11	11	5	8	3	38
Student Internships Placed						
Student Internships Placed	23	28	44	30	22	147
Degrees and Certificates Awarded						
Degrees and Certificates Awarded	280	323	517	1178	666	2964
Workshops/presentations Delivered						
Workshops/presentations Delivered	82	103	133	247	300	865
Matching Funds Raised						
Matching Funds Raised	\$ 1,806,780	\$ 22,157,658	\$ 13,533,317	\$ 8,088,114	\$ 22,509,650	\$ 68,095,519



SB18-086 Cybersecurity Summary

For Fiscal Year 2023, PPSC received 300k from the legislature as part of the college’s fee for service allocation. 10% (30k) of total funds are earmarked for scholarships for Cyber Security students.

FY-23 Funding Highlights:

- **Scholarships:** PPSC awarded 12, \$2,500 scholarships.
- **Faculty:** All other monies funded salaries for three full-time Cybersecurity faculty (2 fully and 1 partially).
- **Credentials:** PPSC Awarded **44 Associate of Applied Science (AAS) degrees** and **38 Certificates in Cybersecurity**.

5-Year Completion Trends in Cybersecurity*

Academic Period	Degree Completers	Certificate Completers	Courses Taken (Registrations)
AY 22–23	44	38	1190
AY 21–22	27	61	1045
AY 20–21	29	30	1086
AY 19–20	10	35	982
AY 18–19	1	28	631
AY 17–18	0	15	245

*PPSC Issued the most Cyber Security degrees ever in 2023, up 60% from year over year. Since the initiation of these funds, PPSC has more than **quadrupled the number of degrees** awarded in Cybersecurity and **quadrupled the amount of full-time equivalent students (34 FTE to 147)**.

The Larger Cyber Picture

Increased staff capacity in Cyber Security since the start of SB18086 funding has allowed for:

- The program to nearly **double the number of registrations** (631 registrations to 1190)
- Serve **concurrent enrollment in Cyber Security effectively, this past year ~10%** (117 out of 1190 registrations) were for high school students.

Cyber Security professionals (both with and without full degrees) in Colorado Springs typically have first year earnings potentials of ~65k. Since the start of funding, PPSC has graduated students with high-earning, secure careers. (approx. ~17M of earnings potential against a 5-year investment from the state of 1.38M).





- Scholarship/internship to students: 200 (More than 50% offered to Latino students at Pueblo, minorities and special ed also involved in FC)
- Cybersecurity degrees and certificates/course completions: 144/803
 - CoB (FC), CoE (FC), CNS (FC), CoB (Pueblo)
- NSA Center for Academic Excellence in Cyber Defense Designation (Fort Collins) and Re-designation (Pueblo)
- Cybersecurity research initiatives across CSU FC and CSU Pueblo: securing the critical infrastructure
 - Energy security (DoE, NIST, Statnett, Norway), transportation security (NSF, ARL, DARPA, NMFTA), IT security (Industry, NIST, NSF), cognitive and social aspects of security (NSA), AI Data Analytics for Cybersecurity Training and Research (NSF) ~ 3M
- Cybersecurity papers/presentations/seminars: 90
- CSU Pueblo NCL (National Cyber League) Team continues to be ranked in the upper 2% of over 400 universities and colleges
- Colorado Higher Ed institutions (UCCS, CSU-Pueblo, UC-Boulder and others) continue top 100 national ranking in NCL cyber games
- Cybersecurity high school camps and cybersecurity high school student internships offered at Fort Collins/Pueblo Campuses
- Cryptography and Data Analytics taught to 400 students at Pueblo by team of Pueblo students and Google employees
- Cybertruck Challenge/CyberTractor Challenge/CyberAutoChallenge/CyberBoat Challenge open to high school students across the United States
- DHS Connected Communities Toolkit Development <https://engr.source.colostate.edu/dhs-launches-new-connected-communities-toolkit-in-partnership-with-colorado-state/>
- MOSAICS (More Situational Awareness for Industrial Control Systems) <https://www.jhuapl.edu/work/projects/mosaics> contributor
- Digital safety for victims of human trafficking (joint endeavor with UCCS and MSU)



CSU co-authored and hosted national launch of the Department of Homeland Security (DHS) *[“How to Write a Connected Community Strategy”](#)* guide, with keynote by Iranga Kahangama, DHS Assistant Secretary for Cybersecurity, Infrastructure, Risk & Resilience, including panel discussions and student mentoring engagement with CSU-Pueblo.



Colorado State University System



SB 18-086 Report, CSUS Sept. 2023

	FY 19	FY 20	FY 21	FY22	FY 23*
Total SB 18-086 Appropriation	\$1,200,000	\$1,200,000	\$729,412	\$1,200,000	\$1,200,000
Actual Amount Spent on Scholarships	\$122,435	\$306,050	\$286,005	\$1,166,083	\$669,269
Total Number of Scholarships Awarded	45	141	118	237	106
Allotted Amount Earmarked for Scholarships	\$180,000	\$180,000	\$108,000	\$180,000	\$180,000
At or above allotted scholarship earmark	No	Yes	Yes	Yes	Yes
Number of faculty/adjuncts hired...	2	32	9	22	7
Number of student internships	71	129	118	198	93
Number of degrees/certificates/course completions	28	303	371	1,061	947
No. presentations/seminars on cybersecurity	83	143	15	123	90
Amount of all other matching money raised	\$50,000	\$7,700,000	\$3,249,816	\$5,231,369	\$2,828,194
<ul style="list-style-type: none"> • More than two hundred (200) faculty/interns hired under the grant. • More than 500 student participants have graduated, virtually all have jobs in IT w/ IT Security prominent. • The CSU System invested \$79,810 for computers at Sturm, serving over 200 students in ITSec courses. 					

* FY 23 Expenditures from the Grant \$1,054,525

MSU Denver



- Offer Bachelor's and Master's Degrees in Cybersecurity
 - Bachelor's National Security Agency Center of Academic Excellence
 - 430 students in Bachelor's program, collaboration across 3 depts
 - 35 students enrolled in the Master's program, 133% growth since launch
- In 2022-23, \$33,000 in scholarships awarded to 22 students
- Key initiatives and partnerships:
 - Project PISCES, supporting public municipalities and utilities
 - Teaching the Autism Community Trades (TACT)
 - Cybersecurity Educational Diversity Initiative with Trinidad State College
- Top Employers for Cyber students: Denver Public Schools, Lockheed Martin, Denver Health, Charles Schwab, UC Health, State of Colorado, Jeffco Public Schools, Centura Health, Comcast, Arrow Electronics, and Amazon

Western Colorado University

- Western's Information Security Emphasis within the Computer Science (CS) major has the largest enrollment of any CS emphasis.
- Currently 36 students (15 freshman, 10 sophomores, 3 juniors and 8 seniors) in the program are served by use of Cybersecurity funding 0.91 FTE faculty.
- Western faculty are pursuing the National Security Agency (NSA) Center of Academic Excellence in Computer Defense (CAE-CDE) designation for Information Security.
- In FY23, 14 students received scholarships totaling \$42,000 in FY23. In FY24, 31 students were offered scholarships totaling \$87,000.
- CS Department Chair just finished Cybersecurity training during fall 23 sabbatical.
- Western is an active participant in the Mountain West Cybersecurity Consortium.
- In 2022-23, 11 students interned—nine in regular programs and two in REUs. Notable placements included Lockheed, Raytheon, NSA, and SRSI in Crested Butte.
- Students joined Deloitte's online competition, Hackazon, with two teams of four each. Our senior-level team secured 6th place out of 30+.





COLORADO MESA UNIVERSITY



**Awarded 38
scholarships**



**Awarded 13
degrees/
certificates**



**Supported 12
student
internships**



**2 graduates
pursuing cyber
grad programs**



**100%
employed in
the field**

Other Accomplishments

- **Delivered 8 presentations/seminars on cybersecurity**
- **Student Research Interns at CMU's Cybersecurity Center have published 4 peer-reviewed articles**
- **36 students have declared the Cybersecurity Professional Certificate or Minor**



Thank you!

We are happy to answer any questions.

