

**INFORMATIONAL
FEBRUARY 19-20, 2025**

TAB	DESCRIPTION	ACTION
1	IRSA – ESTABLISHED PROGRAM TO STIMULATE COMPETITIVE RESEARCH (EPSCOR) ANNUAL REPORT	Information Item
2	IRSA – HIGHER EDUCATION RESEARCH COUNCIL (HERC) ANNUAL REPORT	Information Item
3	PPGA – BOISE STATE UNIVERSITY ANNUAL PROGRESS REPORT	Information Item
4	PPGA – IDAHO DIVISION OF CAREER TECHNICAL EDUCATION ANNUAL REPORT	Information Item
5	PPGA – IDAHO EDUCATIONAL SERVICES FOR THE DEAF AND BLIND ANNUAL REPORT	Information Item

SUBJECT

Established Program to Stimulate Competitive Research (EPSCoR) Annual Report

REFERENCE

August 2016	EPSCoR provided their annual report to the Board
October 2017	EPSCoR provided their annual report to the Board
October 2018	EPSCoR provided their annual report to the Board
October 2019	EPSCoR provided their annual report to the Board
October 2020	EPSCoR provided their annual report to the Board
October 2021	EPSCoR provided their annual report to the Board
October 2022	EPSCoR provided their annual report to the Board
October 2023	EPSCoR provided their annual report to the Board

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.W.
Higher Education Research

BACKGROUND/DISCUSSION

The Established Program to Stimulate Competitive Research (EPSCoR) is a federal-state partnership designed to enhance the science and engineering research, education, and technology capabilities of states that traditionally have received smaller amounts of federal research and development funds. Through EPSCoR, participating states are building a high-quality academic research base that is serving as a backbone of a scientific and technological enterprise.

Idaho EPSCoR is led by a state committee composed of 16 members, appointed by the Board, with diverse professional backgrounds from both the public and private sectors and from all regions in the state. The Idaho EPSCoR committee oversees the implementation of the Idaho EPSCoR program and ensures program goals and objectives are met. The Idaho EPSCoR office and the Idaho EPSCoR Project Director are located at the University of Idaho. Partner institutions are Boise State University and Idaho State University.

The purpose of EPSCoR awards is to provide support for lasting improvements in a state's academic research infrastructure and its research and education capacity in areas that support state and university Science and Technology Strategic Plans. Idaho EPSCoR activities include involvement in K-12 teacher preparation and research initiatives and projects ranging from undergraduate research through major state and regional research projects.

Consistent with Board Policy III.W.2.d., EPSCoR has prepared an annual report regarding current EPSCoR activities that details all projects by federal agency source, including reports of project progress from the associated external Project Advisory Board (PAB).

ATTACHMENTS

Attachment 1 – EPSCoR Annual Report FY2024

STAFF COMMENTS AND RECOMMENDATIONS

A full presentation and discussion of the EPSCoR Annual Report was provided to the Instruction, Research, and Student Affairs Committee on February 6, 2025.

BOARD ACTION

This item is for informational purposes only.

IDAHO ESTABLISHED PROGRAM TO STIMULATE COMPETITIVE RESEARCH (EPSCOR): *ANNUAL REPORT - 2024*

DAVE TUTHILL, IDAHO EPSCOR COMMITTEE CHAIRMAN
ANDREW KLISKEY, PROJECT DIRECTOR

RICK SCHUMAKER, ASSOCIATE PROJECT DIRECTOR

IDAHO STATE BOARD OF EDUCATION: IRSA COMMITTEE
FEBRUARY 6, 2025



IDAHO

NSF EPSCoR

ADVANCING GEOGRAPHIC DIVERSITY IN STEM



2024 ANNUAL REPORT

- EPSCoR/IDeA National Context
- NSF RII Track-1 update “GEM3” and “I-CREWS”
- E-CORE and E-RISE

The screenshot displays the Idaho EPSCoR website. The top navigation bar includes links for Home, About, Research, Education and Outreach, Resources, and a search icon, along with a Log in button. The main content area features a large banner image of a group of people at an outdoor event, with the text "THE RESEARCHER IDAHO NSF EPSCoR NEWSLETTER" and a "more" button. Below this is a "Welcome to Idaho EPSCoR" section with the URL www.idahoepscor.org and a paragraph describing the organization's primary objective. To the right, there are two "Announcements" sections: "Use-Inspired Research at the U.S. National Science Foundation" and "Idaho EPSCoR Annual Meeting Agenda 2024". The bottom section of the screenshot shows the Idaho CREWS website, featuring a large image of a dam and the text "Idaho Community-engaged Resilience for Energy-Water Systems" with the URL www.idahocrewws.org.

Federal Funding for All Eligible States

Agency	FY22 Enacted	FY23 Enacted	FY24 Enacted	FY25 Budget Request	FY25 Coalition Goals	FY25 House Appropriations Committee	FY25 Senate Appropriations Committee
NSF	\$215.0	\$245.0	\$250	\$258.37	\$289.0	\$250.0	
NIH	\$410.0	\$425.95	TBD	\$427.23	\$500.0	\$446.0	
DOE	\$25.0	\$35.0	\$35	\$25.0	\$40.0	\$35.0	
USDA	\$66.75*	\$68.25	15%	n/a	15% Language (*)	N/A	
NASA	\$26.0	\$26.0	\$26.0	\$25.0	\$30.0	\$29.0	
DOD	\$19.0	\$20.0	TBD	n/a	\$25.0	N/A	
Total	\$761.75	\$820.2			\$943.25		



IDAHO
EPSCoR

Awards to Idaho

- ✓ RII Tracks -1, -2, -4
- ✓ INBRE, COBRE
- ✓ Infrastructure
- ✓ Multiple awards
- ✓ Research, Core

Dollars in Millions.
Source:
EPSCoR/IDeA



CREATING HELPFUL INCENTIVES TO PRODUCE SEMICONDUCTORS (CHIPS) ACT 2022 – H.R. 4346

NSF (Section 10325)

- 20% set aside for **EPSCoR** states, but ramps up from 15.5% to 20% over 7 years;
- Set aside relates to Congress' allocation under the Research and Related Activities and STEM Education Accounts (minus the Antarctic Facilities) only, rather than the whole of NSF.

- FY22: - (13.7%)
- FY23: 15.5% (15.9%)
- FY24: 16%
- FY25: 16.5%
- FY26: 17%
- FY27: 18%
- FY28: 19%
- FY29: 20%



Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
NSF	Track-1: Idaho Community-engaged Resilience for Energy-Water Systems (I-CREWS)	2023-28	U of I (w/ Boise State, Idaho State, CDA Tribe, S-B Tribes)	\$20,000,000
NSF	Track-2 RII FEC: Intermountain Natural and Working Lands: Sustainable Practices for Ecosystems and Resilience Enhancement	2024-28	U of I w/MT, Tribes in MT and ID	\$2,999,956
NSF	Track-2: Local and Place Based Adaptation to Climate Change in Underserved Rural Communities	2023-27	U of I w/ NV, SC	\$2,435,509
NSF	Track-2: Developing a Circular Bio-Based Framework For Architecture, Engineering and Construction Through Additive Manufacturing	2021-25	U of I w/AL	\$3,974,309
NSF	Track-2: Leveraging Big Data to Improve Prediction of Tick-Borne Disease Patterns and Dynamics	2020-25	U of I, w/NV, NH	\$6,430,179
NSF	Track-2 RII FEC: Transforming wastes Into Economic Assets for Sustainability, Resilience, and Prosperity by a Novel Negative Emission Technology	2024-28	U of I w/AL, NM	\$1,005,042



Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
NSF	RII Track-4: EPSCoR Research Fellows: NSF: Enhancing Water Budget Simulations across CONUS: Modeling Vegetation Uptake of Rock Moisture	2025-27	U of I	\$300,000
NSF	EPSCoR Research Fellows: Incorporating Knowledge Graphs and Reasoning Capabilities for Enhanced Visual Data Exploration in Mineral Evolution	2025-26	U of I	\$213,433
NSF	EPSCoR Research Fellows: NSF: Modeling Human Preparation and Anticipation Processes	2025-26	U of I	\$164,597
NSF	EPSCoR Research Fellows: NSF: Heterogeneous Integration of Wide Bandgap Semiconductor Chips for High Temperature Applications	2025-26	U of I	\$299,938
NSF	EPSCoR Research Fellows: NSF: Enhanced Predictive Understanding of Wildfire Ignitions in the Face of Changing Socioenvironmental Landscape	2024-26	Boise State	\$297,813



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ADVANCING GEOGRAPHIC DIVERSITY IN STEM



Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
DOE	Neuromorphic Systems for Power Grid Cyber-Resilience	2022-25	Boise State	\$708,985
DOE	Mechanistic and Kinetic Analysis of Polymer Deconstruction and Modification by Irradiation for Polymer Upcycling	2022-25	Idaho State	\$583,930
DOE	DNA-Controlled Dye Aggregation – A Path to Create Quantum Entanglement	2019-25	Boise State	\$12,500,000



U.S. DEPARTMENT OF
ENERGY

Office of
Science



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EPSCoR

Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
NIH	Idaho INBRE	2019-25	U of I	\$20,203,883
NIH	COBRE: Convergent Engineering and Biomolecular Science	2023-28	Boise State	\$10,200,000
NIH	COBRE: Modeling Complex Interactions	2015-25	U of I	\$22,922,703
NIH	COBRE: Matrix Biology	2014-25	Boise State	\$22,741,690
NIH	COBRE: Nutrition and Women's Health	2024-29	U of I	\$11,000,000
NASA RID	Research Infrastructure Development (RID)	2022-27	U of I	\$1,000,000
NASA Research	Cryoldaho: Building Idaho's Cryosphere Research Community through Analysis of Terrain Effects on Snow and Ice Meltwater Fluxes	2021-25	Boise State	\$750,000
NASA Research	On-Demand Manufacturing of Smart Systems for Structural Health Monitoring	2022-25	Boise State	\$750,000



Active EPSCoR/IDeA Awards in Idaho, November 2024

Agency	Title	Years	Institution(s)	Award Amount
NASA Research	IDEAS: LA: IDaho Exploration And Science Lunar Analog	2023-26	Idaho State	\$750,000
NASA Research	Improving global dryland streamflow modeling by better characterizing vegetation use of deepwater resources using NASA's GRACE/GRACE-FO, SWOT, and LIS	2025-27	U of I	\$750,000
NASA R3	Advanced Manufacturing Dense Nuclear Fuels with Complex Geometries	2022-24	Boise State	\$100,000
NASA R3	Advanced Flip-Chip and TSV Based High-Temperature 3D SiC IC Packing for Venus Surface Exploration	2022-24	U of I	\$100,000
NASA R3	Characterization of Thermal Transport Modes in Porous Materials	2023-24	Boise State	\$100,000



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Active EPSCoR/IDeA Awards in Idaho, November 2024

Agency	Title	Years	Institution(s)	Award Amount
NASA ISS Flight Op	Evaluation of Biofilm Resistant Coatings for Spacecraft Water Systems	2022-25	U of I	\$100,000
NASA R3	Development of Biofilm Resistant Coatings and Evaluation in Simulated Microgravity	2023-24	U of I	\$100,000
NASA R3	Detection and Characterization of Spore-Forming Anaerobic Bacteria in an Aerospace Clean Lab	2024-25	Idaho State	\$100,000
NASA R3	Effects of Lunar and Martian Regolith Simulants on Growth, Survival, and Fitness of Vertebrates: Acute and Chronic Exposure Zebrafish Models	2023-25	Idaho State	\$100,000
NASA R3	Advancing transition metal and rare-earth containing soft magnets for versatile high-power electronic propulsion systems;	2024-25	Boise State	\$100,000



Recent EPSCoR/IDeA Awards in Idaho

Agency	Summary	Years	Institution(s)	Award Amount (\$ and %)
USDA	8 of 21 AFRI awards	FY20	U of I, Boise State	\$3,004,362 (42% of total)
USDA	7 of 16 AFRI awards	FY21	U of I, Boise State	\$2,804,362 (50% of total)
USDA	12 of 19 AFRI awards	FY22	U of I, Boise State	\$4,512,102 (51% of total)
USDA	13 of 19 AFRI awards	FY23	U of I, Boise State	\$5,350,781 (60% of total)
USDA	9 of 13 AFRI awards	FY24	U of I, Boise State	\$4,116,363 (72% of total)



\$13.98 million in
EPSCoR set-aside to Idaho in
past 3 years



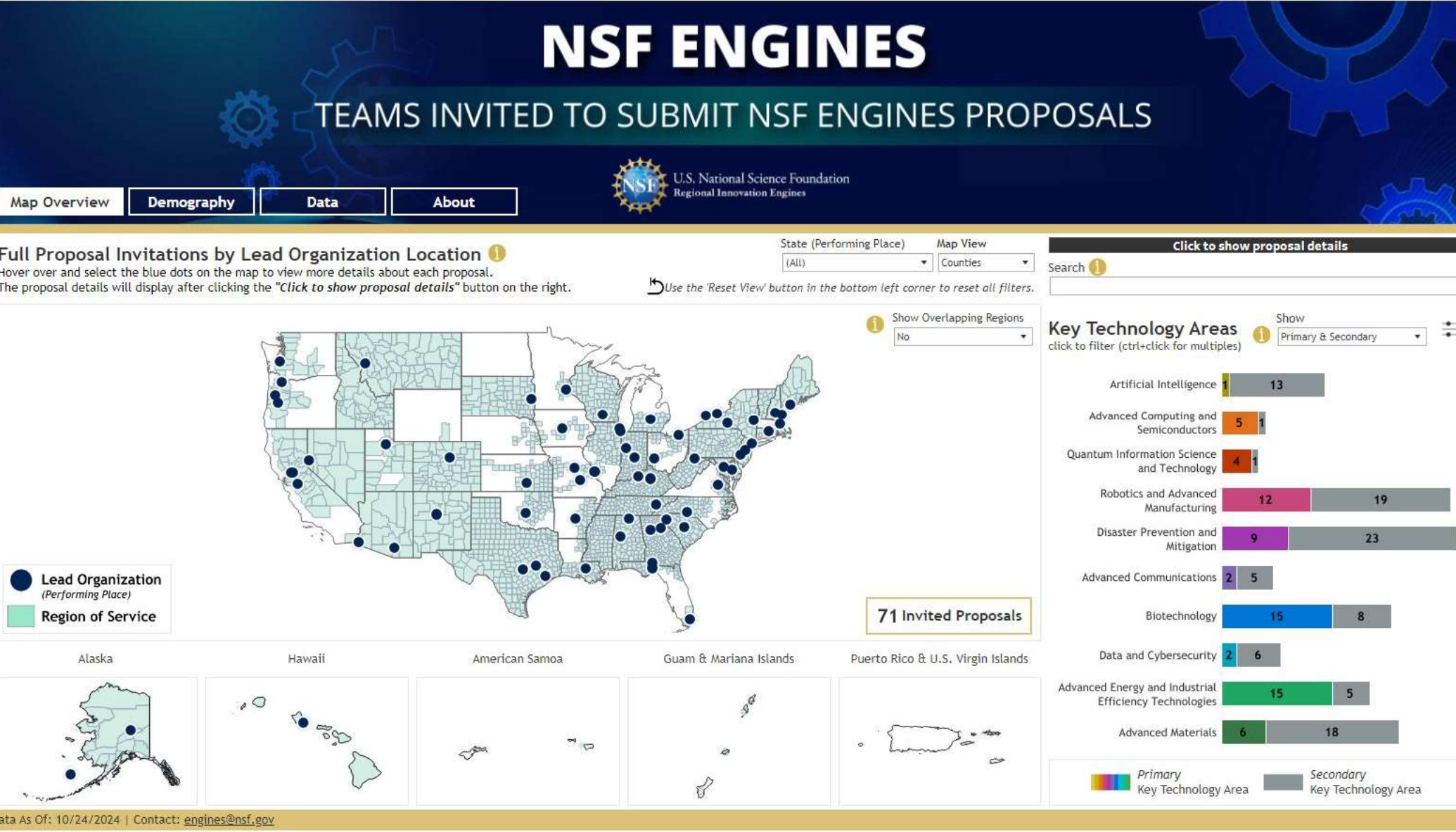
Recent Co-Funded NSF Awards to Idaho

Years	# Grants Awarded	EPSCoR	Total Project \$
FY20	10	\$1,773,777	\$3,727,664
FY21*	7	\$6,799,960	\$21,587,841
FY22*	8	\$10,857,856	\$21,376,004
FY23	12	\$2,258,314	\$5,947,704
FY24	13	\$2,921,058	\$7,230,065
Total	50	\$24,610,965	*\$40,918,323



*Including the largest co-Funded Award to Idaho: "Mid-scale RI-1 (M1:IP): A Deep Soil Ecotron facility to explore belowground communities and ecosystem processes." 2021-2026. Led by U of I: \$18,950,955 (FY21 & FY22)





Idaho's Research Competitiveness at NSF

Total NSF \$ (in Millions) to Idaho



Total NSF funding to Idaho
(FY24) = **\$41.6M**,
68% increase from FY18

Since FY19, **22%** of
Idaho's NSF funding is
EPSCoR RII+

NSF EPSCoR eligibility is <0.75%
share of total NSF funding,
excluding EPSCoR RII+

Idaho's share (FY19-23) = **0.33%**



IDAHO EPSCOR: *INFRASTRUCTURE IMPROVEMENT STRATEGY*

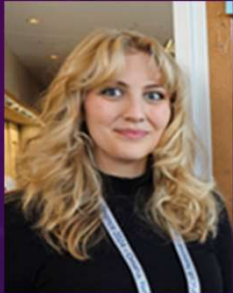


- GEM3 Track-1: Completed
- I-CREWS Track-1: Year 2
- Capacity-building – education, research, WFD, broadening participation, partnerships



IDAHO EPSCoR: *INFRASTRUCTURE IMPROVEMENT STRATEGY*

Student Research Stories



Spencer Roop,
Ph.D. Student at Idaho State University
Research Focus: Biological Sciences

Research focus:

Spencer received a Bachelors of Science in Biology at Gonzaga University before continuing on in her graduate work at Idaho State University. Her research focus, as part of the NSF EPSCoR GEM3 project, focused on the physiological differences in big sagebrush (*Artemisia tridentata*), and linking phenotypic variation to genotypic variation.



Tyler Breech,
Ph.D. Student at Idaho State University
Research Focus: Biological Sciences

Research Focus:

Tyler, a doctoral student in Biological Sciences at Idaho State University, is part of the larger Idaho NSF EPSCoR GEM3 research team working to understand the impacts of environmental and social change on Idaho's wildlife, particularly, rainbow trout. His primary research focus is the genetics of redband trout. He points out that there are many hypothesized subspecies of rainbow trout, for example redband trout, coastal rainbow trout, and California golden trout just to name a few. Tyler is working to understand how these different rainbow trout throughout the native range in western North America are related to each other, and where native Idaho redband trout fit in that family tree.



IDAHO EPSCOR: *INFRASTRUCTURE IMPROVEMENT STRATEGY*

Student Research Stories



Haley Netherton-Morrison,
Ph.D. Student at Boise State University
Research Focus: Ecology, Evolution, and Behavior

Research focus:

Haley's focus is on the application of social science theory to natural resource issues. She seeks to understand public perceptions of landscape and community change, how and why they differ, and their role in natural resource management and land use planning. Haley employs mixed methods and a range of theories to understand these variations. Currently, her research seeks to improve the understanding of people place relationships in Idaho landscapes and communities undergoing social ecological changes, through the lenses of landscape values and sense of place.



Ethan Henley,
Former GEM3 SARE undergraduate
University of Idaho
Currently MS Graduate Student at Arizona State
University

Research Focus:

Ethan's research interest in Geographic Information Systems (GIS) led him to apply to the Idaho EPSCoR GEM3 Summer Authentic Research Experience (SARE) Program during the summer of 2023, where he was selected to work on a project titled, *Characterizing Changes in Idahoan Sagebrush Cover from 1985 to 2021 and their causes*. The project's focus was to characterize historical changes in Idahoan sagebrush cover using remote sensing and GIS. Ethan's role included characterizing the trend in sagebrush cover in Idaho at 30 meter resolution using a remote sensing-based dataset from 1985 to 2021. He also worked on a team that investigated the potential causes of these changes, including climate change, human induced land cover/use change, and wildfire. He received his Bachelor's of Science in Geography from University of Idaho in 2023.

Continuing on with his interest in GIS, Ethan is currently working towards his Master of Science in Geographic Information Science and Cartography.



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IDAHO EPSCoR: *INFRASTRUCTURE IMPROVEMENT STRATEGY*



Championing research that protects communities and Idaho: Meet researcher Jared Talley

Jared Talley, former EPSCoR graduate student at Boise State University (BSU) and currently, assistant professor in Environmental Studies at BSU

Research focus:

Jared Talley, assistant professor in Environmental Studies in the School of Public Service at Boise State, participated in EPSCoR as a graduate assistant at Boise State, working under the MILES Project. His role involved engaging landowners around farm and water use in the Treasure Valley. As part of his graduate studies, Talley wrote a thesis focused on stakeholder engagement in natural resource management, a project that ultimately inspired him to pursue a doctoral degree centered on engagement and collaboration in conservation.

As a Southwest Idaho native, his firsthand knowledge of the critical relationships between a community and the landscapes they call home shapes his role as an educator, researcher and leader. Talley's interest in environmental philosophy and community collaboration led to the creation of a graduate student role tasked to study rural STEM education needs in Idaho, as part of the community engagement initiatives for I CREWS project.

Now as a faculty member at Boise State, Talley has the opportunity to mentor the graduate student who is continuing this important work in rural STEM education. Additionally, he leads a team conducting research on carbon projects on lands in the American West as part of Boise State's Grand Challenge Resource Nexus for Sustainability.

In addition to community engagement, Talley leads research examining the landscape between public service organizations and Idaho's rural communities. The project aims to understand how well resourced and well intentioned organizations perceive community needs and their efforts to address them. This project also evaluates the community perspectives on their needs and explores any alignment or divergence between these views and the organizations' efforts.

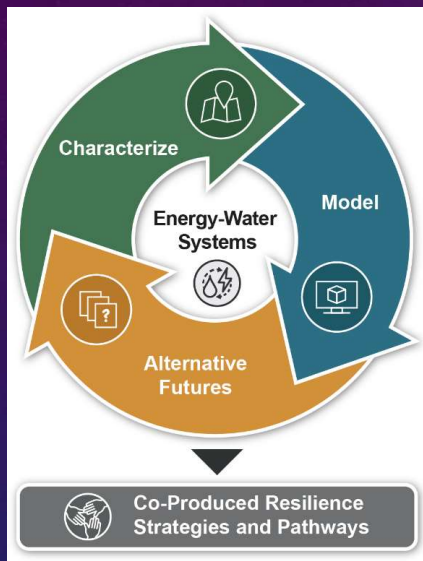
Growing up in Southwest Idaho himself, Talley emphasizes the importance of equipping students with the skills to apply their expertise within their own communities. It would be awesome to have those kids from [rural] communities be well trained in the complexity of the energy water systems so that they can come back to their community and help their community, he says.

Original article written by Zenaida De La Cruz



RII TRACK-1 CURRENT AWARD

IDAHO COMMUNITY-ENGAGED RESILIENCE FOR ENERGY-WATER SYSTEMS (I-CREWS)



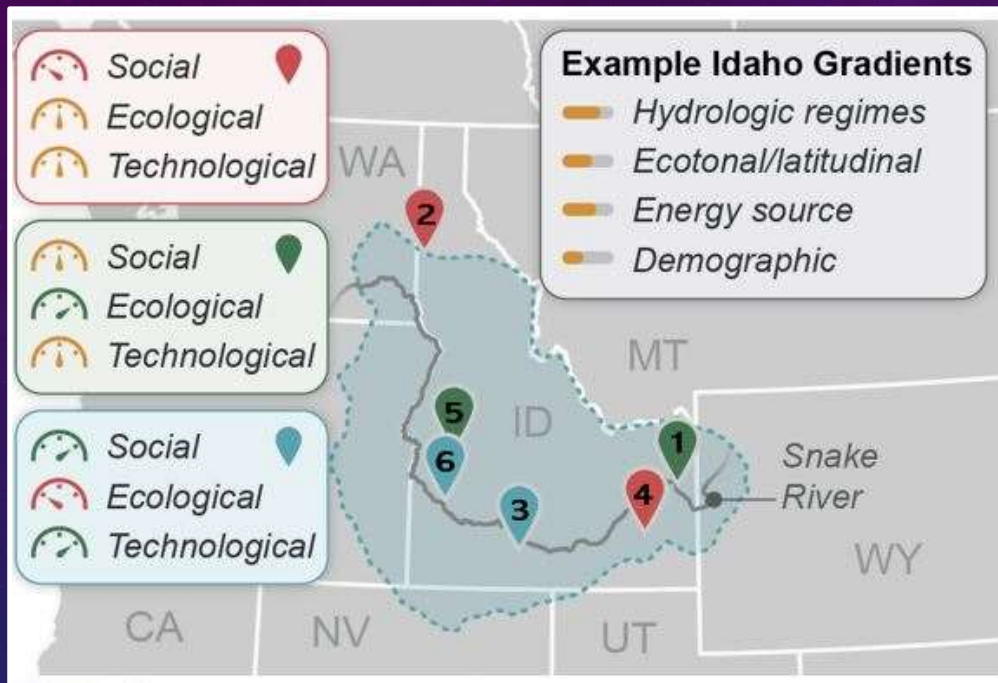
Critical national and state need: enhancing access for communities to diagnostic science for proactively addressing impacts of climate, population, and technological change on the interplay between energy and water

Scientific vision: build a world class capacity to characterize, model, and assess a range of futures to promote the resilience of E-W systems to climate, population, and technological change

Awarded: Aug 1, 2023 (thru July 31, 2028)



TRANSITIONED FROM YR1 STRATEGIC PLANNING TO YR2 SITE LEVEL RESEARCH & EDUCATION



- Refined study site locations - where the community-engaged work takes place.
- Refining language and developing long-term approaches to shared understanding.
- Roles of institutions and partners.
- Focus on cross-connections between sites and project elements.



IDAHO EPSCoR: *INFRASTRUCTURE IMPROVEMENT STRATEGY*

I-CREWS New Faculty Hires

Boise State University:

- Data scientist / statistician [Dr. Michael Perlmutter hired Aug 2023]
- Environmental governance
- Systems engineer

Idaho State University:

- Resilience social scientist [Dr. Georgia Hart-Fredeluces, hired Oct 2024]
- Environmental civil engineer

University of Idaho:

- Environmental historian [Dr. Alyssa Kriekemeier, hired Aug 2024]
- Power and water systems modeler [Dr. Angel Monsalve, hired Jan 2024]
- Energy-water resource scientist [search in process]



Jean'ne M. Shreeve NSF EPSCoR Research Excellence Award

2023 Award Recipient



Professor Alistair Smith
University of Idaho

James McNamara (2022)
John Kalivas (2021)
Lillian Alessa (2020)
Colden Baxter (2018)
Lisette Waits (2017)
Ronald Hardy (2016)
Sanford Eigenbrode (2016)
David McIlroy (2014)
Alex Punnoose (2012)
Jean'ne M. Shreeve (2011)



IMPLICATIONS OF THE NEW RII **E-CORE** AND **E-RISE** PROGRAMS (TO REPLACE RII TRACK-1 PROGRAM)



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ADVANCING GEOGRAPHIC DIVERSITY IN STEM



EPSCoR E-CORE

Builds capacity in 1 or more targeted research infrastructure cores

Research Administration
Facilities
Higher Ed Pathways
STEM Educ Pathways
Broadening Participation
Partnerships
Community engagement & outreach

4 years (\$8M) + 4 Years (\$8M)

EPSCoR Track-1

Enhance research and capacity-building in topical areas to improve future R&D competitiveness

Research
WFD
Education
Broadening Participation
Diversity
Partnerships
Communication
Administration

5 years (\$20M)

EPSCoR E-RISE

Supports incubation of research in a scientific field leading to increased research capacity and competitiveness in the topical area and sustainable improvements

Jurisdiction-wide network of teams of researchers and sectors that incubate high-quality research in a defined STEM disciplinary area

Develop high quality hypothesis- and problem-driven research projects that will sustain project outcomes beyond the E-RISE RII funding

4 years (\$7M) + 3 Years (\$4.5M)

IMPLICATIONS FOR IDAHO

- **Eligibility**
 - Eligibility has been expanded [universities, colleges, Tribal Nations, non-profits, private institutions]
 - Track-1 institutions become eligible Aug 2027 [Year 5 of I-CREWS]
 - Other Idaho institutions are eligible now
 - Eligibility could be updated in Spring 2025
- **Role of EPSCoR Committee is transitioning**
 - Expanded representation necessary [Chair Tuthill is leading expansion efforts]
 - Expected to provide high-level strategic view of research across Idaho
 - greater collaboration with HERC
 - Approval for submissions NOT required
- **Submissions**
 - Minimum of one E-CORE
 - Likely multiple E-RISEs possible
 - Any institution can lead or co-lead, and submit E-COREs and E-RISEs
 - Intent remains to provide statewide collaboration and coordination [per the current solicitations]
- **Implications**
 - Statewide coordination and planning by Idaho institutions OR individual institutional approaches

Building Research Competitiveness through EPSCoR/IDeA



<https://www.idahoepscor.org>



<https://www.nsf.gov/od/oia/programs/epscor/>



<https://basicresearch.defense.gov/Pilots/DEPSCoR-Defense-Established-Program-to-Stimulate-Competitive-Research/>



<https://science.osti.gov/bes/epscor>



<https://www.nigms.nih.gov/Research/DRCB/IDeA/Pages/default.aspx>



<https://www.nasa.gov/stem/epscor/home/index.html>



<https://www.nifa.usda.gov/grants/programs/agriculture-food-research-initiative-afri/afri-fase-epscor-program>

**INFORMATIONAL
FEBRUARY 19-20, 2025**

SUBJECT

Higher Education Research Council Annual Report for Fiscal Year 2024

REFERENCE

February 2017	The Board was provided the annual update of the Higher Education Research Council for FY16 and approved the second reading of amendments to Board Policy III.W.
February 2018	The Board was provided the annual update of the Higher Education Research Council for FY17
June 2019	The Board was provided the annual update of the Higher Education Research Council for FY18
June 2020	The Board was provided the annual report of the Higher Education Research Council for FY19
June 2021	The Board was provided the annual report of the Higher Education Research Council for FY20
February 2022	The Board was provided the annual report of the Higher Education Research Council for FY21
February 2023	The Board was provided the annual report of the Higher Education Research Council for FY22
February 2024	The Board was provided the annual report of the Higher Education Research Council for FY23

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies and Procedures, Section III.W.
Higher Education Research

BACKGROUND/DISCUSSION

Board Policy III.W. Higher Education Research recognizes the significant role research plays in innovation, economic development, and enhanced quality of educational programs. By developing and leveraging the state's unique research expertise and strengths, Idaho's universities and colleges serve as catalysts to spur the creation of new knowledge, technologies, products, and industries. This in turn leads to new advances and opportunities for economic growth.

The Board's Higher Education Research Council (HERC) provides recommendations to the Board regarding statewide collaborative efforts and initiatives to accomplish these goals and objectives. In addition, HERC provides direction for, and oversees the use of, the limited resources allocated by the Board for higher education research by promoting research activities that will have the greatest beneficial effect on the quality of education and the economy of the state.

HERC also administers the Idaho Global Entrepreneurial Mission (IGEM) Fund programs, disbursement of Infrastructure Funds, and the oversight of matching funds for our Idaho Established Program to Stimulate Competitive Research (EPSCoR) federal grants on the Board's behalf and in compliance with Board

Policy III.W.

HERC-IGEM projects are awarded for competitive state university research in support of the goals of the IGEM initiative. These funds are to be used as seed funding for strengthening Idaho's future by strategically investing in the development of expertise, products, and services which result in state economic growth. While these awards may be for up to three years, the funding is contingent upon successful progress as determined by HERC at an annual review of the project.

IMPACT

Taking a strategic approach to invest in the state's unique research expertise and strengths leads to new advances and opportunities for economic growth and enhance Idaho's reputation as a national and international leader in excellence and innovation. This update will provide the Board with the opportunity to provide ongoing input to the Higher Education Research Council on areas of focus and strategic direction.

ATTACHMENTS

- Attachment 1 – FY24 HERC Report Presentation Deck
- Attachment 2 – FY24 HERC Budget Allocation
- Attachment 3 – FY24 Performance Measure Reports
- Attachment 4 – FY24 Research Activity Reports
- Attachment 5 – FY24 Infrastructure Summary Reports
- Attachment 6 – FY24 Undergraduate Research Report
- Attachment 7 – FY24 Idaho Conference on Undergraduate Research Report
- Attachment 8 – FY24 IGEM Grant Annual Reports

BOARD STAFF COMMENTS AND RECOMMENDATIONS

A full presentation of HERC activities was provided to the Instruction, Research and Student Affairs Committee of the Board on February 6, 2025.

BOARD ACTION

This item is for informational purposes only.

Higher Education Research Council (HERC)

Report on activities from July 1, 2023 - June 30, 2024
(Fiscal Year 2024)

Dr. Grace Anderson, Chair
Dr. Chris Nomura, Chair-Elect



Attachments

- FY24 HERC Budget Allocation
- FY24 Performance Measures Reports
- FY24 Research Activity Reports
- FY24 Infrastructure Summary Reports
- FY24 Undergraduate Research Reports
- FY24 Idaho Conference on Undergraduate Research Report
- FY24 IGEM Grant Final and Annual Reports

HERC - Mission

Strengthen the research capabilities at Idaho's public four-year institutions and contribute to the economic development of the state of Idaho.

HERC - Purpose, Vision, and Role

- **Purpose:** To provide vision, leadership, and strategic financial support to the research endeavors at Idaho's higher education institutions.
- **Vision:** Idaho will become a research destination in key discipline areas.
- **Role:** To manage HERC funds, influence the research endeavor in higher education in Idaho, and monitor key factors that might impact the funder and influencer roles HERC plays.

HERC Membership

Higher Education Representatives

Dr. Nancy Glenn, *Boise State University*

Dr. Martin Blair, *Idaho State University*

Dr. Christopher Nomura, *University of Idaho (Chair-Elect)*

Dr. Grace Anderson, *Lewis-Clark State College (Chair)*

Industry Representatives

Todd Combs, *Idaho National Laboratory*

Eileen Barber, *Keynetics*

Heather Messenger, *Life Sciences and Biotech Industry*

Douglas Sayer, *Premier Technology Inc.*

FY24 HERC Budget Allocation

HERC IGEM Grants	\$2,100,000
Research Infrastructure Funds	\$854,000
Matching Grants (EPSCoR match)	\$800,000
Undergraduate Research	\$265,000
Administrative Costs	\$55,800
Total	\$4,074,800

Research Infrastructure

Funding to support science, engineering, and other research infrastructure

FY24 Infrastructure Budget - \$854,000

Major line items:

- **BSU** – \$127,000 for High-Performance Computing Equipment and Software.
- **ISU** – \$89,907 used to improve research infrastructure facility in need of partial roof replacement, surveillance cameras installed, and locks being replaced.
- **LCSC** – \$41,069 for salary and fringe for LC State Librarian allocated to support undergraduate and faculty research efforts.
- **UI** – \$114,981 spent for a CPU 8x GPU Capable Server for Research and Computing Data Sciences unit.

Undergraduate Research

Funding to support STEM undergraduates in research projects and travel to conferences

FY24 Undergraduate Research Budget - \$225,000

68 student research projects supported in FY24:

- **BSU** – 20 students across 12 STEM disciplines participated in a 12-week mentored research experience.
- **ISU** – 22 students received mentored research experience and had the opportunity to present their research at the ISU Undergraduate Research Symposium or ICUR.
- **LCSC** – 15 students received mentored research experience and had the opportunity to present their research at the ISU Undergraduate Research Symposium or ICUR.
- **UI** – Out of 42 applicants, 11 students were provided with a \$5,000 stipend in the form of a fellowship which allowed them to devote full time effort to their projects. Each student was also provided with \$1,000 to help offset materials and supplies and other project related expenses.

Idaho Conference on Undergraduate Research (ICUR)

Funding for a two-day undergraduate conference held each July.

FY24 ICUR Budget - \$40,000

FY24 ICUR Highlights/Outcomes:

- 444 participants over 35 different institutions/organizations
- 181 poster presentations
- 550 project collaborators including 255 undergraduate students, 78 graduate students, and 151 faculty
- HERC funding was utilized to pay for transportation and housing for students to attend from across the state and for the space, A/V, and catering for the event

Idaho Global Entrepreneurial Mission Fund (IGEM)

Competitive grant program used as seed funding for strengthening Idaho's future by strategically investing in the development of expertise, products, and services which result in state economic growth.

- 1- to 3-year grants up to \$700,000 per year
- FY24 IGEM Grant Budget – \$2,100,000
- Active Grants in FY24: 3

FY24 Active IGEM Grants

IGEM 22-001: The Cyberdome: An Investment in Idaho's Cybersecurity Future

Boise State University - \$700,000 – Year 3/Ended

IGEM 22-002: Boise State University Food and Dairy Innovation Center (FDIC)

Boise State University - \$700,000 – Year 3/Ended

IGEM 23-001: Reconfigurable Attack-Defend Instructional Computing Laboratory (RADICL)

University of Idaho - \$700,000 – Year 2

IGEM 22-001: The Cyberdome: An Investment in Idaho's Cybersecurity Future

- The Cyberdome project funded an equivalent of 22 six-month long student internships.
- There were a total of five papers published across topics such as: protecting data integrity for outsourced databases, email encryption methods, and nation-initiated cyber-attacks.
- The team served 11 clients and had approximately 20 prospective clients in varying stages of movement forward towards activation, far exceeding the original grant goal of five clients.
- Twelve departing interns accepted a full-time job offers. The median wage for those with a bachelor's or master's degree was \$70,000 while those with an associate's degree earned \$46,800.

IGEM 22-002: Boise State University Food and Dairy Innovation Center (FDIC)

- Construction of three and a half FDIC lab modules of 650 sq ft per lab took place, for a total of more than 2,000 sq ft
- Currently managing 20 sponsored projects
- Another four proposals have been awarded and contracts are in the process of being finalized.
- Trained 17 graduate students, 23 undergraduate students, and employed 7 staff. In addition, four students placed into internships, where two gained full time employment
- A total of five papers were published along with one patent awarded

IGEM 23-001: Reconfigurable Attack-Defend Instructional Computing Laboratory (RADICL)

- Number of faculty and student participants as a result of funding:
 - 7 Principal Investigators
 - 2 Master's students
 - 1 new student recruited to be directly funded in next reporting period
 - 14 additional undergraduate and graduate students directly involved in supporting initial project efforts
- Hosted two regional workforce and collaboration workshops
- One paper published
- Created a private cloud environment that will support the reconfigurable virtual spaces for cybersecurity and energy research and training
- Doubled the computing capacity of their private cloud environment from the previous year's acquisitions

Thank you.



FY 2024 Allocation of HERC Funds

FY2024

	Allocation	\$4,074,800
	HERC IGEN	2,100,000
	Infrastructure Funds	\$854,000
	Matching Grants (EPSCoR Match)	\$800,000
	Incubation Fund	\$0
	Undergraduate Research	\$265,000
	Administrative Costs	\$55,800
TOTAL BALANCE	Sum	\$0

IGEM Funds

BSU	IGEM 22-001	700,000
BSU	IGEM 22-002	700,000
UI	IGEM 23-001	700,000

Total IGEN	Committed IGEN Funds	\$2,100,000
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Research Infrastructure Funds

BSU	\$250,000
ISU	\$250,000
UI	\$250,000
LCSC	\$104,000
Total Infrastructure	\$854,000

Matching Award Grants

NSF-EPSCoR	\$800,000
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Total Matching Grants	\$800,000
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Targeted Research

Idaho iCORPS Ignite (Institution pending)

Total Targeted Research

Undergraduate Research

BSU	\$65,000
ISU	\$65,000
UI	\$65,000
LCSC	\$30,000
Idaho Conference for Undergraduate Research (ICUR)	\$40,000

Total Undergraduate Research	\$265,000
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Administrative Costs	
FY24 Administrative Costs	55,800
Total Administrative Costs	55,800
Total Budget / Allocation	\$4,074,800

Boise State University FY24 Performance Measures Report

Performance Measure	FY2020	FY2021	FY2022	FY2023	FY2024	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey, 5 Year Average.	\$38,318,235	\$41,113,857	\$43,638,927	\$45,960,283	Not Available	5% average increase across the previous 5 years
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey. % increase over prior 5 yr period.	6.7%	7.3%	6.1%	5.3%	Not Available	5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho institution of higher education (in either direction).	35	23	26	30	37	5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	25	12	9	13	12	3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in Higher Education Research Strategic Plan and that involves at least two Idaho public postsecondary institutions.	2	2	1	0	0	1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions. 5 year average.	\$2,629,765	\$2,760,431	\$2,858,774	\$2,654,282	\$2,589,813	5% average increase across the previous 5 years
Statewide amount of awards with the Idaho National Laboratory by the institutions. % increase over prior 5 yr period.	4.8%	5.0%	3.6%	-7.2%	-2.4%	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding from private sector only.	13.8	10.4	9.2	9.8	9.2	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding from private sector only.	4.5%	-24.6%	-11.5%	6.5%	-6.1%	5% average increase across the previous 5 years

Boise State University FY24 Performance Measures Report

Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding federal pass-through only.	3.8	4.2	4.6	4.4	4.8	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding federal pass-through only.	-9.5%	10.5%	9.5%	-4.3%	9.1%	5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. 5 year average.	25.6	24.2	26.0	32.6	36.8	5% average increase across the combined institutions from the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. % increase over prior 5 year period.	-11.1%	-5.5%	7.4%	25.4%	12.9%	5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions. 5 year average.	17.0	17.0	16.8	16.0	13.4	5% average increase across the previous 5 years
Number of invention disclosures resulting from research at the institutions. % increase over prior 5 year period	7.59%	0.00%	-1.18%	-4.76%	-16.25%	5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.				6	2	2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects. 5 year average	1042.4	1118.0	1215.6	1247.2	1291.6	3% average increase across the previous 5 years
Number of undergraduate and graduate students at the institutions paid from sponsored projects. % increase over prior 5 year period	7.84%	7.25%	8.73%	2.60%	3.56%	3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. 5 year average	39.2%	39.0%	38.8%	38.1%	36.7%	10% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. % increase over prior 5 year period	7.54%	-0.49%	-0.57%	-1.71%	-3.59%	10% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. 5 year average	930.0	993.2	1066.6	1121.2	1137.4	3% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. % increase over prior 5 year period	8.8%	6.8%	7.4%	5.1%	1.4%	3% average increase across the previous 5 years

Performance Measure Explanatory Notes:

Boise State University FY24 Performance Measures Report

Note A - Activity with private sector/industry - (a) is funding from private sector, and (b) is funding from private sector, federal flow through.

Idaho State University FY24 Performance Measures Report

Performance Measure	FY2023	FY2024	FY2025	FY2026	FY2027	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey,	\$7,404,000	\$7,122,873	\$0	\$0	\$0	5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	37	36	0	0	0	5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	31	22	0	0	0	3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in this strategic plan and that involve at least two Idaho public postsecondary institutions.	0	0	0	0	0	1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey.	\$2,499,045	\$2,780,447	\$0	\$0	\$0	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.).	64	48	0	0	0	5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions.	1	0	0	0	0	5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions.	1	6	0	0	0	5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.	1	6	0	0	0	2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects.	362	382	0	0	0	3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience.	36%	36%	0%	0%	0%	10% average increase across the previous 5 years

Idaho State University FY24 Performance Measures Report

Number of faculty and staff (combined metric) at the institutions paid from sponsored projects.	231	211	0	0	0	3% average increase across the previous 5 years
K-20 Statewide Stratgic Plan Performance Measures						
Percentage of students participating in undergraduate research.	36%	36%	0%	0%	0%	Note: This measure is being requested independently from your IR offices.

Lewis Clark State College FY24 Performance Measures Report (First year tracking)

Performance Measure	FY2024	FY2025	FY2026	FY2027	FY2028	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey, 5 Year Average.*	\$480,771					5% average increase across the previous 5 years
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey. % increase over prior 5 yr period.*	N/A					5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho institution of higher education (in either direction).	0					5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	0					3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in Higher Education Research Strategic Plan and that involves at least two Idaho public postsecondary institutions.	0					1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions. 5 year average.	0					5% average increase across the previous 5 years
Statewide amount of awards with the Idaho National Laboratory by the institutions. % increase over prior 5 yr period.*	N/A					5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding from private sector only. See Note A*	0					5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding from private sector only. See Note A*	N/A					5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding is federal pass-through only. See Note A*	0					5% average increase across the previous 5 years

Lewis Clark State College FY24 Performance Measures Report (First year tracking)

Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding is federal pass-through only. See Note A*	N/A					5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. 5 year average.*	0					5% average increase across the combined institutions from the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. % increase over prior 5 year period.*	N/A					5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions. 5 year average.*	0					5% average increase across the previous 5 years
Number of invention disclosures resulting from research at the institutions. % increase over prior 5 year period*	N/A					5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.	0					2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects. 5 year average*	28					3% average increase across the previous 5 years
Number of undergraduate and graduate students at the institutions paid from sponsored projects. % increase over prior 5 year period*	N/A					3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. 5 year average*	11%					10% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. % increase over prior 5 year period*	N/A					10% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. 5 year average*	6.00					3% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. % increase over prior 5 year period*	N/A					3% average increase across the previous 5 years

***Data not available for 5 year period. Where data is provided it is for FY24**

Performance Measure Explanatory Notes:

Note A - Activity with private sector/industry - (a) is funding from private sector, and (b) is funding from private sector, federal flow through.

University of Idaho FY23 Performance Measures Report (FY24 data will be provided in late February 2025)

Performance Measure	FY2019	FY2020	FY2021	FY2022	FY2023	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey, 5 Year Average.	\$106,568,703	\$109,640,230	\$110,327,710	\$111,540,817	\$116,402,928	5% average increase across the previous 5 years
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey. % increase over prior 5 yr period.	3.13%	2.88%	0.63%	1.10%	4.36%	5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho institution of higher education (in either direction).	17	16	18	17	22	5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	9	11	6	6	14	3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in Higher Education Research Strategic Plan and that involves at least two Idaho public postsecondary institutions.	N/A, new metric	N/A, new metric	N/A, new metric	2	2	1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions. 5 year average.	22.80	25.40	28.60	31.20	34.20	5% average increase across the previous 5 years
Statewide amount of awards with the Idaho National Laboratory by the institutions. % increase over prior 5 yr period.	10.68%	11.40%	12.60%	9.09%	9.62%	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding from private sector only. See Note A	48.80	50.80	52.20	50.60	47.80	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding from private sector only. See Note A	2.09%	4.10%	2.76%	-3.07%	-5.53%	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding is federal pass-through only. See Note A	18.40	20.40	21.20	21.60	24.00	5% average increase across the previous 5 years

University of Idaho FY23 Performance Measures Report (FY24 data will be provided in late February 2025)

Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding is federal pass-through only. See Note A	10.84%	10.87%	3.92%	1.89%	11.11%	5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. 5 year average.	7.6	6.6	7	8.6	10	5% average increase across the combined institutions from the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. % increase over prior 5 year period.	-7.32%	-13.16%	6.06%	22.86%	16.28%	5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions. 5 year average.	20.6	24.8	27.2	27	24.6	5% average increase across the previous 5 years
Number of invention disclosures resulting from research at the institutions. % increase over prior 5 year period	8.42%	20.39%	9.68%	-0.74%	-8.89%	5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.	N/A, new metric	N/A, new metric	N/A, new metric	11	8	2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects. 5 year average	1194.8	1180	1151.4	1118.6	1079	3% average increase across the previous 5 years
Number of undergraduate and graduate students at the institutions paid from sponsored projects. % increase over prior 5 year period	2.58%	-1.24%	-2.42%	-2.85%	-3.54%	3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. 5 year average	61%	60%	60%	57%	56%	10% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. % increase over prior 5 year period	-0.41%	-0.51%	-1.08%	-3.98%	-2.09%	10% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. 5 year average	1246.20	1264.80	1273.80	1286.20	1289.00	3% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. % increase over prior 5 year period	2.30%	1.49%	0.71%	0.97%	0.22%	3% average increase across the previous 5 years

Performance Measure Explanatory Notes:

Note A - Activity with private sector/industry - (a) is funding from private sector, and (b) is funding from private sector, federal flow through.

Boise State University Research Activity Report FY2024

Awards for the Period July 1, 2023 through June 30, 2024

Activity Type		Federal	State	Industry	Other	Total	% of Grand Total
Instruction:							
	Sponsored Programs	\$ 2,841,590	\$ 6,159,258	\$ -	\$ 355,816	\$ 9,356,664	
	State Instruction Appropriations	\$ -	\$ -	\$ -	\$ -	\$ -	
Subtotal Instruction		\$ 2,841,590	\$ 6,159,258	\$ -	\$ 355,816	\$ 9,356,664	11.21%
Research:							
	Sponsored Programs	\$ 39,437,227	\$ 1,147,106	\$ 296,974	\$ 1,377,444	\$ 42,258,751	
	State Research Appropriations	\$ -	\$ 352,700	\$ -	\$ -	\$ 352,700	
Subtotal Research		\$ 39,437,227	\$ 1,499,806	\$ 296,974	\$ 1,377,444	\$ 42,611,451	51.07%
Other Sponsored Activities:							
	Sponsored Programs	\$ 25,833,110	\$ 3,375,508	\$ 31,600	\$ 2,069,930	\$ 31,310,148	
	State Other Sponsored Activities Appropriations	\$ -	\$ 163,900	\$ -	\$ -	\$ 163,900	
Subtotal Other Sponsored Activities		\$ 25,833,110	\$ 3,539,408	\$ 31,600	\$ 2,069,930	\$ 31,474,048	37.72%
More Than One Type							
	Sponsored Programs	\$ -	\$ -	\$ -	\$ -	\$ -	
	State Other Sponsored Activities Appropriations	\$ -	\$ -	\$ -	\$ -	\$ -	
Subtotal More Than One Type		\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Grand Totals		\$ 68,111,927	\$ 11,198,472	\$ 328,574	\$ 3,803,190	\$ 83,442,164	
Percent of Grand Total		81.63%	13.42%	0.39%	4.56%	100%	100%

Expenditures for the Period July 1, 2023 through June 30, 2024

Activity Type		Federal	State	Industry	Other	Totals	% of Grand Total
Instruction:							
	Sponsored Programs	\$ 2,047,830	\$ 2,357,698	\$ -	\$ 218,567	\$ 4,624,094	
	State Instruction Appropriations	\$ -	\$ (176)	\$ -	\$ -	\$ (176)	
Subtotal Instruction		\$ 2,047,830	\$ 2,357,522	\$ -	\$ 218,567	\$ 4,623,919	6.43%
Research:							
	Sponsored Programs	\$ 39,087,272	\$ 1,277,857	\$ 343,524	\$ 2,348,304	\$ 43,056,958	
	State Research Appropriations	\$ -	\$ 1,470,473	\$ -	\$ -	\$ 1,470,473	
Subtotal Research		\$ 39,087,272	\$ 2,748,331	\$ 343,524	\$ 2,348,304	\$ 44,527,432	61.93%
Other Sponsored Activities:							
	Sponsored Programs	\$ 19,029,366	\$ 1,758,207	\$ 178,133	\$ 1,679,651	\$ 22,645,357	
	State Other Sponsored Activities Appropriations	\$ -	\$ 102,295	\$ -	\$ -	\$ 102,295	
Subtotal Other Sponsored Activities		\$ 19,029,366	\$ 1,860,502	\$ 178,133	\$ 1,679,651	\$ 22,747,652	31.64%
Grand Totals		\$ 60,164,468	\$ 6,966,355	\$ 521,657	\$ 4,246,522	\$ 71,899,002	
Percent of Grand Total		83.68%	9.69%	0.73%	5.91%	100%	100%

**Idaho State University Research Activity Report FY2024
Office for Research
Award Breakdown by Funding Agency Type and Project Type
July 1, 2023 through June 30, 2024**

	Federal	State	Industry	Other/Foundation	Totals	Percent of Total
Research	5,206,042	1,444,333	2,340,721	3,221,243	12,212,339	34%
Training and Instruction	3,779,688	1,245,658	1,537,973	324,198	6,887,517	19%
Other/Public Service	13,204,860	2,098,463	684,105	964,950	16,952,378	47%
Totals	22,190,590	4,788,454	4,562,799	4,510,391	36,052,234	100%
Percent of Total	62%	13%	13%	13%	100%	

State = Awards from state of Idaho agencies, including other state universities and colleges

Other/Foundation = Awards from other funding agencies, such as foundations, universities from outside of Idaho, local municipalities, non-profits, etc.

File Name: ISU OR Annual Awards FY24

Idaho State University Research Activity Report FY2024
Office for Research

Expenditure Breakdown by Funding Agency Type and Project Type
July 1, 2023 through June 30, 2024

	Federal	State	Industry	Other/Foundation	Totals	Percent of Total
Research	3,984,698	2,689,873	2,388,960	1,674,019	10,737,550	27%
Training and Instruction	7,929,126	2,624,431	1,414,510	577,110	12,545,178	32%
Other/Public Service	12,696,567	3,387,286	202,958	102,567	16,389,378	41%
Totals	24,610,391	8,701,591	4,006,428	2,353,696	39,672,106	100%
Percent of Total	62%	22%	10%	6%	100%	

File Name: ISU OR Annual Expenditures FY24

RRES1U (23-0112) is \$11,487,172 of the Other/Public Service under Federal.

FY 2024 INFRASTRUCTURE REPORT SUMMARY – Boise State

<i>Detailed Allocations</i>	
<i>Library Support</i>	
<i>Graduate Research Assistantships/Research Associates</i>	
<i>Post Doctoral Fellows</i>	
<i>Technician Support</i>	
<i>Maintenance Contracts</i>	\$2,100.41
<i>Research Equipment</i>	\$247,899.59
<i>Competitively Awarded Summer Research Support</i>	
<i>Start-Up Funds for New Hires</i>	
<i>Incentives to Reward Faculty for Research Achievements</i>	
<i>Other</i>	
<i>Total Allocation</i>	\$250,000

FY 2024 INFRASTRUCTURE REPORT SUMMARY – Boise State

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<i>Detailed Allocations</i>	
<i>Publications in refereed journals</i>	
<i>Presentations at professional meetings and conferences</i>	
<i>Grants Received as a result</i>	
<i>Grants Pending</i>	
<i>Student Participation</i>	
<i>Faculty Participation</i>	
<i>Other Participation</i>	
<i>Patents Awarded</i>	
<i>Patents Pending</i>	
<i>Manuscripts Submitted</i>	

FY 2024 INFRASTRUCTURE REPORT SUMMARY – Boise State

Notes:

Research Equipment:

HPC (High Performance Computing) Equipment and Software - \$127,000

WITec alpha300 Ri Inverted CRM and associated equipment/parts (lasers, imaging, cryostat) - \$115,296

Mechanical Control Box with GF Signets – Biomedical Research Vivarium - \$5,603

FY26 Biology Fragment Analyzer maintenance and service costs - \$2,100.41

TOTAL: \$250,000

Returns

- Return of \$10,476.78 to SBOE in September 2024

Note from Sept 27, 2024 communication with John Thomas:

Two of the units we awarded HERC funds as part of the Research Infrastructure Funds Omnibus Award experienced significant delays in closing their books last fiscal year due to purchase order delays. Over the past month, they have returned unused funds to DRED. Today, I submitted an invoice payment request to our Procurement team for \$10,476.78 to be returned to HERC. It was approved this afternoon, and a check should be cut and mailed within the next few days.

To prevent this issue from recurring in the future, all awardees of the Division of Research portion of HERC funds (\$250k) will now receive the attached document, which clearly outlines that (1) these funds do not carry forward and (2) funds must be expended by June 20.

Further, in the instance of these funds being encumbered for infrastructure expenses, I am having units bill the Division of Research and Economic Development directly for the expense instead of having them set up a HERC account in their department to manage and transferring the funds as has been done by the previous admin. This ensures that I can view the status of these purchases monthly, and should the item still be encumbered/not shipped and paid for by May 30 of each year, I can submit a change order request with Procurement and inform the unit that they need to find separate funding.

With these changes, we should not experience a delay in returning HERC funds to SBOE like this again (and hopefully won't have anything to return!) Please let me know if you have any questions.

TOTAL: (\$10,476.78)

FY24 Total: \$239,523.22

FY 2024 INFRASTRUCTURE REPORT SUMMARY - Idaho State University

<i>ISU FY 2024</i>	Total \$	Detailed Allocations
<i>Library Support</i>	\$0	
<i>Graduate Research Assistantships / Research Associates</i>	\$24,656	Support for Graduate and undergraduate students
<i>Post-Doctoral Fellows</i>	\$0	
<i>Technician Support</i>		
<i>Maintenance Contracts</i>	\$13,432	Preventative Maintenance on the purification system in Biolgy. Instrument service for the Milli-Q 7015 Purification System.
<i>Research Equipment</i>	\$122,005	DNA Sequencer: This piece of equipment provides Next-Generation Sequencing data to ISU faculty as well as external reseachers and classrooms. BD FACSMelody Flow Cytometer: newly acquired instrument in the Molecular Research Core Facility. This Instrument is used for sorting blood cells and quantifying types of immune cells in the blood sample. Humidity Boiler was purchased for our Animal facilities used for research. System install costs: install and commission an Elemental Scientific laser ablation system connected to an Agilent mass spectrometer at CAMAS, ISU. The funds for instrument acquisition were provided by a NSF Major Research Instrumentation award (BCS: 2320040; \$744,396). Instrument provides hands-on training for undergraduate and graduate students in advanced chemical analysis of solid samples; enabling them to engage in cutting-edge research on archaeological artifacts, geological mineral identification and dating, and isotopic studies. These types of learning experiences provide our students with valuable technical skills, enhancing both their academic and professional readiness across multiple disciplines including archaeology, environmental sciences, forensics, and geology.
<i>Competitively Awarded Summer Research Support</i>		
<i>Start-Up Funds for New Hires</i>	\$0	
<i>Incentives to Reward Faculty for Research Achievements</i>	\$0	
<i>Other</i>	\$89,907	The funding was used to improve research infrastructure for a unique facility (former Armory Building) on the campus that was in need of partial roof replacement. Reactor Security Upgrades: 2 video surveillance cameras installed and existing magnetic locks were replaced with electronic strike locks. Repair on the Horiba Pump.
<i>Total Allocation</i>	\$250,000	

FY 2024 INFRASTRUCTURE REPORT SUMMARY - Idaho State University

<i>ISU FY 2024</i>	
<i>Publications in Refereed Journals</i>	
<i>Presenations at Professional Meetings and Conferences</i>	
<i>Grants Received as a Result</i>	The data from the Illumnia MiSeq was part of a collaborative multi-year, NSF EpSCPR project.
<i>Grants Pending</i>	
<i>Student Participation</i>	The DNA sequencer provides data from this instrument impacts many ISU research endeavors with grant funded projects and graduate and undergraduate studies. Our graduate students are also using the Flow Cytometer in there research activities.
<i>Faculty Participation</i>	DNA sequencer provide data for ISU faculty as well as external researchers. FLOW Cytomter: Our faculty in Biological Sciences and Anthropology are both utilizing this instrument in their current research programs with the potential to bring in more users and collaborations in the future.
<i>Other Participation</i>	The data from the sequencer was used in a Microbiome summer course taght by the Nevada Genomics Center, University of Nevada Reno.
<i>Patents Awarded</i>	
<i>Patents Pending</i>	

FY 2024 INFRASTRUCTURE REPORT SUMMARY - Lewis Clark State College

	Total \$	Detailed Allocations	
Library Support	\$44,576	See Library Support Detail tab.	
Qualtrics License	\$8,277	Annual campus license for survey software for use by students as well as faculty and staff for their survey research.	
Grant Support	\$10,778	Internal operational sponsored programs support services	
Salary for Research Librarian	\$41,069	Salary and fringe for LC State Librarian to support undergraduate and faculty research efforts.	
Total Expenditures	\$104,700	Approved carryforward used	
	Detailed Allocations		
Publications in Refereed Journals			
Presentations at Professional Meetings and Conferences			
Grants Received as a Result			
Grants Pending			
Student Participation	Students utilize the research librarian and the purchased library resources in coursework, undergraduate research activities, and in preparing for the annual LC State Research Symposium. For survey research, Qualtrics survey software was purchased using HERC Infrastructure funds for students' use at no cost.		
Faculty Participation	Faculty utilize the research librarian, Qualtrics software products, the purchased library resources and assist students in preparing for the annual LC State Research Symposium.		
Other Participation	Community members, faculty and staff emeritus, and alumni are invited to attend the research symposium each year.		
Patents Awarded			
Patents Pending			

FY 2024 INFRASTRUCTURE REPORT SUMMARY - University of Idaho

	Total \$	Detailed Allocations
<i>Library Support</i>	\$0	
<i>Graduate Research Assistantships / Research Associates</i>	\$0	
<i>Post-Doctoral Fellows</i>	\$0	
<i>Technician Support</i>	\$0	
<i>Maintenance Contracts</i>	\$0	
<i>Equipment</i>	\$124,937	\$114,981 -(1) CPU 8x GPU Capable Server for Research and Computing Data Sciences unit; \$9,956 - Electron Microscopy equipment upgrades
<i>Start-Up Funds for New Hires</i>	\$0	
<i>Incentives to Reward Faculty for Research Achievements</i>	\$33,650	\$6,550 Excellence in Research Award; \$2,500 Power of Possibility Research Faculty Award; \$24,600 Research Incentive Faculty Awards (17)
<i>Other</i>	\$91,413	\$26,211 for (3) UI Faculty and (1) Research & Faculty Development Director participants to travel to the NIH R01 program in Lincoln, NE; \$9,213 for AI workshop;\$452 for Institute for Innovative Climates Solutions NSF FIERCE research support; \$2344 for PostDoc/Faculty Mentor Award; \$10,000 publishing support; \$3,002 travel support for the Idaho Geological Survey director to meet with stakeholders; \$10,651 NASA EPSCoR Conference Room upgrades; \$5,389 faculty laboratory research support; \$13,400 in faculty travel awards to meet with individual research program officers. \$10,751 Institutional Research Data Analyst position support.
<i>Total Allocation</i>	\$250,000	

FY 2024 INFRASTRUCTURE REPORT SUMMARY - University of Idaho

	Detailed Allocations	
<i>Publications in Refereed Journals</i>	4	
<i>Presentations at Professional Meetings and Conferences</i>	5	
<i>Grants Received as a Result</i>		
<i>Grants Pending</i>		
<i>Student Participation</i>	5	
<i>Faculty Participation</i>	52	
<i>Other Participation</i>	13	
<i>Patents Awarded</i>		
<i>Patents Pending</i>		

NOTE: Other participation includes postdocs, research scientists, research specialists, and stakeholders.

**Higher Education Research Council
Undergraduate Research Fellows
Boise State University
Final Report**

Academic Year 2023-2024

Donna Llewellyn, Executive Director, Institute for Inclusive & Transformative Scholarship
Lavanya Seetamraju, Undergraduate Research Project Manager, Institute for Inclusive & Transformative
Scholarship
Nico Diaz, Senior Student Initiatives Coordinator, Institute for Inclusive & Transformative Scholarship

Introduction

The Institute for Inclusive & Transformative Scholarship oversaw the HERC Undergraduate Research Fellowship at Boise State University Fall 2023 and Spring 2024. HERC funds were used to support Boise State undergraduate students who had minimal research experience with a 12-week mentored research opportunity during the fall and spring semesters. Funds provided by the Higher Education Research Council supported a total of 20 students across 12 different STEM disciplines.

On behalf of the Institute for Inclusive & Transformative Scholarship, we thank the Higher Education Research Council for their generous support in helping build meaningful experiential learning experiences for Idaho students and supporting faculty research.

The Higher Education Research Council provided \$65,000 in funding to support STEM undergraduate research at Boise State University this year. Please see the table below of how stipends and travel awards were dispersed.

HERC Funding:

Stipends	Amount	Details
Fall Semester Research Stipends	\$27,000	9 fellows, receiving \$3,000 each
Spring Semester Research Stipends	\$33,000	11 fellows, receiving \$3,000 each
Travel grants	\$5,000	See table below
Total	\$65,000	

Conference	Amount	Details
Society for Range Management	\$800.00	1 student presented at the conference in Sparks, NV.
American Chemical Society National Meeting	\$800.00	1 student attended the conference in New Orleans, LA.
Max Planck Institute	\$700.00	1 student to attend the Max Planck Institute in Germany.
Conference for Undergraduate Women in Physics	\$1350.00	6 students attended the conference in Bozeman, MT.
Pacific Sociological Association Annual Conference	\$1350.00	6 students attended the conference in San Diego, CA.

The titles and abstracts of the student projects are on the following pages.

Fall 2023 Fellows

Benjamin Bailey - Material Science and Engineering

Title: Advanced Scanning Probe Microscopy and Infrared Nanospectroscopy Characterization of Atomic Layer Deposited and Etched Thin Films

Abstract: Because modern semiconductor device features are smaller than the diffraction limit of standard optical microscopes, higher resolution electron and scanning probe microscopies are routinely employed for device characterization. In particular, atomic force microscopy (AFM) and associated advanced scanning probe microscopy (SPM) techniques can map nanoscale surface topography and morphology as well as provide insight into electrical, magnetic, and mechanical properties. More recently, with the development of AFM-IR, AFM can be combined with infrared (IR) spectroscopy to provide chemical identification with ~10 nm resolution. Here we report AFM characterization of area selective atomic layer deposition (ASALD) and etching (ASALE) of molybdenum disulfide (MoS_2), a layered two-dimensional (2D) semiconductor that shows great promise due to its atomically thin structure and impressive electrical properties. High resolution AFM is used to characterize ALD film quality and ALE morphology, while advanced SPM modes are employed to measure electrical properties of interest. Additionally, AFM-IR is brought to bear to provide insight into the ALE mechanism and reaction products. These results hold promise for advancing the characterization and integration of novel 2D materials into semiconductor device manufacturing.

Ammon Butler - Mechanical Engineering

Title: Improving Ni-Mn-Ga Alloy Actuation: Effects of Micro-Peening on Mechanical and Magnetic Properties

Abstract: As miniaturization in modern devices advances, the demand for efficient, compact actuators becomes increasingly critical. Traditional mechanical systems often face limitations in size and response time at small scales, highlighting the need for new materials that can deliver both high performance and scalability. Magnetic shape memory alloys (MSMAs), such as Nickel Manganese Gallium (Ni-Mn-Ga), offer solutions for small-scale actuators due to their combination of magnetic actuation and superelasticity. This research investigates how controlled surface treatments enhance the mechanical and magnetic properties of Ni-Mn-Ga. We focus on a technique called “micro-peening,” in which microscopic glass beads are shot at the sample surface using pressurized air. A Ni-Mn-Ga sample was first polished with a 3-micron slurry and then micro-peened with pressures ranging from 10 to 25 psi, increasing in 5-psi increments. For each surface treatment, we performed multiple mechanical compression tests with a custom-made micro-mechanical tester and magnetic actuation experiments with a standard vibrating sample magnetometer. The results reveal that specific intermediate treatments yield optimal mechanical and magnetic properties by “smoothing” the actuation process, suggesting potential pathways to improve Ni-Mn-Ga’s performance in technical devices requiring reliable actuation.

Samantha Butler - Biology with a Cellular, Molecular and Biomedical Emphasis

Title: Eat the Raw Cookie Dough

Abstract: Salmonella is a highly antibiotic-resistant Gram-negative bacteria that is the most reported bacterial food-borne disease. Despite increases in awareness and sanitation, the incidence of Salmonella has continued to increase. A vaccine to combat this important pathogen in agriculturally important animals would help to protect humans. AB5 toxins are key bacterial virulence factors and have been used as vaccine antigens. We have previously characterized an AB5 toxin of *S. Typhimurium*, called ArtAB, to better understand its role in pathogenesis. We hypothesized that other AB5 toxins can be found using Salmonella whole genome sequence searches. We identified a homologous toxin with 31% identity to ArtAB in *S. Montevideo* (PltC). Using PCR, we have also identified PltC in isolates of *S. Typhimurium* and cloned it into a plasmid for expression in *E. coli*. Similar process has been used to identify a toxin from *Diarizonae* that has two B-subunits to clone into *E. coli*. Protein purification using D-galactose or Fetuin affinity was not successful to purify the pltC A and B subunits, and other methods are currently being explored including cloning the B subunit alone. In addition, we have tested the DNA from bovine fecal samples to determine if the artAB gene is present and will test these samples for pltC in the future. Western-blot was used to test for an immune response, but the process was unsuccessful. This work will support future studies involving antigen and antibody testing with the goal of animal studies and clinical trials to develop a novel bovine Salmonella vaccine.

Sarah Cole - Material Science and Engineering

Title: Synthesis of Uranium Nitride Nuclear Fuel

Abstract: In order to sustain the U.S. nuclear reactor fleet, the industry is currently bolstering its advanced fuel cycle through the development of novel fuel forms. Advanced Technology Fuels (ATF) such as uranium nitride (UN) offer higher uranium density, higher thermal conductivity, and lower coefficient of thermal expansion compared to currently used uranium dioxide (UO₂) fuels. These properties have the potential to lead to increased power uprates, longer cycle lengths, and improved performance. While there are numerous synthesis techniques for UN, this study focuses on the carbothermic reduction of UO₂ prior to nitriding due to its cost, efficiency, and process scalability. Synthesized UN powder was characterized for phase purity before being high energy planetary ball milled (HEPBM), pressed, and sintered in order to study the effects of the ball milling processing step on final sintered density.

Maria Jessica Cruz - Public Health

Title: It's 110° Fahrenheit Outside! Managing Heat & Protecting Workers

Abstract: Global temperatures and heat waves have increased due to climate change over the years, which can severely impact the health and safety of the outdoor working population groups. Agricultural workers are among the vulnerable populations impacted by heat stress due to the demanding work they perform under direct sunlight and in poor working conditions. In light of this, a literature review was conducted to identify and synthesize effective interventions to help decrease heat stress and prevent these severe health impacts. Findings were synthesized from 10 articles and summarized in educational outreach materials that were developed. These include a trifold pamphlet, poster, and business card infographic for distribution to community organizations and farmworkers. Feedback was solicited from farmworker-serving community organizations, and the materials were translated in Spanish. The effective interventions that were identified

during the literature search and highlighted in the materials includes heat education and awareness training; water, rest, and shade; cooling interventions; workplace modifications; clothing; and team monitoring.

Lindsey Jenkins - Chemistry

Title: The Physiochemical Properties of Perfluorinated Environmental Pollutants

Abstract: Perfluoroalkyl substances (PFAS) persist in the environment and have been shown to disrupt the Earth's carbon cycle and negatively contribute to the Greenhouse Effect. PFAS have been found to have unique properties, such as ice nucleation and increased hydrophilicity, compared to their nonfluorinated versions. In order to improve models to predict climate change, a molecular understanding of the physicochemical behavior of PFAS molecules on environmentally relevant aqueous surfaces is needed. Sum Frequency Generation (SFG) spectroscopy and surface tension afford the ability to determine surface behavior of PFAS. Here, we compare three different chain length of PFAS to their nonfluorinated compounds at the air/water interface. In the hydrogen bonding region, fluorinated PFAS have shown to increase the O-H stretch SFG signal which correlates to more ordering of water molecules at the surface. In addition, surface tension measurements were completed to determine apparent surface pKa. The high surface activity of PFAS adds additional challenges to standard analytical techniques used in environmental chemistry. This study explores these distinctive physiochemical properties with the goal of rational design of remediation techniques for PFAS from the environment.

Autumn King - Biology

Title: Comparing the retentiveness of coarse particulate organic matter transport of a natural and restored stream

Abstract: We looked at how well, or how far, coarse particulate organic matter, or leaf material, travels downstream during both high and low stream discharge. We did this to compare the function of two stream's retentive capabilities, which are dependent on several different factors such as particle type, size, and instream features. The retentiveness of a stream can be what determines how well nutrients are retained within a stream system. We compared a natural and a restored stream. The Diane Moore Nature Center served as the location for our artificially constructed stream segment. Dry Creek, located within the Dry Creek Experimental Watershed, served as the location of our naturally occurring stream segment. Both streams are in Boise, Idaho within a 30-minute drive from Boise State University.

Ryn Oliphant - Physics

Title: Improving Prediction of Solar Material Properties through Software Engineering

Abstract: It is possible to inexpensively generate electrical power from the sun with panels made from carbon-based molecules. The challenge is in finding the organic molecules that are both easy to make and efficient at catching light and converting it into power. It is therefore important to understand how charges move through these molecular systems, and we use kinetic Monte Carlo simulations to investigate these processes. Because the scientific software for performing kinetic Monte Carlo simulations of charge transport in organic materials is relatively new, there are open challenges with improving software performance, correctness, and generalizability. In this work, we focus on scientific software development of the package MorphCT and identify and prioritize areas for improvement. MorphCT calculates charge hopping rates between organic

molecule pieces, and we recognize instances of pairs of organic pieces breaking assumptions that MorphCT depends upon. We add logic to the library to help users manage these corner cases more effectively. These advances help make tangible connections between materials structure and performance, while also making the computational workflows that we use to study them more transparent, reproducible, usable, and extensible by others.

Aviana Smith - Physics

Title: Investigations Into the Electrical Double Layer at the Membrane Interface

Abstract: The formation of an electrical double-layer (EDL) is a consequence of the electrostatic interactions that occur at the interface between a charged surface and an electrolyte. The asymmetrical distribution of coions and counterions at the interface leads to charge accumulation, development of capacitances, and large variations of the electrical properties in terms of electric field, potential, and conductance. The EDL is a key concept in electrochemistry, which is important for energy storage in supercapacitors or electrocatalysis. However, the implications are even more important for biological systems; all cells are surrounded by a charged membrane, and any modification of electrical properties leads to changes in the biological functions essential for cellular physiology. Despite all of the progress made in understanding the structure and properties of EDL over the last century, a complete physical model and a proper mathematical frame have not been ascertained. Consequently, the understanding of predictable relationships between the interface properties and biological functionalities are still in the incipient phase. To fill the gaps in our knowledge, we developed an experimental system suitable for gathering relevant data on the electrical properties of the interface by employing both inorganic and organic interfaces; this interface is also viable for physical and mathematical modeling.

Spring 2024 Fellows

Lucas Arsenith - Civil Engineering

Title: Effect of Terrain Resolution on Rockfall Dispersion

Abstract: Rockfall events are a geohazard that can pose a significant threat to infrastructure and life in mountainous areas. The trigger mechanism for these events varies but is usually due to undercutting of an existing slope, physical weathering including freeze/thaw cycles, anthropogenic factors such as excavation, environmental factors, and seismic events. Corrective measures are expensive and involve using nets, anchor bolts, or removing hazardous rock masses. Historically, two-dimensional modeling techniques have been used for sites where rockfall is a risk but these are limited in their functionality and accuracy. Three-dimensional modeling techniques are currently evolving and being used to accurately predict where boulders that detach from the slope will land. My study aims to address current issues with using a three-dimensional rockfall model such as data collection, required inputs, accuracy, and calibration. For this portion of my study, I will be comparing models created using site-specific LiDAR data and downsampling the point cloud to analyze the effects of topography resolution and boulder size on the distribution of the final resting boulder locations, known as dispersion. I hypothesize boulders in models with higher-resolution topography will have a tighter dispersion when compared to lower-resolution topography. I will continue to work on this research topic as a master's student and further investigate how the dispersion of boulders compares with terrain resolution. From this research, I hope to produce a three-dimensional calibrated rockfall model for this site.

Giada Brandes - Mechanical Engineering

Title: Assessing EtCO₂ Levels Exhibited During Nose Deformation

Abstract: Obstructed breathing during sleep creates a challenge for nasal respiration during the night, affecting nearly 24% of the population between ages 30 to 60 years old. Neonates and infants have underdeveloped nasal cavities which cause higher nasal resistance because of their radially smaller middle cavity and the lack of an inferior meatus, resulting in less airflow. The long-term goal of this work is to apply the mechanics of adult breathing and nose deformation to infant breathing and test design.

Skyler Chase - Computer Science and Geoscience

Title: Infrasound-Based Avalanche Event Classification: Leveraging Deterministic Techniques for Machine Learning Dataset Creation

Abstract: Avalanche detection and classification play a crucial role in ensuring safety within mountainous transportation corridors. Infrasound, which encompasses sound frequencies below the human audio range, serves as a valuable indicator of avalanche activity and other related events. Previous studies have predominantly utilized deterministic methods to identify infrasound events, although distinguishing events associated with avalanches remains a challenge. To address this gap, leveraging machine learning techniques becomes imperative for accurate classification. However, this necessitates a robust labeled dataset. In this study, we present a novel tool that utilizes correlograms to visualize infrasound events. These visualizations serve as a foundation for event classification, enabling the distinction between avalanche and non-avalanche sources.

Leah Engle - Global Studies

Title: Climate Change Opinion Dynamics

Abstract: Climate change is a term used on a regular basis in society today. Science has proven that the climate has been changing over the years and has found direct ties to these trends and human actions. Nevertheless, Yale research has found that 48% of Idaho residents still deny that humans are causing this global warming, which is 6% above the national average. This sizable minority is hindering our society's ability to move towards a greener tomorrow. Therefore, we plan to use deep canvassing methods in hopes to start conversations about human impacts on climate change and further understand how it can be used to influence people's ideas. A thorough systematic review of similar literature pertaining to climate change and social perspectives was conducted to form a strong background and understanding of this research. Through the data collected from the systematic reviews, cognitive interviews, and deep canvassing methods we expect to see positive results and an increase in awareness of the impacts that humans have on climate change.

Jadyn Hart - Mechanical Engineering

Title: Flux Mapping of a High Heat Flux Solar Simulator

Abstract: Concentrating Solar Power (CSP) is a form of renewable energy generation that utilizes solar irradiance to create useful heat. The extreme operating conditions under high temperature and solar flux can cause maintenance issues, increase operational costs, and decrease conversion efficiency under varying solar irradiance conditions. A solar simulator can be utilized to model similar conditions to those in CSP energy

generation in order to test different materials for solar receivers and heat transfer fluids. Since these experiments must be accurate to CSP conditions, the solar simulator should be characterized for heat flux distribution across the focal plane. A heat flux distribution map will be made of the high flux solar simulator using radiometer readings at locations with varying heat flux on the focal plane, and grayscale images will allow for correlation between flux and brightness using image analysis software. Using this strategy, a heat flux distribution map will be generated from the grayscale images for each of the individual lamps and all four lamps in order to calibrate the lights to a focal point and ensure peak flux is reached within the simulator.

Lauren Homza - Biology

Title: Visual Predator Detection in a Nocturnal Moth

Abstract: Detecting an approaching predator allows animals to employ evasive maneuvers in order to avoid being eaten (1). My study provides evidence that the greater wax moth (*Galleria mellonella*) may use visual stimulus to detect approaching predators (sensu 2). I also present preliminary data showing that the luna moth (*Actias luna*) may also be using visual stimulus to avoid predation. Using forceps, I tethered moths by the ends of their abdomens in front of a computer screen and induced flight. Once the moths were flying steadily I presented 1 of 6 “looming threats”. I presented each moth with the stimulus up to six times. I calculated the frequency of predator avoidance behaviors after the onset of the stimulus and compared it to the frequency of those behaviors for the ten seconds preceding the onset of the stimulus. If moths are using their visual system to detect predators this brings a new dimension to understanding moths’ anti-predator strategies, particularly given the two species used in this study are nocturnal. Flight cessation is generally considered a “last ditch” evasive maneuver, which points toward visual stimuli being an important component in the likelihood of a moth escaping predation in the final critical moments of an attack.

Amelia Jobe - Computer Science and Social Science

Title: “The Best Minds in Technology”: How Meritocratic Language in Amazon Job Postings Perpetuates Gender Inequality

Abstract: I conducted a mixed-methods analysis of all Amazon internships advertised to undergraduate students during the spring 2024 semester to investigate how seemingly gender-neutral language in job postings works to reproduce gender inequality in technology-related fields. In my analysis, I found that when the percentage of women in the given field decreased, the amount of meritocratic and status-based language increased. These meritocratic phrases in job postings appeared to be gender-neutral but really worked to reproduce existing structures of gender inequality. In theory, merit acts as a great equalizer. In actuality, it can justify inequalities by rewarding those with pre-existing privileges and punishing those with social barriers to success. The male-dominated nature of the tech industry shapes technological ideals of merit in masculine ways. This masculinization of merit acts as a primer for masculinized cultural matching, which reproduces masculine hegemony in elite technological spaces such as Amazon.

Ethan LaHaug - Political Science

Title: Are Separately Elected Lieutenant Governors More Likely to Seek Other Statewide Offices?

Abstract: A major difference across state governments is whether lieutenant governors run on a team or separate ticket as the governor. However, we lack research on the effects of this difference. Moreover, lieutenant governors are rarely studied at all, perhaps due to the perception that lieutenant governors generally

have a minor role in state policymaking and governance. Despite their limited direct influence in many states, the lieutenant governor's office may serve as an important pipeline for other elected offices, especially governorships. Lieutenant governors who run separately for their office will have more experience running their own campaign, providing more name recognition, an established campaign organization, and fundraising networks that are beneficial for seeking higher office (e.g., Desmarais, La Raja, and Kowal 2014). Consequently, they may have more interest in and resources for seeking to move up the political ladder (Francis and Kenny 2000).

How does the election process of lieutenant governors affect their future careers? Are lieutenant governors who are separately elected more likely to run for higher office? If so, are they more successful? How do other factors like the powers of their office, partisanship, geography, and gender further shape their career decisions? We expect lieutenant governors who are separately elected will have more progressive ambition and access to resources, making it more likely they will seek higher office.

To answer these questions, we are collecting biographic and political data on lieutenant governors holding office in the past two decades for all 45 states with lieutenant governor offices. This research will extend our knowledge of this rarely studied statewide office and the people holding this office. It will also help us better understand state political pipelines and how the election method of lieutenant governors affects their future careers.

Katie Markthaler - Geoscience

Title: Moving Mountains: Determining Temperature Distribution in the Himalaya's Earliest Metamorphic Rocks

Abstract: The Himalayas of northern India expose a rare sheet of ultrahigh-pressure rocks, called the Tso Moriri Complex, uplifted from at least one hundred kilometers depth. The widespread exposures of this rock complex provide an exceptional opportunity to examine the dynamics of how ultrahigh-pressure metamorphic rocks form and are exposed at the surface. These exposures have allowed us to sample geographically distributed rocks. In this project, I collected temperature data on four samples distributed along a 90-km long NW-SE transect across the entire complex. Additional thermometry from Thompson et al. (2024) is also available. I measured concentrations of temperature dependent zirconium in the mineral rutile using Laser Ablation - Inductively Coupled Plasma Mass Spectrometry. Using calibrated equations, we then estimated the maximum temperature experienced by these rocks at an assumed pressure of 25 kbar. Temperatures broadly increase from ~570 °C in the extreme northwest to ~625 °C ~45 km to the southeast, reaching ~770 °C in the extreme southeast. These are the first Zr-in-rutile data collected on geographically distributed samples across the Tso Moriri complex. Although we have not yet calculated pressures, these data suggest possibly deeper origins of rocks to the southeast compared to the northwest, so that the sheet is tilted from its original orientation as it was exhumed. This implication is consistent with structural data that indicate NW-directed transport during exhumation (Long et al., 2020).

Ryan Samolis - Physics

Title: Whole River Contaminant Degradation Depends on Transport Processes in River Sediments

Abstract: Pollutants in rivers expose aquatic species and human populations to harmful contamination. In rivers, contaminants can naturally transform into equally potent “daughter” compounds. These transformations most commonly occur once contaminants have been carried by river water into a shallow,

reactive region of river sediments called the hyporheic zone. While mathematical models are useful tools for predicting parent and daughter contaminant exposure in rivers, they make assumptions about what processes dominate in the hyporheic zone, which limits our understanding of contaminant fate at the river scale. Here, we compared two hyporheic zone reactive transport models with differing transport assumptions – diffusion vs. advection – to understand how each process impacts the integrated effects of transport, surface-subsurface exchange, and subsurface reactions on whole river contaminant degradation. We found that the assumed transport process does not control whole-river parent-to-daughter transformation, but it strongly controls daughter compound degradation. Specifically, daughter degradation rates are highest when contaminants are advected through the hyporheic zone, compared with diffusion. Our results indicate contaminant degradation patterns depend on the transport mechanism in the hyporheic zone. Therefore, practitioners should consider both the toxicity of contaminants and the dominant physical processes in the hyporheic zone when predicting contaminant fate in river systems.

Miranda Trester - Biology with a Cellular, Molecular and Biomedical Emphasis

Title: Surveillance of Animal and Patient Samples for Pathogens

Abstract: I analyzed pathogens in patient and wild animal samples found using Next Generation Sequencing with the Illumina Respiratory Pathogen ID/AMR Enrichment Panel (RPIP). I found that Coronavirus OC43 was prevalent in many clinical samples in patients who had tested negative for COVID-19 and Influenza but were still exhibiting respiratory and other symptoms. I also found Coronavirus OC43 through sequencing of a ground squirrel's genome. I analyzed the base pair alignment of each of our patients' pathogen samples and the ground squirrel to the strain found in NCBI to determine if mutations had occurred. This research opens the door to furthering our understanding of how pathogens are transmitted between humans and animals. Additionally, many of the patients who tested negative for COVID-19 but had Coronavirus OC43 exhibited much harsher symptoms (such as throwing up) than patients usually exhibit with this pathogen.



**Idaho State
University**

Office for
Research

Undergraduate Research Funding for STEM Majors
Idaho State University
FINAL PROJECT REPORT for HERC Funds
November, 2024

Submitted By
Sonia Martinez
Undergraduate Research and Outreach Director
Idaho State University, Office for Research
Pocatello, Idaho

Idaho State University, Office for Research, Sonia Martinez | 921 South 8th Avenue | Pocatello, Idaho,
83209 | 208-282-1323.

Summary

In FY 24, we experienced an increased interest by students in undergraduate research. Central to the student learning experience is the mentor-mentee relationship. Students at Idaho State University engage in research at all levels of Science, Technology, Engineering, and Math (STEM). We recognize the impact of faculty-led research experiences on students to enhance their understanding of academic concepts and build professional skill development that makes them competitive in high-demand industry jobs. Therefore, Undergraduate Research is Goal Four in ISU's Strategic Plan.

Because ISU serves rural communities, whereas 41% of our students are first-generation students unfamiliar with research, the Office for Research casts a campus-wide outreach effort to inform students about paid research opportunities; this approach ensures access for all students. According to the Bureau of Labor Statistics, STEM majors are experiencing strong industry growth and the best return on education investment. To help students pursue their career goals in high-demand industry sectors, we work to eliminate barriers for our most vulnerable populations. At ISU, 39% of our students are Pell-eligible, and paid learning opportunities allow students who may otherwise have competing financial responsibilities to participate in research (IHE, Nov 4, 2024).

With the support of the Idaho State Board of Education, we awarded funding to seven faculty researchers. PIs were awarded up to \$8,000 to support two or three students at \$13.00 per hour, including funding for materials and supplies. In addition, \$5,000 was awarded to nine students for conference travel to present research at prestigious national conferences. An additional \$10,000 was awarded to McNair Scholars to support student research and travel. These funds were used for poster printing, travel, and equipment for twenty-two students.

Finally, students who participated in the funded HERC experience had the opportunity to present their research at the ISU Undergraduate Research Symposium in February 2024. In July, twenty-five students took advantage of transportation via a chartered bus to attend the ICUR conference held at Boise State University. We also welcomed a cohort of eight McNair scholars and their coordinators. Seven ISU faculty members also traveled to ICUR to participate in the "Meet a Professor" event. Idaho State University students engaged in the conference experience by sharing their research in poster presentations, lightning talks, panels, and faculty-student paired talks. The opportunity for our students would not be possible without the generous support from the State Board of Education. These experiences prepare our students for Idaho's high-demand industry jobs in the growing STEM fields. For a broader understanding of the experience our students gained, please refer to the ICUR conference report from Boise State University, where you will find participant testimonials.

Attached to this summary, please see the reports on the research activity supported by this grant cycle and the experiences our students gained this past academic year. If you have any questions, please call the Office for Research about any research presented in this report.

Idaho State University, Office for Research, Sonia Martinez | 921 South 8th Avenue | Pocatello, Idaho, 83209 | 208-282-1323.



**Idaho State Board of Education
Higher Education Research Council
Undergraduate Research Fellows**

**Academic Year 23-24
Summary**

Introduction

The Office of Institutional Research and Effectiveness, in collaboration with the Office of the Provost & Executive Vice President for Academic Affairs, oversaw the Higher Education Research Council (HERC) undergraduate research fellows' program.

The HERC funds provided undergraduates students with research opportunities in the Science, Technology, Engineering or Math (STEM) fields under the guidance of a faculty mentor. Lewis-Clark State College (LC State) students were selected based on a competitive application process. Fifteen (15) students received a HERC research fellowship. All participating students presented posters at either the LC State Research Symposium in May 2024 or at the Idaho Conference for Undergraduate Research (ICUR) in Boise, July 2024.

Thank you to the Idaho State Board of Education and HERC for their generous allocation of \$30,000 in support of advancing STEM student learning. LC State expended the funds as follows:

EXPENSE CATEGORY	AMOUNT
Stipends	\$6,855.00
Travel	\$2,086
Materials and Supplies	\$1,608.82
Miscellaneous Expenses	\$270.00
TOTAL	\$12,770.72*

*Received approval to utilize remaining balance to purchase needed materials and supplies in support of undergraduate research in FY25.

Following are the student project abstracts:

Fellowship Recipients: Sara Hathaway, Abigail Brown, Ava Hasenoehrl, Tesla Presnell & Jayden Youngren

Faculty Mentor: Dr. Eric Stoffregen, LC State, Division of Physical, Division of Physical Life, Movement & Sport Sciences

Title: *Metabolic dysfunction following early embryonic DNA damage in Drosophila melanogaster*

Abstract: Blm DNA helicase is essential for proper DNA replication during early Drosophila development. Progeny from Blm-null mothers die as embryos due to lack of Blm protein. However, a few progeny survive to adulthood. We hypothesized that survivors of Blm-deficient development would display alterations in metabolic function due to DNA damage incurred during development. Our data suggest metabolic processes, particularly those related to nutrient storage, are altered by development without Blm.

Fellowship Recipients: Conner May, Chris Denny, Abby Gorton & Ike Hopper

Faculty Mentors: Dr. Clay Robinson & Dr. Jessica Savage LC State, Athletics and Division of Physical, Life, Movement & Sport Sciences

Title: *Vitamin C's Effect on Iron Absorption & Aerobic Capacity in Female Cross-Country Athletes*

Abstract: The purpose of this study was to determine the effects that Vitamin C has on rates of Iron absorption and whether supplementation of vitamin C and Iron will improve Ferritin, Hemoglobin, Hematocrit levels, and V02 Max in female cross-country athletes. Six female cross-country athletes participated in pretesting including, V02 max, and blood draws to analyze iron absorption rates & posttest after eight-week Iron & Vitamin C supplementation intervention. All data was analyzed and was shared at the research symposium.

Fellowship Recipients: Rubina Jayden Martin & Kirsten Miller

Faculty Mentor: Dr. Leigh Latta, LC State, Division of Physical, Life, Movement and Sport Sciences

Title: *Effects of Temperature Increase on Behavior in C. elegans*

Abstract: For this experiment, behavioral analysis was completed to determine if temperature impacts the behavior of *C. elegans*. Specifically, various aspects of velocity (maximum velocity, mean velocity, and the standard deviation of velocity) were quantified using behavioral tracking and analysis software in two temperature treatment groups (18°C and 23 °C). We hypothesized that an increase in temperature would increase the speed at which these organisms move. Indeed, the results demonstrated that as temperature increased, the velocity of the *C. elegans* did as well. This may be due in part to the temperature increase stimulating greater metabolic activity in ectothermic species such as *C. elegans*. Because these nematodes have a specific temperature range at which they function properly, these results may also suggest that exceeding or failing to fall within their typical temperature range of 15°C to 25°C will result in a velocity decline initiated by their stress responses.

Fellowship Recipient: Rubina Jayden Martin & Kirsten Miller

Faculty Mentor: Dr. Leigh Latta, LC State, Division of Physical, Life, Movement and Sport Sciences
LC State, Physical, Life, Movement & Sport Sciences

Title: *Effect of Temperature on C. elegans Acceleration*

Abstract: This study examined the effects of temperature on aspects of the acceleration of *Caenorhabditis elegans*. Three generations of *C. elegans* were reared in two different temperature treatments (18°C and 23°C) and their behavior was measured using WormTracker software. Results indicated that maximum acceleration, mean acceleration, and the standard deviation of their acceleration were impacted. Specifically, the acceleration of *C. elegans* was higher for individuals in the high temperature group. Because *C. elegans* are ectothermic organisms, their behavior is dependent on temperature. *C. elegans* function best within a certain temperature range (typically between 15°C to 25°C), so the increase in acceleration in response to increased temperature is likely due to an increased metabolism. Although untested, it seems likely that when the threshold of this range is crossed, behavior may go down due to a stress response.

Fellowship Recipients: Tesla Presnell, Ava Hasenoehrl, Abigail Brown, Sara Hathaway, Jayden Youngren

Faculty Mentor: Dr. Eric Stoffregen, LC State, Division of Physical, Life, Movement & Sport Sciences

Title: *In Drosophila, survivors of Blm-deficient development exhibit a neurodegenerative phenotype that includes sleep and circadian rhythm disruption*

Abstract: *Drosophila* embryos that lack maternally loaded Blm protein experience DNA damage, leading to high embryo mortality. We hypothesized that the few embryos that survived to adulthood would experience neurodegeneration phenotypes. Progeny that developed with or without maternally loaded

Blm were studied. Those lacking maternal Blm exhibited reduced motor function, disrupted sleep, and altered circadian rhythms, suggesting increased neurodegeneration in the absence of accelerated aging.

Fellowship Recipient: Clayton Beachy, Chloe Shumaker, Joel Mullikin & Bonolo Molefe

Faculty Mentor: Dr. Jessica Savage, LC State, Division of Physical, Life, Movement & Sport Sciences

Title: *Effects of Stroboscopic Vision Impairment on Lower Quarter Balance*

Abstract: To determine the effect of stroboscopic vision on the Y Balance Test Lower Quarter (YBT-LQ) in ball sport collegiate male and female athletes.

METHODS: Male (n=1) and female (n=6) participants completed six trials of familiarization with all three reach directions: anterior (A), posteromedial (PM), and posterolateral (PL), for both right (R) and left (L) legs. Following familiarization, participants completed three trials in each direction and reach scores were recorded. Limb length measurements were used for calculation of composite scores for both right and left legs. Paired t-tests were used to identify significant ($p < .05$) differences between composite and anterior reach scores for right and left legs.

RESULTS: Significant differences were identified between R leg composite scores with (M = 87.08; SD = 5.97) and without stroboscopic vision (M = 93.93; SD = 6.31), $p < 0.01$, and R leg. A reach scores with (M= 53.16; SD = 6.40) and without stroboscopic vision (M = 63.91; SD =14.86), $p = 0.05$.

STRATEGIC INITIATIVE
Undergraduate Research Funding for
STEM Majors at the University of Idaho
FINAL PROJECT REPORT

FY 2024

Submitted to:
Higher Education Research Council
Idaho State Board of Education
P.O. Box 83720
Boise, Idaho 83720-0037

Submitted by:
University of Idaho Office of Undergraduate Research
875 Perimeter Drive
Moscow, ID 83844
October 25th, 2024



University of Idaho
Office of Undergraduate Research

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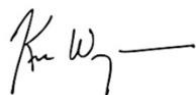
Executive Summary

Undergraduate research is recognized as a high-impact educational practice that increases the rates of student retention and engagement. At the University of Idaho, it is practiced throughout all units on campus, and it is centrally placed in the institution's strategic plan. The Office of Undergraduate Research (OUR) is taking the lead in enabling research opportunities for undergraduates at UI as it manages various competitive student grant programs that directly support student research.

During AY 2023-24, generous funding from the State Board of Education (SBoE) permitted UI to continue its Summer Undergraduate Research Fellowship (SURF) Program. This intensive 10-week summer research experience actively engages undergraduates in faculty- mentored, independent research. Over the course of the program, students are mentored toward increased independence on their projects. Each student was provided with a \$5,000 stipend in the form of a fellowship which allows them to devote full time effort to their projects. Each student was also provided with \$1,000 to help offset materials and supplies and other project-related expenses. Selection of student participants is a competitive process in which students submit research proposals to the Office of Undergraduate Research and the Director utilizes faculty affiliates in each college to review the proposals and provide selections. **This year there were 42 applications!** The Director then makes sure that projects all well-represented across colleges. It is important to note that not all projects this cycle required a supply budget. This allowed for us to fund additional students with SBoE funds. For FY24, the SBoE funding supported **11 OUR SURF** awards. All these students supported by SBoE funds attended and presented the results of their projects at the 2024 Idaho Conference on Undergraduate Research in Boise, ID on July 17-18, 2024. These students will also be required to present their results at the UI Undergraduate Research Symposium on April 21, 2025. In addition to the projects supported by SBoE funds, the OUR was able to fund **4 additional awards** to allow further participation beyond STEM disciplines.

End of project feedback from students and their mentors was overwhelmingly positive. Significantly, none of the undergraduate research projects described here would have been possible without the support provided by the State Board of Education. We sincerely thank the Higher Education Research Council and the Idaho State Board of Education for making these experiences possible for our students.

Sincerely,



Kristopher V. Waynant
Director, Office of Undergraduate Research
Associate Professor, Chemistry
kwaynant@uidaho.edu

Enhancing Comfort and Repeatability of Human-Robot Attachment Systems: Comparison of Compliant Orthoses for BLUE SABINO

Emile Johnson (College of Engineering)

Mentor: Dr. Chris Bitikofer (Mech Eng)

Abstract: The human-robot attachments (HRA) connecting humans to exoskeleton robots should facilitate user independence, efficient donning/doffing, and maintain alignment while balancing comfortable interface compliance against structural rigidity. This report presents a proof-of-concept comparison of innovative self-aligning, size-adjustable HRA components, specifically as applied to the upper arm. A novel compliant orthotic mechanism was developed, consisting of a cable-driven mechanism 3D printed out of flexible TPU filament with PLA inserts for added support and rigidity. This design was compared to the existing rigid components often used for exoskeleton applications, specifically the solid design currently used on the BLUE SABINO. Experimentation included a ballistic-gel simulated human arm fitted with an array of force-sensitive resistor (FSR) sensors to measure applied forces. Kinematic alignment was assessed across 5th percentile female to 95th percentile male sizes using 3D printed arm cross-sections. Findings provide evidence-based recommendations for the design of HRA.

Results: Pressure sensor tests comparing the developed compliant orthosis to the currently used solid orthosis revealed that a compliant approach can create a more even pressure distribution. The pressure distribution improves as it's tightened. Further, the proposed complaint design has been shown to have the potential to significantly reduce kinetic misalignment in preliminary laser alignment tests. These factors are important in ensuring patient comfort and usability in exoskeleton devices that might employ an orthosis like these. While these results indicate that the compliant design achieved improved pressure distribution over the arm mock's circumference, it's evident in the polar plots that the compliant orthosis didn't distribute pressure as evenly as would be ideal, with significant high points on the top and bottom sensors. This result is potentially a consequence of mismatch between the orthosis shape (circular) and the arm mock (oval), forcing the arm into a circular shape. Further research should investigate designing the natural profile of the compliant orthosis to match the arm's oval shape and to consider any other reasons why the low-pressure points are observed. Furthermore, future work should intentionally design in lower pressure areas around bony or sensitive areas of the arm to improve comfort and ensure safe blood flow even when the orthosis is completely tightened. Future development will seek to improve these factors while also increasing usability. Application of the recommendations from the material testing conducted in this study for a future full-scale prototyped device, consisting of an outer shell cast using Dragon Skin 30 (Smooth-On, Inc) with filled gaps cast using Ecoflex 00-10(Smooth-On, Inc.) could improve pressure spread and comfort further. A complete mounting system compatible with BLUE SABINO should also be developed to enable misalignment-free exoskeleton application. Finally, to ensure user independence, the closure system should be refined to achieve better ease of use.



The Influence of Postural Instructions on quality of touch in Partner Dancing

Colby Hillend (CLASS)

Mentor: Rajal Cohen (Psychology)

Abstract: This study will investigate the influence of postural instructions on dynamic partnered movements and quality of dance experience for older adults learning social swing dancing. Older adults face increased health risks due to social isolation. Partner dancing, which includes ballroom, Latin, and swing dances, fosters community while using non-verbal cues and physical touch. While the value of a body configuration that facilitates sufficient tension in the physical contact between dance partners is widely appreciated in the dance world, this concept has not been studied scientifically. This study will use a repeated measure design with 30 pairs of participants to investigate how postural instructions impact dance experience. The study will comprise a multi-stage dance lesson, with each stage including a baseline trial followed by three experimental trials using Effortful, Relaxed, and Light postural instructions. Participants will fill out surveys to evaluate their connection, confidence, and enjoyment after each trial. Increased enjoyment throughout the experiment is predicted, with the Light condition having the highest connection, confidence, and enjoyment ratings. Long-term potential benefits of this innovative new line of work include increasing well-being in older adults through improving the quality of dance instruction and understanding how posture affects quality of touch.

Results: Preliminary findings from 11 dyads suggest that Leads prefer the Light instructions, while the Relaxed instructions result in the lowest ratings from both Leads and Follows regarding how confident participants felt in moving together, how connected participants felt to their partner, and how much participants enjoyed the movement. When averaging across stages using a scale of 1-100 with 1 being the least and 100 being the most, Leads rated Light at 85.8 ($p=0.44$), Effortful at 81.7 ($p=.10$), and Relaxed at 71.5 ($p=0.05$) for Connection; Light at 85.2 ($p=0.46$), Effortful at 80.9 ($p=0.02$), and Relaxed at 70.5 ($p=0.09$) for Confidence; and Light at 84.8 ($p=0.04$), Effortful at 65.8 ($p=0.23$), and Relaxed at 55.4 ($p=0.02$) for Enjoyment. Follows rated Light at 81.0 ($p=0.11$), Effortful at 85.2 ($p=0.09$), and Relaxed at 74.7 ($p=0.13$) for Connection; Light at 79.6 ($p=0.10$), Effortful at 82.1 ($p=0.06$), and Relaxed at 72.4 ($p=0.16$) for Confidence; and Light at 79.1 ($p=0.71$), Effortful at 80.2 ($p=0.17$), and Relaxed at 73.5 ($p=0.20$) for Enjoyment. See Figure 1.

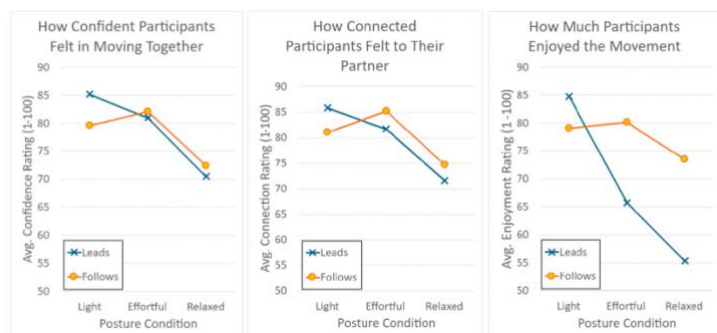


Figure 1: Average ratings for Confidence (left), Connection (center), and Enjoyment (right) for both Leads and Follows during Light, Effortful, and Relaxed posture conditions.

Preliminary Conclusions

Our clearest initial result is that both Leads and Follows experienced the least connection, confidence, and enjoyment when the Lead uses an intentionally Relaxed approach. When the arms are very relaxed, they cannot efficiently transmit information about the movement of the rest of the body. This supports the importance of teaching the “frame” to beginners in partner dancing. A limitation of this study is the use of subjective self-report measures. Next steps include testing the remaining 19 dyads, analyzing the data using 4x4 AVOVAs, reviewing video footage of partner movement, and writing a research paper. Future work will include objective assessment of how well the partners move together.

Association of Phocaeicola vulgatus and Gut Nerve Cell Damage with Diabetes

Barrett Abendroth (College of Science)

Mentor: Onesmo Balemba (Biology)

Abstract: Type 2 diabetes (T2D) is associated with debilitating disorders and poses serious healthcare burdens. The total estimated cost of diagnosed diabetes in the U.S. in 2022 is \$412.9 billion, including \$306.6 billion in direct medical costs and \$106.3 billion in indirect costs. Gut movement-related diseases are among the major debilitating conditions affecting patients. With rising prevalence, mortality, and financial costs, it is essential to combat this disease effectively. Previous research shows that mice fed a high-fat diet (HFD) have neuropathy and gastrointestinal dysmotility before symptoms of T2D. Studies of intestinal contents of HFD suggest that they accumulate proteases and toxic substances that damage gut nerve cells and inhibit muscle contractions before T2D develops. We, therefore, postulate that *Phocaeicola vulgatus*—the protease-producing gut bacterium, which is increased in T2D patients, plays a key role in instigating the development of neuropathy, dysmotility, and T2D. The goal of this proposal is to determine whether four strains of *P. vulgatus* isolated from human feces produce molecules that cause gut movement-related diseases by injuring gut nerve cells and inhibiting muscle contractions. We will achieve this by testing whether culture supernatants of these bacteria damage nerve cells and inhibit contractions of cultured duodenal muscle preparations from healthy mice. We expect to identify at least one species that reduces gut movement by damaging myenteric neurons, causing constipation, which is a common disorder in T2D patients. This research will further our knowledge of the specific cause of gastrointestinal dysfunction in diabetic patients and lead to the development of potential biomarkers for early disease detection and treatments.

Results: All four strains of *Phocaeicola vulgatus* (PV) inhibited muscle contraction after 24 hours of culture. Noteworthy, culture supernatants of one strain of PV (*P. vulgatus* DSM-3289) significantly inhibited muscle contractions after 12 hours. Bacteria culture medium and the tissue culture medium did not affect gastrointestinal muscle contractions. Our data also suggested that *P. vulgatus* DSM-3289 activated the expression of TNF-alpha in myenteric neurons and enteric glia. Similarly, *P. vulgatus* DSM-108234 activated the expression of TNF-alpha in myenteric neurons and enteric glia. However, quantitative analysis of our data indicated that *P. vulgatus* DSM-3289 significantly increased TNF-alpha expression in myenteric neurons while *P. vulgatus* DSM-108234 increased TNF-alpha expression in enteric glia. Qualitative analysis indicates a similar pattern with Caspase-11 expression, where *P. vulgatus* DSM-3289 activated caspase-11 expression in myenteric neurons, while *P. vulgatus* DSM-108234 activated caspase-11 expression in enteric glia. We are performing quantitative analysis of Caspase-11 expression to confirm these observations.

Conclusions: The gut microbiome is linked with causing motility-related disorders in diabetes patients by damaging nerve cells in the gut. However, molecules responsible for causing these effects and the exact bacteria strains are not known. Here we show for the first-time findings suggesting that exudates and transudates of *P. vulgatus* strains, especially *P. vulgatus* DSM-3289 decrease gastrointestinal motility by inhibiting muscle contractions and damaging myenteric neurons.

Damage to myenteric neurons play the primary role in driving diabetic gastrointestinal disorders (gastroparesis, constipation, diarrhea and pain). We have previously shown that fecal supernatants of mice fed high-fat diets to model obesity and type 2 diabetes contain unknown water-soluble molecules that damage myenteric neurons *ex vivo* by activating inflammation and oxidative stress. The findings that *P. vulgatus* DSM-3289 activated TNF- α expression in myenteric neurons, while *P. vulgatus* DSM-108234 activated TNF-alpha expression in enteric glia, supports the view that the byproducts of *P. vulgatus* DSM-3289 and DSM-108234 are toxic to enteric neurons and glia. Likely the byproducts underlie the significant differences between *P. vulgatus* strains in decreasing intestinal muscle contractions and activating inflammation in myenteric neurons and glia and could trigger cell death.

Sustainable weight of Ear-borne Virtual Fence on cows

Emma Macon (College of Natural Resources)

Mentor: Karen Launchbaugh (FRFS)

Abstract: Virtual fence is a promising tool for adaptive management of livestock grazing. Currently, there are several companies offering neck-collar devices, similar to the invisible fence used for dogs. Based on rancher input, a push is being made to see if virtual fence technology can be transitioned from neck collars to an ear-borne device. One of the biggest challenges in this transition is identifying a sustainable weight for the devices that allows proper healing of the ear piercing and minimal long-term irritation. Other research with ear-borne devices on cattle has suggested maximum weights anywhere from 30-250 grams. Previous research conducted at the University of Idaho suggests that 60 grams may be a realistic target weight when using two-prong ear tags (EnduroTags). The goal of this proposed research is to 1) determine whether a healing period before weight application is optimal for ear health; 2) establish where it is best to place weight on the ear that promotes good ear health; and 3) determine the effects of combined weight and probe configuration on ear health.

Results: A 2-week healing period after tags were applied but before additional weight was added, resulted in lower scores indicating greater levels of healing (Fig. 3). Further analysis supported that the majority of animals with a healing period ranked in the lower half of our overall rank ($Z=\pm 2.731$, $p=0.0063$) meaning less crust, scar tissue, and blood was observed at the end of this experiment.

Secondly, weight placement on the ear tag did not affect ear droop (orientation) and mobility ($p>0.05$) and there was no statistical difference in irritation between treatments, but 83% of animals in the “Front-Bottom” treatment exhibited irritation while in the “Front + Back” and “Front-Post” treatments, 67% and 50% of animals exhibited irritation, respectively and there was a difference in the pendulum effect between treatments ($p=0.0000617$). The degree to which the ear tag swung when animals moved their head was scored with increasing severity. Initial analysis showed a difference in swing between treatments ($H=12.538$, $df=2$, $p=0.00189$). Further analysis revealed ears with tags that had weight near the posts showed less swing than ears with tags that were weighted near the bottom ($p<0.05$), however there was no difference when weight was located at the bottom of the tags ($p>0.05$; Fig. 4).

Conclusions

A 2-week healing period before the application of weight to an ear tag is effective in decreasing ear irritation and allows for greater healing once weight is applied. This information is valuable for developing devices applied to livestock ears. Weight placed near the ear tag posts limits the swing and pendulum effect of the ear device which may reduce irritation. Our observations indicate a developing trend between irritation and swing severity; however, a longer study would be necessary to make a conclusion. Finally, electrode configuration and construction will be an important factor in promoting good ear health. We suggest that airflow around the electrode site will be important to minimize adverse effects of electrodes and weight configuration.

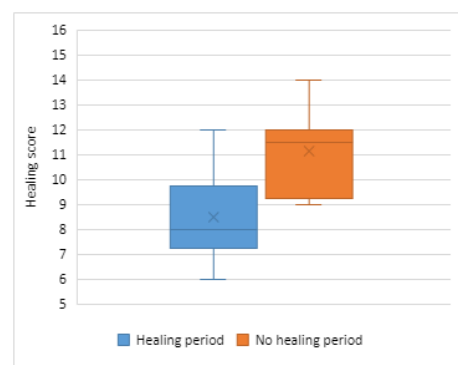


Figure 3. Average healing score that each treatment was given upon the final observation.

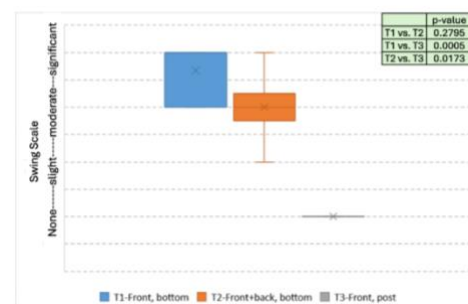


Figure 4. The range of scores recorded in each treatment

Protease Involvement in Prophage Induction Therapy

Loretta Rodman (COS/CALS)

Mentor: James Van Leuven (AVFS)

Abstract: *Paenibacillus larvae* is a bacterial pathogen that infects honeybee larvae, causing American Foulbrood disease. Options to treat and control *Paenibacillus larvae* infections are limited due to this bacteria's resilience and swift emergence of antibiotic resistance, thus, research to identify and test alternative therapies is a significant priority. The purpose of this research proposal is to test the effectiveness of prophage induction therapy to control *P. larvae*. Prophage induction therapy includes exposing a bacterial culture to an inducing agent, resulting in cellular production of phage virions and synchronized lysis of the bacterial cells. Genomic analysis of *P. larvae* strains revealed that the majority of strains carry two or more prophages in their genomes, indicating prophage induction therapy could be a useful approach. Although preliminary prophage induction testing using classic inducing agents such as ultra-violet light and mitomycin C have not been successful, our lab was able to successfully induce prophage production from *P. larvae* using proteinase K. There are currently no reports describing induction of prophage with proteinase K. Thus, the aim of this proposal is to test the effectiveness of various proteases for inducing prophage from *P. larvae*, which may uncover novel prophage inducing agents.

Results: After multiple failed attempts of trying to induce prophage with the tailocin stability testing and not getting inducing prophage it was determined that further investigation in the experiment was deemed necessary. After investigating the original parameters that induced prophage with Proteinase K, it was determined that standard procedure was not being followed and would most likely be unable to be replicated. It was determined in a meeting that the project be switched to another experiment that would be able to have obtainable data that would still fit the budget parameters. After some trial and error, it was concluded to test different phage-resistant strains of 3650 *P. larvae* on honeybee larvae to test if the mutations that made the bacteria resistant to the phage caused any changes in its virulence. Streak plates of the phage resistant bacteria that were obtained were: Heath X, Scottie r, Scottie y, Wa alpha, and XIII Ba. They were named after the phage that they were resistant to. Before testing these strains on larvae, a dilution test was conducted on the strains to be able to determine the cell count in relation to a certain Optical Density (OD) where the OD range for experiments were 0.7-1.0.

Note that due to difficulty growing the dilution tests for Wa alpha and XIII Ba there is no data yet. A growth curve was also conducted on each strain by adding a single colony into 3mL of BHI broth and letting it incubate for 7 days in a 37° C incubator. Each day 200uL of the solution was used to test the OD. For the first virulence test a 48-well plate of 0-3 day old larvae (0-3 days after hatching) were grafted from the same frame. 3650, one resistant strain, the same resistant strain at a higher cell count, and a control were all keep in one plate. The plate was fed 1uL of cells and 10uL of feed. They were then fed every day at the same time with the feeding regiment advised in the Coloss bee guide.

Conclusion

The first, and so far, only survivability test has inconclusive results because by day 4 all of the larvae were dead even the control. This could be due to possible contaminants. There will be more replicates with all the strains to allow for a more accurate representation. Graphing error killing 25% of controls is to be expected but this is much higher. The growth curve of 3650 has a much higher OD at day 1 compared to the other phage-resistant strains which then slowly tapers off. The phage-resistant strains take longer to get to higher ODs which means they have a slower replication rate than the wild type 3650. This change could cause the phage-resistant strains to be less virulent since this bacterium is not as deadly to larvae infected at ages older than 4 days after hatching.

Autonomous Weeding Robot Machine Vision Research

Kevin Wing (College of Engineering)

Mentor: John Shovic (Comp Sci.)

Abstract: This project aims to perform a comprehensive study focused on enhancing reforestation efforts through the application of machine vision and plant-identification algorithms in agricultural robotics. With the urgency of environmental restoration underscored by initiatives like the REPLANT Act, this research aligns with Project Evergreen’s objectives to optimize weed identification and eradication, thus promoting healthier forest regeneration. By researching plant identification algorithms and leveraging machine vision for precise weed and seedling differentiation, the project aims to advance autonomous weeding robots’ capabilities, reducing manual labor and improving seedling growth environments. This endeavor not only supports efficient reforestation but also offers a scalable, technology-driven model for environmental conservation, addressing the distinct challenges associated with sustainable agriculture and forestry.

Results: A convolutional neural network (CNN) was determined to be the ideal solution for detecting various weed species in a nursery setting, with the YOLOv8 architecture chosen specifically for its real-time capabilities. The decision to train on a diverse dataset comprising multiple weed types aimed to improve the model’s generalization and applicability in real-world conditions. The model achieved a precision of 0.52 and a recall of 0.47, resulting in an F1 score of 0.49. These results indicate a moderate ability to correctly identify weeds, highlighting the challenges of achieving a balance between precision and recall across different weed species. Further analysis showed variability in detection performance across weed types, suggesting the need for targeted improvements.

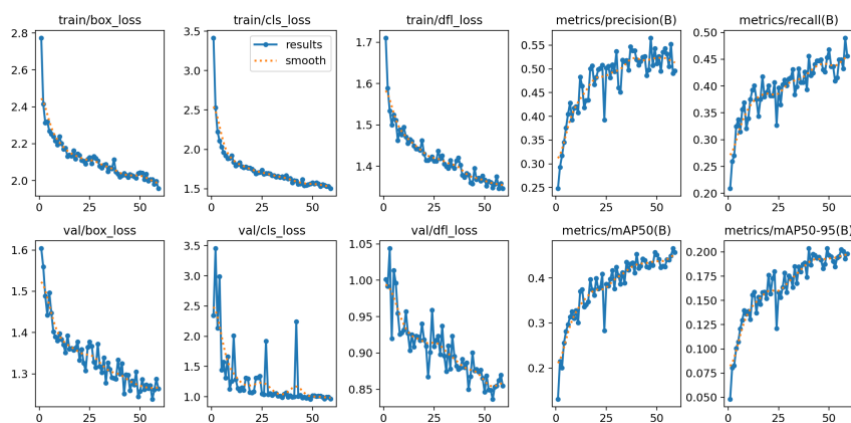


Figure 3: Model Accuracy over Training

Conclusions: The deployment of a YOLOv8-based model for detecting various weed species in a nursery setting has shown moderate success. The model achieved a precision of 0.52 and a recall of 0.47, leading to an F1 score of 0.49. These results suggest that while the model can identify weeds to some extent, improvements are needed to enhance both precision and recall. The variability in performance across different weed types highlights the need for further refinement of the model and dataset. Future work will focus on optimizing the model’s architecture and expanding the training dataset to improve detection accuracy under diverse environmental conditions. Integrating this technology into an autonomous weeding robot continues to hold promise for improving seedling survival and reducing manual labor costs in the nursery.

Effects of Beaver Dams on Songbird Diversity in Semi-Arid Western Rangelands

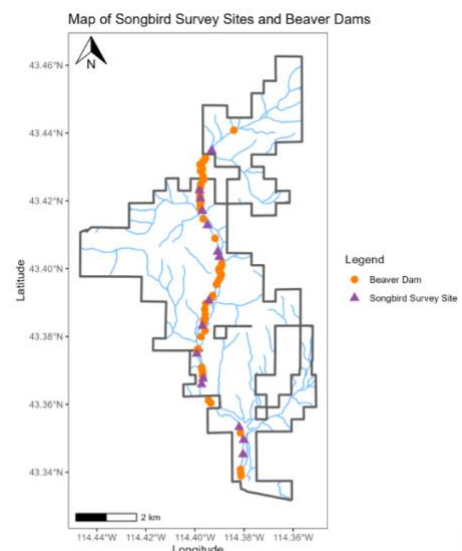
Annie Vaage (College of Natural Resources)

Mentor: Simona Picardi (FWS)

Abstract: Semi-arid western rangelands are commonly known to be moisture limited, and riparian habitats are vital for wildlife in these regions. Within riparian habitats, beavers are ecosystem engineers that can modify the landscape by building dams along rivers and creeks. Past studies have shown that beavers can positively impact other wildlife, including songbirds. In this study, we will examine songbird occupancy in relation to dam presence and characteristics at Rinker Rock Creek Ranch (semi-arid sagebrush steppe traversed by a riparian corridor). The objective of this study is to test the hypothesis that beaver activity increases songbird occupancy in riparian habitats in western rangelands. We predict that songbird occupancy will be inversely correlated with distance to beaver dams and positively correlated with their size and density. To test this hypothesis, we will collect occupancy data on songbirds to relate with the beaver dam data, while controlling for cattle presence and density. This research will provide valuable information to managers at Rinker Rock as they implement the construction of artificial beaver dams along the creek in the future. Field research was completed from May to July.

Preliminary Results:

I finished the songbird field data collection on July 26th, 2024. I worked Monday through Friday and performed 135 site visits to 15 distinct survey sites (9 visits per site). I spent a total of 405 minutes conducting songbird surveys (3-minutes per survey). Overall, I detected 66 bird species (53 songbird species). Red-winged Blackbirds (225), Song Sparrows (198), Yellow Warblers (154), and Western Meadowlarks (113) were the most commonly detected species. There were 1,416 total bird detections (including repeated counts of the same species). This summer we censused a total of 286 dams along Rock Creek and its tributaries. Of those 286 dams, 217 are natural and 69 are man-made (BDAs). 28 dams were classified as active, 93 as inactive, and the remaining 165 as breached. In Fall 2024, I will analyze the songbird and beaver dam data using occupancy models to answer my research question, hypothesis, and prediction.



Outcomes of this work include:

- Scientific outcome: an improved understanding of the role of beavers in creating habitat for other wildlife in arid rangelands, particularly songbirds;
- Management outcome: inform the implementation of BDAs as a management tool to enhance wildlife habitat at Rinker Rock Creek Ranch;
- Data generation outcome: a complete census of beaver dams at Rinker Rock Creek Ranch, which will be used in this project as well as other research projects based at the Ranch (including a graduate project led by a MS student supervised by Dr. Simona Picardi);
- Educational outcome: gain experience in the process of conducting research, from field data collection to analysis to communication.

Conclusions: *An improved understanding of the role of beavers in creating and facilitating habitat for other wildlife in moisture-limited systems, particularly songbirds. This research provides valuable information to managers at Rinker Rock as they implement the construction of artificial beaver dams (BDAs) along the creek in the future.*

Digital Threads: Grafting sustainable fashion with 3D printing and virtual garments

Aayushree Lama (Virtual Tech and Design)

Mentor: Lori Wahl (Textile Design)

Abstract: The fashion industry annually disposes of 92 million tons of textiles in landfills and is ranked third in the world for emissions. The industry has a projected increase of 50% in global emissions alone by 2030. Sustainable practices must be explored and implemented to reduce waste and use resources more responsibly. 3D printing offers a way of producing fantastical digital designs that may require new approaches to construction rather than traditional cut-and-sew methods using fabric and a sewing machine. By integrating sustainable filaments and fabrics in a single garment, this research developed a sustainable method of producing garments using a combination of cut-and-sew techniques and 3D printing. I developed a two-piece, wearable garment for the physical world and a virtual, digital version for virtual applications.

Results

I created seven small-scale prototype 3D prints and two full-scale prototype prints, along with three virtual prototypes before moving into physical prototypes. Two physical garment prototypes were constructed before the final garment, with three test prints used to develop the application of Croma Fácil and varying surface smoothing techniques. Experimentation with and without clear gloss varnish helped achieve a metal-like finish, and sanding was used to enhance smoothness. Challenges arose with the adhesion of Croma Fácil, requiring 7-8 layers of repainting for proper coverage. An initial design intended to attach around the body was incompatible with the filament's properties, leading to the creation of small notches that served as loopholes to sew the 3D printed attachment onto the base garment. The project primarily focused on refining the finish and attachment systems for the top, ensuring a secure and aesthetically pleasing outcome. Early prototype prints posted to Instagram garnered over 57,000 views, attracting significant interest in the designs and potential future accessories.



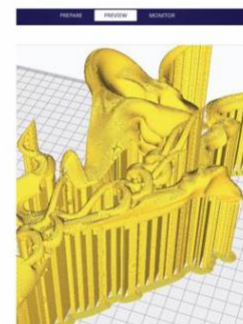
3D Modeling prototype on nomad and 3Ds max.



Digital base garment prototype in Browzwear.



Attachment on the 3D printer in PLA filament. Buildplate dimensions are 420 x 420 x 500 mm



3D model in the slicing software with supports visible.



Croma Fácil on the test prints.



Physical base garment prototype.

Beyond Negotiation: Unveiling the Economic Impact of Unionization on automotive industry performance

Anna Bliss (College of Business and Economics) **Mentor: Shenghan Xu (Supply Mgmt.)**

Abstract: This research project examines the relationship between CEO compensation and company performance within the context of corporate governance. It outlines the structure of corporate governance, the process of becoming a CEO, and the role CEOs play in leading companies. The study explores the factors that determine CEO pay, including performance-based incentives and board decisions. Using regression analysis on data from S&P 500 companies, the research assesses whether CEO compensation is justified by key performance metrics like Return on Assets (ROA) and Return on Equity (ROE). The findings highlight the ongoing debate surrounding CEO pay, with mixed evidence on whether it aligns with company performance. The study concludes that the justification of CEO compensation depends on various factors, including how pay is structured, the effectiveness of corporate governance, and broader economic and social considerations. While performance-based pay can align CEOs with shareholder interests, concerns about pay disparity and governance issues continue to drive debate.

Results: To quantitatively assess the relationship between CEO compensation and company performance, regression analysis was employed. The dependent variable in the regression model was CEO compensation, while the independent variables included the financial performance metrics derived from the DuPont Model—specifically ROA and ROE. This statistical approach aimed to determine whether there was a significant relationship between CEO pay and these performance indicators.

A comprehensive literature review was conducted to provide qualitative insights that complement the quantitative analysis. The review focused on existing research on CEO compensation, particularly studies that explore the connection between executive pay and company performance. It also examined the role of corporate governance in setting CEO compensation, ethical considerations surrounding pay disparities, and the strategic and operational factors that influence CEO effectiveness.

Summary: The project underscored the complexity involved in determining CEO compensation. While performance metrics like ROA and ROE are often cited as justifications for high pay, the weak correlation observed suggests that other factors—such as the CEO’s role in strategic decision-making, crisis management, and market positioning—are also critical in shaping compensation packages. Also the role of corporate governance emerged as a pivotal factor in CEO pay determination. The literature review and data analysis both pointed to the influence of board oversight and shareholder activism in setting compensation. Effective governance can ensure that CEO pay is aligned with company performance and shareholder interests, while weak governance can lead to excessive pay that is not justified by results.

Pay Rank	CEO	Company (TICKER)	Total Pay (MILLIONS)	Cash Pay (MILLIONS)	Change From 2022	Pay Vs. Industry	Return vs. Industry	1-Year Return	Total Pay (MILLIONS)	Median Employee Pay	Industry
1	Hock Tan	Broadcom (AVGO)	\$161.83	\$1.20	▲167%	\$\$\$\$\$	■■■■■	▲83.70%	161.83	317199.00	Semiconductors & Semiconductor Equipment
2	Nikesh Arora	Palo Alto Networks (PANW)	\$151.43	\$2.25	▲135%	\$\$\$\$\$	■■■■■	▲50.20%	151.43	206035.00	Software & Services
3	Stephen Schwarzman	Blackstone (BX)	\$119.78	\$0.35	▼-52.70%	\$\$\$\$\$	■■■■■	▲82.80%	119.78	245000.00	Financial Services
4	Christopher Winfrey	Charter Communications (CHTR)	\$89.08	\$5.20	▲470%	\$\$\$\$\$	■■■■■	▲14.60%	89.08	54476.00	Media & Entertainment
5	Will Lansing	Fair Isaac (FICO)	\$66.35	\$1.95	▲251%	\$\$\$\$\$	■■■■■	▲110.80%	66.35	101674.00	Software & Services

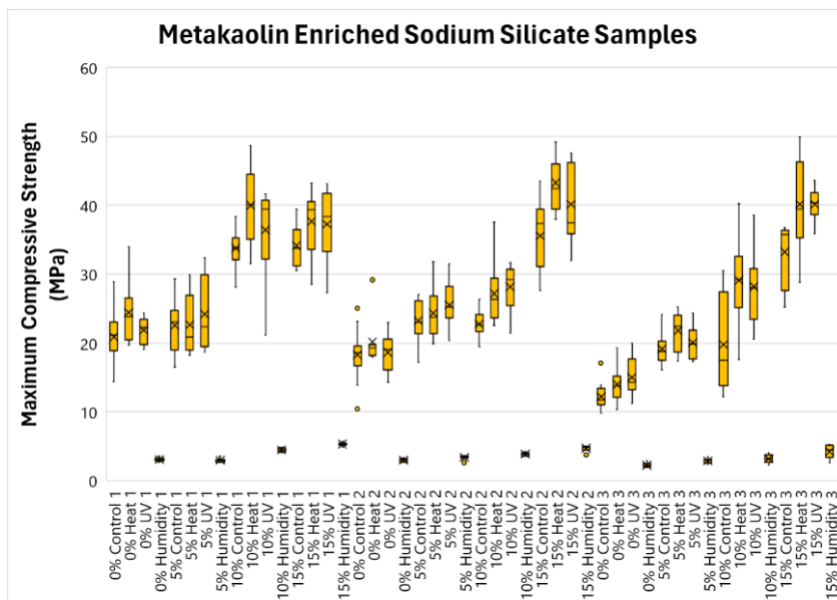
Organized Collection of Data (Collected through Web Scraping)

Metakaolin Modification for Enhanced Durability: Evaluating the Longevity of 3D Printed Wood Material

James Setters (College of Engineering)

Mentor: Mike Maughan (Mech. Eng.)

Abstract: Our research group aims to use additive manufacturing to make biobased wood houses. To assess the real-world durability of our environmentally friendly 3D printed material, we are addressing concerns such as ultraviolet light, humidity, and extreme temperatures. These conditions were simulated using two testing chambers including the COOSPIDER UV resin curing light lamp and the TestEquity 1000H Series. I propose to conduct experiments to analyze the effects of aging on our material and explore the impact of adding an alkali activator, metakaolin, to enhance water resistance in the wood composite. The testing involves extruding rods of sodium silicate wood (SSW) mixture and sodium silicate metakaolin wood (SSMW) mixture. Specimens were cut and tested, with multiple specimens from each group serving as the control groups. The remaining specimens will be divided into groups of 8, exposed to various weathering events, and then tested for compressive strength using the Instron 5500R. The metakaolin-enriched samples outperformed the others, demonstrating resilience against the environmental challenges applied.



Results: As shown in the Figure a trend is apparent that indicates the more metakaolin you add to the mixture of sodium silicate and wood flour the higher the compressive strength is expected to be. Within the SSMW mixtures groups, the 15% metakaolin group outperformed the rest. My hypothesis was that the infusion of additional 3D networks of silica into our material could usher in a marked enhancement in both weather resistance

and compressive strength. This was only partly correct, the samples that were enriched with metakaolin did perform better with compression, but the humidity test samples performed 85% worse, proving that the metakaolin did not enhance water resistance in our material.

Conclusions: Adding metakaolin improved the mechanical properties of our material by increasing the number of 3D networks of silica but did not notably improve its water resistivity. Going forward we will need to find a new additive, a different resin or a new curing method that can provide water resistant qualities while still maintaining its compressive strength. This is an important factor in making sustainable housing for future generations and because of this study we now know how to increase the compressive strength of our material by up to 5 times more than the control groups.

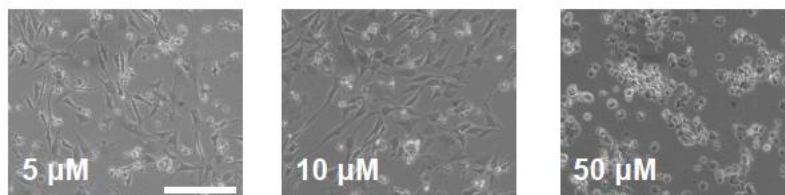
Exploring the role of MRTF-SRF signalling in the regulation of collagen crosslinking enzyme production by stem cells

Andrea Cernuda Herraiz (College of Engineering)

Mentor: Nate Schiele (Biol. Eng.)

Abstract: The reduced ability of tendon tissue to regenerate and heal following damage or rupture, alongside the financial burden associated with treating these tendon pathologies, highlights the potential of tissue engineering using mesenchymal stem cells (MSCs) as a therapeutic route to approach this clinical issue. However, many gaps in knowledge exist pertaining to MSCs ability to differentiate into functional tendon tissue, or tenogenesis. Understanding tenogenesis is crucial in tissue engineering and regenerative medicine approaches. To investigate this, this study tests the myocardin-related transcription factor (MRTF) - serum response factor (SRF) cell signaling pathway, known to regulate gene expression in response to changes in the cytoskeleton. Additionally, lysyl oxidase (LOX) is a critical enzyme involved in the cross-linking of collagen and elastin fibers in the extracellular matrix (ECM), and appropriate collagen cross-linking is essential for maintaining tendon structural and mechanical properties. This project will investigate LOX production, its regulation via transforming growth factor (TGF) β 2 and its relationship with the MRTF-SRF pathway. The objective is to explore the effect of the activation of the MRTF pathway on LOX production by 1) testing whether TGF β 2 activates MRTF-SRF and 2) evaluating the chemical inhibitor CCG-1423 to assess whether MRTF is the mechanism of LOX production.

Results: TGF β 2-induced tenogenic growth of MSCs proceeds despite CCG-1423 treatment. Initial cytotoxicity tests were conducted to evaluate the optimal concentration range of CCG-1423 optimal for cell viability and effectivity in inhibiting MRTF-SRF pathway signaling during TGF β 2-induced tenogenesis. MSCs were treated with TGF β 2 at 50 ng/mL and CCG-1423 at 5, 10, and 50 μ M (left to right) and were collected on day 3. With increasing CCG-1423 concentration, cytotoxicity increases and cell viability decreases. MSCs treated at these concentrations showed a reduction of fibroblastic morphology and increased death rate due to cytotoxicity. Therefore, further testing of CCG-1423 cytotoxicity was conducted using lower concentrations. The control groups, consisting of MSCs treated with DMSO and 50 ng/mL TGF β 2, showed no visible morphological changes with respect to the treatment groups, which consisted of MSCs treated with 500 nM, 1 μ M, and 2 μ M. In terms of LOX enzyme production, LOX does not seem to be consistently impacted by CCG-1423 treatment. However, Western blot and densitometry analyses showed an increase in LOX production in the TGF β 2 treatment groups, which is consistent with our lab's previous findings. Thus, densitometry analyses showed inconclusive impact in LOX production by MRTF-SRF inhibition.



Conclusions: The use of the first-generation inhibitor CCG-1423 allowed cell viability but presented no visible morphological changes at concentrations lower than 2 μ M during tenogenic growth of MSCs. Therefore, it is concluded that the use of CCG-1423 must be further assessed for its effectiveness in inhibiting MRTF-SRF activity. Additionally, the second-generation inhibitor CCG-203971, known to be less cytotoxic, will be assessed due to its potential for enhanced efficiency. Furthermore, Western blotting and densitometry analyses showed no conclusive evidence of changes in LOX production due to MRTF-SRF inhibition. Thus, an additional experimental process to better understand the impacts of activating MRTF-SRF pathway must be conducted, as well as exploration of whether LOX is more related to cellular morphology change or other potential TGF β -induced signaling pathways.

Exploring the Potential of the Novel Killer Toxin K21L in *S. kudriavzevii*

Lily Givens (College of Science)

Mentor: Paul Rowley (Biological Sciences)

Abstract: Fungal infections, particularly those caused by *Candida* species, pose a significant threat to global health. This threat is exacerbated by limited, and often ineffective treatment options that rely on chemically synthesized medications. A potential alternative to traditional antifungal drugs lies in the application of “killer toxins” produced by certain yeast strains. Yeast exhibiting the “killer” phenotype are capable of secreting toxins that are harmful to neighboring susceptible yeasts while maintaining immunity themselves. This project will investigate the novel killer toxin K21L found in *S. kudriavzevii*, a homolog of the K21 toxin found in *S. paradoxus*. Preliminary data shows a high level of sequence similarity between K21 and K21L, indicating the newly discovered K21L will likely possess the killer phenotype. This project aims to confirm the presence of the K21L gene and killer toxin expression by *S. kudriavzevii*. Subsequent cloning of K21L and expression by *S. cerevisiae* will confirm that K21L is a killer toxin. This work is novel because there is no known strain of *S. kudriavzevii* in the literature that possesses the killer phenotype. The validation of the K21L toxin would establish K21L as the first known killer toxin in this species.

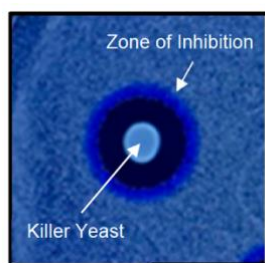


Figure 1: Killer yeast inhibiting the growth of a susceptible yeast. Dead, susceptible yeast cells become stained by methylene blue, while the living yeast are able to reduce it and remain brightly colored.

Results: The presence of the killer phenotype was indicated by a zone of growth inhibition or staining of susceptible lawn yeasts by methylene blue. Multiple known toxins (K2 & K28) were used as positive controls. Both toxins were tested against 29 lawn strains. K21 inhibited the growth of 9 strains. K21L inhibited the growth of 17 strains. 8 susceptible strains were shared between the two toxins. Strains susceptible to both toxins showed a larger zone of growth inhibition against K21. The novel toxin K21L found in *S. kudriavzevii* Y27342 possess the killer phenotype.

Conclusions: The killer phenotype of K21L is due to the presence of a cytoplasmic persisting dsRNA virus. K21L exhibits similar killing activity to its homolog K21L. Further experimentation must be done to confirm the sequence of the M21L sequence in *S. kudriavzevii* due to inconclusive preliminary results. Future work will include continued work on confirming the sequence of the M21L sequence, cloning and expression of K21 and K21L in *S. cerevisiae*, experiments investigating spectrum of activity of K21 and K21L at varying pH and temperature and designing of chimeras of M21 and M21L.

K21	K21L	
		<i>N. dair</i> NCYC_777
		<i>C. glab</i> ATCC 2001
		<i>C. glab</i> Y-1417
		<i>C. glab</i> Y-17256
		<i>C. glab</i> CBS 138
		<i>S. cer</i> BY4741
		<i>S. cer</i> CYC_1113
		<i>S. cer</i> DSM_70459
		<i>S. cer</i> MS300C (K28)
		<i>S. cer</i> NCYC_1001
		<i>S. cer</i> Y-2429
		<i>C. glab</i> YB-181
		<i>C. glab</i> ATCC 66032
		<i>C. glab</i> ATCC 90030
		<i>S. par</i> OS 294 (K74)
		<i>K. afr</i> NCYC 2729
		<i>N. cast</i> NCYC 2898
		<i>S. cer</i> K12
		<i>S. par</i> CBS 432
		<i>S. par</i> A12C
		<i>S. mik</i> NBRC 1815
		<i>S. mik</i> SSS 211
		<i>S. mik</i> NBRC 10993
		<i>S. kud</i> NBRC 1802
		<i>S. kud</i> NBRC 10991
		<i>S. kud</i> SSS 411
		<i>S. bay</i> CBS 7001
		No killing ability found
		Blue halo present
		Clear zone present
		Both blue halo and clear zone

Understanding the cell forms that underlie the chlamydial developmental cycle

Megan Ward (College of Science)

Mentor: Scott Grieshaber (Biological Sciences)

Abstract: *Chlamydia trachomatis* is a bacteria that relies upon a developmental cycle consisting of three distinct cell forms: reticulate bodies (RBs), intermediate bodies (IBs), and elementary bodies (EBs). RBs replicate within host cells but are not infectious. EBs are infectious but cannot replicate. IBs are transitional forms from RB to EB. Developmental cycle completion is central to chlamydial pathogenesis in that *C. trachomatis* are obligate intracellular parasites of eukaryotic cells. Infection of this specific genus of *Chlamydia* can cause blinding trachoma as well as STIs with the potential to cause pelvic inflammatory disease and infertility. The regulation and mechanisms of these cell forms are currently poorly understood. Preliminary and published data indicate four stages of the cycle, but understanding cellular contributions to the developmental cycle and pathogenesis can be difficult due to mixed cell environments of chlamydial inclusions. Therefore, this project will focus on understanding the regulation of gene expression in these early populations, and the impact of regulation on the infectious cycle. We will develop a CRISPRi knockdown screen to assess the role of essential genes on cell type regulation, and then investigate the role of cell type-specific expression.

Results: Over the course of this summer, I designed plasmids using Benchling, an online software for the visualization and construction of theoretical plasmids. The software allowed me to use sequences from preliminary studies to piece together theoretical plasmids that I would then be making in the lab. My advising professor helped me to create the basic template that is used for CRISPR constructs, adding on the bits and pieces to target specific sequencing in this knockdown project. Making the backbone of the plasmid was successful after two tries, with bright bands of DNA showing up on the electrophoresis gel. The bands of DNA were cut out and purified.

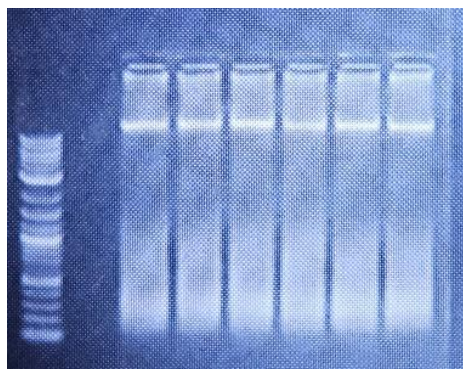


Figure 3. This image shows results from an electrophoresis gel, including a 10KB ladder on the far left and 6 samples of DNA backbone to the right. A dye allows UV to cause the bands to glow brightly just above the top “rung” of the 10Kb ladder, indicating that it is at our projected 16Kb size. The other gradients that appear in the sample columns are fragments and debris. The DNA bands were cut out using sterile razorblades, and then purified using centrifugation.

Conclusions and Future Directions: I’m now re-doing the PCR for the backbone again to have more available, using two different guide RNA templates. I will then repeat the ligation with a 5:1 ratio and a flush of insert for each one. Every colony that results will be streaked out for isolation, grown in *E. coli* within liquid LB media, purified using a miniprep, and sent out for sequencing. I’m also working with my professor to reassess the design of the plasmid on Benchling to look for any errors.

Without a proper cloning of the constructs with sequencing verification, I cannot move forward with a chlamydial transformation, as well as other tests and assays that would follow. If I can finally get this plasmid to ligate and give me colonies that come back with the correct sequencing, I can then transform it into *Chlamydia trachomatis* using host epithelial kidney cells from the African greenback monkey. From there, I can continue with entry and growth assays, as outlined above, as well as the testing for the phosphorylation of TARP.

Impact of TGFB and Akt on lysyl oxidase production in mesenchymal stem cells

Julia Palmer (College of Engineering)

Mentor: Nathan Schiele (Biol. Eng.)

Abstract: Tendon injuries are common and result in altered mechanical properties, affecting quality of life. In developing tendons, collagen molecules within collagen fibrils are crosslinked by the enzyme lysyl oxidase (LOX), establishing a strong collagen network and impacting the mechanical properties of tendon (Marturano et al 2013). A challenge for developing therapies to control LOX and tendon function is the limited information on the mechanisms that regulate LOX production by cells. To address this, our recent work found that LOX production may be increased by mesenchymal stem cells (MSCs) when treated with transforming growth factor (TGF) β 1 or (TGF) β 2 (Pancheri et al 2024), but the cell signaling pathways involved in this regulation are unknown. TGF β cell signaling may include the Akt pathway, and our prior work suggests Akt may regulate stem cell differentiation toward the tendon lineage (tenogenesis) (Theodossiou et al 2021). Akt is a kinase that, once activated (phosphorylated), can influence various cellular processes including cell growth, protein synthesis, and apoptosis (Gopallawa et al 2021). Though previous studies suggest Akt signaling and TGF β impact tendon, the cell signaling cascade that results in the regulation of LOX by MSCs remains unknown. Therefore, the objective of this study was to determine how TGF β -induced LOX production by MSCs is regulated by Akt signaling. To assess this, we treated MSCs with TGF β 1 or TGF β 2 and a chemical inhibitor of Akt (MK-2206) or chemical activator of Akt (SC-79) and evaluated LOX protein production.

Results: TGF β 2 treatment resulted in a fibroblastic cell morphology at all timepoints. MK-2206 treatment appeared to impact the MSCs resulting in less fibroblastic morphology and lower cell density, beginning at day 1 (Fig 1A). TGF β 2-induced p-Akt was also found to trend down ($p = 0.09$) with MK-2206 treatment at day 1, and p-Akt remained reduced at days 3 and 7. LOX levels were significantly increased with MK-2206 at day 1 ($p < 0.05$) and continue to trend upward at days 3 and 7, compared to all controls groups (Fig 1B). To determine if TGF β 1 impacts LOX production through Akt, we explored how LOX levels are impacted by MK-2206 and TGF β 1. Our initial findings suggest that MK-2206 altered TGF β 1-induced cell morphology and Akt activation, similar to our prior findings with TGF β 2. However, at day 3, MK-2206 treatment resulted in a trending ($p = 0.09$) decrease in TGF β 1-induced LOX production. This is an interesting finding and suggests that Akt may play a unique role in LOX production depending on the TGF β isoform. This is particularly intriguing as TGF β 1 is typically associated with fibrosis, while TGF β 2 is typically associated with tenogenesis. Further studies are ongoing to better understand the role of Akt activation in LOX production by C3H10T1/2 MSCs. For example, our preliminary findings showed at SC-79 resulted in a transient Akt activation after 1 hr, and LOX appeared to be decreased, compared to vehicle controls. However, this will need to be

studied further. In summary, activation of Akt in MSCs may have a regulatory role in TGF β -induced LOX production. These findings enhance our understanding of how the Akt pathway is involved in LOX-mediated collagen crosslinking, which will improve tendon tissue engineering and treatments to restore tendon function.

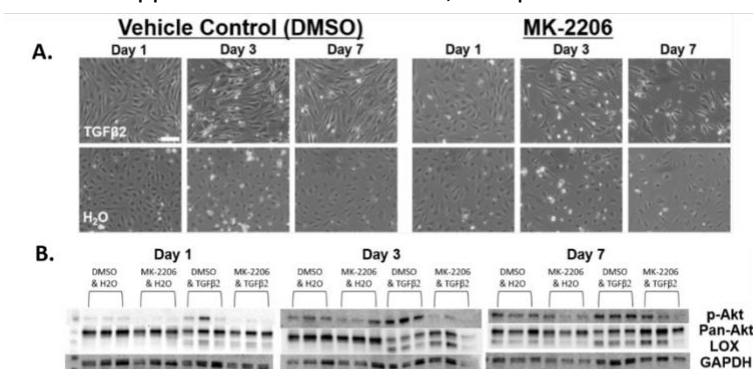


Fig 1: A. Phase contrast images of MSCs on days 1, 3, and 7, treated with DMSO (left) and 500 nM with MK-2206 (right). Cells were also treated with TGF β 2 at 50 ng/mL (top row), or sterile water (bottom row). Scale bar=250 μ m. **B.** Western blots show protein levels of p-Akt, Pan-Akt, LOX and GAPDH (loading control) at day 1, 3, and 7. Each lane corresponds to a biological replicate ($n=3$).

Transcriptional investigations into Neonatal Gut Development related to Early Feeding

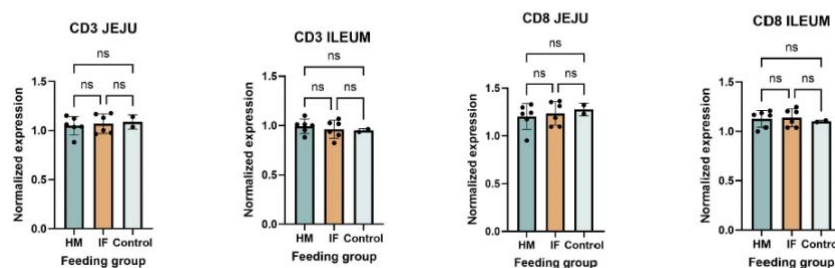
Sierra Keele (Biology)

Mentor: Bethany Fehrenkamp (WWAMI)

Abstract: While numerous correlational studies suggest that human milk (HM) optimizes infant gut development¹, little is known about the physiological process. To investigate HM's protective mechanisms for intestinal development, we used the neonatal piglet model. The recommended time to exclusively breastfeed an infant is six months², which is equivalent to one month in piglets³. We hypothesized that HM-fed piglets would show increased paracellular junctions and reduced inflammatory markers in the intestines compared to infant formula (IF)-fed piglets.

Methods: We reared littermate Yorkshire-duroc piglets for 28 days, assigning them to HM-fed (n=6) and IF-fed (n=6) groups, alongside controls reared on sow's milk (n=2) at the farm. Following euthanasia and tissue collection, we extracted RNA from intestinal tissues, purified them of DNA contaminants, synthesized complementary DNA (cDNA), and performed quantitative-PCR (qPCR). We examined paracellular junction proteins (Claudin 1, Tight Junction Protein 1, Tight Junction Protein 2, Occludin, and Cadherin 1), immunomodulatory cytokines (Interleukin (IL)-2, IL-4, IL-8, IL-10, IL-1B, and TNFa), and lymphocyte markers (CD3e, CD8a, CD20, CD79b). Results were normalized to the reference gene beta actin within individuals and averaged across feeding groups

Lymphocyte Markers



Results: We used ANOVA, analysis of variance, with multiple comparisons to determine differences between feeding groups. The results from this project were included in two publications under review currently. Also, there is extreme variation in expression of IL-2 in the ileum of IF-fed group compared to the HM-fed and control group. While there were little differences in transcript abundance of these select genes, it is still apparent that HM feedings play a role in optimizing gut development. As part of a larger project, our lab has determined that histomorphology is significantly different across feeding groups. I learned wet lab skills (RNA extraction, cDNA synthesis, qPCR) and statistical analysis techniques. The experiences this summer expanded my professional network, improved my presentation skills, lab skills, and overall professional development.

Discussion: Contrary to our expectations, there were no significant differences in the expression of inflammatory markers or paracellular junctions. However, as part of a larger project, it is still clear HM plays a role in optimizing gut development. Future research will involve a global transcriptomic analysis of the ileum using next-generation sequencing data.

BUDGET and EXPENSES

Last Name	First Name	Supply Budget	Supply Budget Spent	Stipend	
Johnson	Emile	\$ 1,000.00	\$ 955.87	\$ 5,000.00	
Abendroth	Barrett	\$ 1,000.00	\$ 1,056.73	\$ 5,000.00	
Macon	Emma	\$ 1,000.00	\$ 998.81	\$ 5,000.00	
Rodman	Loretta	\$ 1,000.00	\$ 999.00	\$ 5,000.00	
Wing	Kevin	\$ 1,000.00	\$ 925.00	\$ 5,000.00	
Vaage	Annie	\$ 1,000.00	\$ 983.20	\$ 5,000.00	
Setters	James	\$ 1,000.00	\$ 1,010.10	\$ 5,000.00	
Cernuda					
Herraiz	Andrea	\$ 1,000.00	\$ 1,000.00	\$ 5,000.00	
Ward	Megan	\$ 1,000.00	\$ 1,000.00	\$ 5,000.00	
SURF INBRE					
Palmer	Julia			\$ 5,000.00	
Sierra	Keele			\$ 5,000.00	
Totals		\$ 9,000.00	\$ 8,928.71	\$ 55,000.00	
Spent in FY25 on Posters			\$ 466.23		
			\$ 9,394.94	\$ 55,000.00	\$ 64,394.94
				Carry-forward	\$ 605.06

BUDGET JUSTIFICATION

Student Stipends: \$55,000

Each student received a stipend salary of \$5,000 for 10-weeks of 40h/week faculty-mentored work in the Summer between May 28 and Aug 2 knowing that they had to present at the Idaho Conference for Undergraduate Research (ICUR 2024). The students all presented posters and wrote final reports. Those reports are summarized above.

Student Supply Funds: \$10,000

Each OUR SURF student received a supply budget of \$1,000 for their project and \$1,000 was available for incidental expenses (i.e., poster printing following the end of FY24 on June 30, 2024). Not all students spent out their funds, some overspent. The SURF-INBRE students did not receive supply funds from the OUR as they received those from Idaho INBRE.

TOTAL: \$65,000

SPENT: \$64,394.94

Overall - The project carried forward **\$605.06** to FY25 and we hope to use those funds to further support our students.

Final Report for HERC Funding for the 2024 Idaho Conference on Undergraduate Research (ICUR)
Submitted by Donna Llewellyn, Executive Director of the Boise State Institute for Inclusive and Transformative Scholarship

ICUR 2024 was held on July 17 and 18, 2024. For the first time since 2019, the conference was an entirely in-person event held on the Boise State University campus. We utilized the funding from HERC to pay for transportation and housing for students to attend from across the state and for the space, A/V, and catering for the event. In addition, because we continued to host the Summer Research Community on-line to allow all students from all institutions to participate, we purchased a license to use a larger zoom room. Finally, due to the increased logistics of arranging busses, housing, and on campus space for the event, we needed a much greater amount of staff time to get the conference designed, planned, and implemented. We are grateful for the HERC funding that allowed us to hold ICUR this year.

There were 480 people who registered for the conference this year, with 444 participating in the sessions. This included people from over 35 different institutions/organizations. There were 181 poster presentations with a total of 550 project collaborators including 255 undergraduate students, 78 graduate students and 151 faculty (plus some postdoctoral fellows, high school students, and other community members). Our planning committee of representatives from the different colleges and universities across the state really worked hard to encourage and facilitate participation.

There were two days of workshops and presentations – see the following websites for the program schedule. More details are also available at <https://www.boisestate.edu/icur/>. Note that Boise State has disallowed the use of pdf programs due to accessibility issues so all materials for the conference were posted at the [event site](#).

A survey was been sent out to all of the attendees. The likert scale responses and an overview of the open-ended responses are attached. We intend to use these results to improve the conference next year, as we learn from our virtual conferences about what aspects of this event are best suited to a virtual setting and which parts really suffer from a lack of in-person interaction.

The funding from HERC went to the following categories of expenditures:

Item	Amount
Zoom license to allow for over 100 participants (we used this for SRC as a lead up to ICUR)	675
Materials and Supplies	473.46
Facilities	3,355.00
Meals and other Refreshments	17,951.99
Housing	12,118.34
Transportation	14,632.63
TOTAL	\$60,000.00

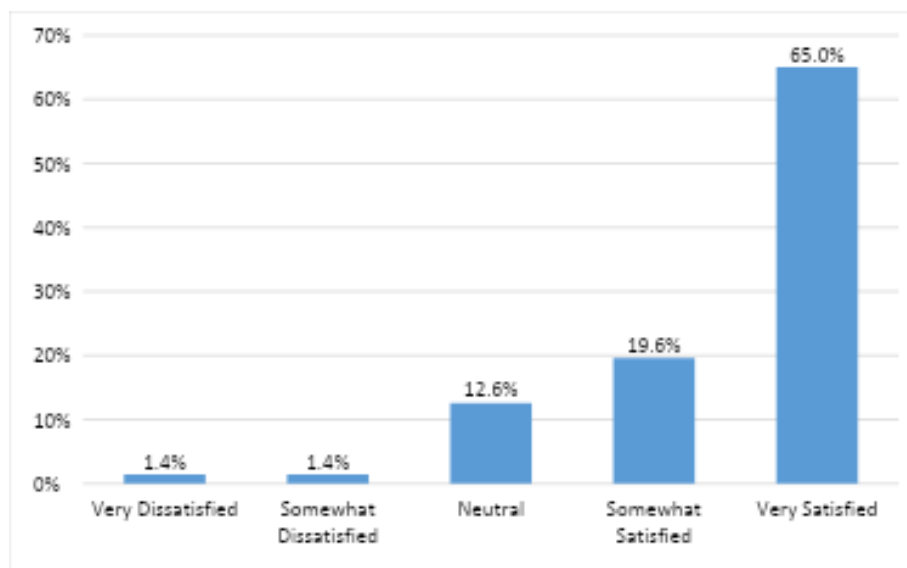
Idaho Conference on Undergraduate Research 2024

Survey Results

RESPONSE RATE: 32.9%

- 435 survey recipients (excludes 6 IFITS staff who did not receive the survey)
 - 278 (63.9%) students
 - 157 (36.1%) faculty/staff/other
- 143 recorded responses; 1 of these is an incomplete response
 - Answers for the incomplete response are included where available.

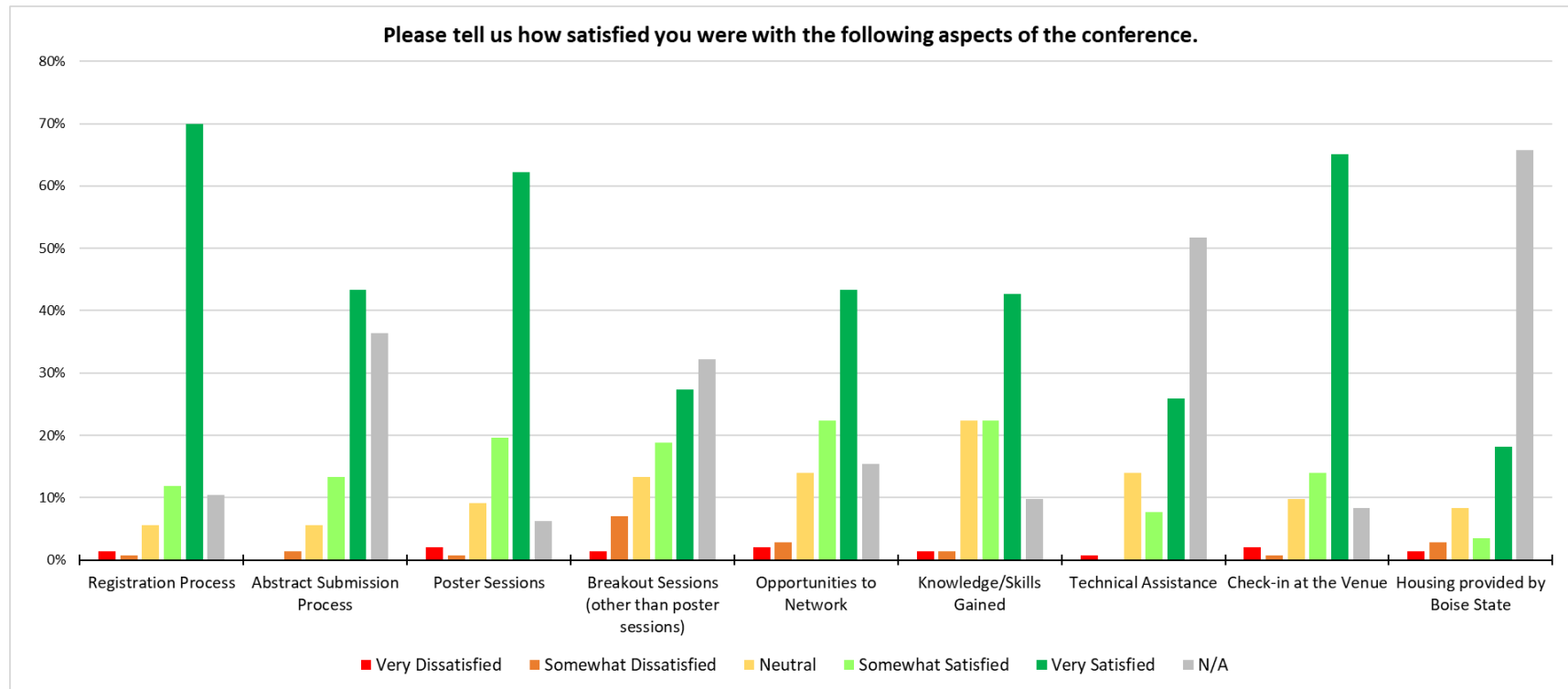
Please indicate your overall satisfaction with the 2024 Idaho Conference on Undergraduate Research.



Answer	%	Count
Very Dissatisfied	1.4%	2
Somewhat Dissatisfied	1.4%	2
Neutral	12.6%	18
Somewhat Satisfied	19.6%	28
Very Satisfied	65.0%	93
Total	100.0%	143

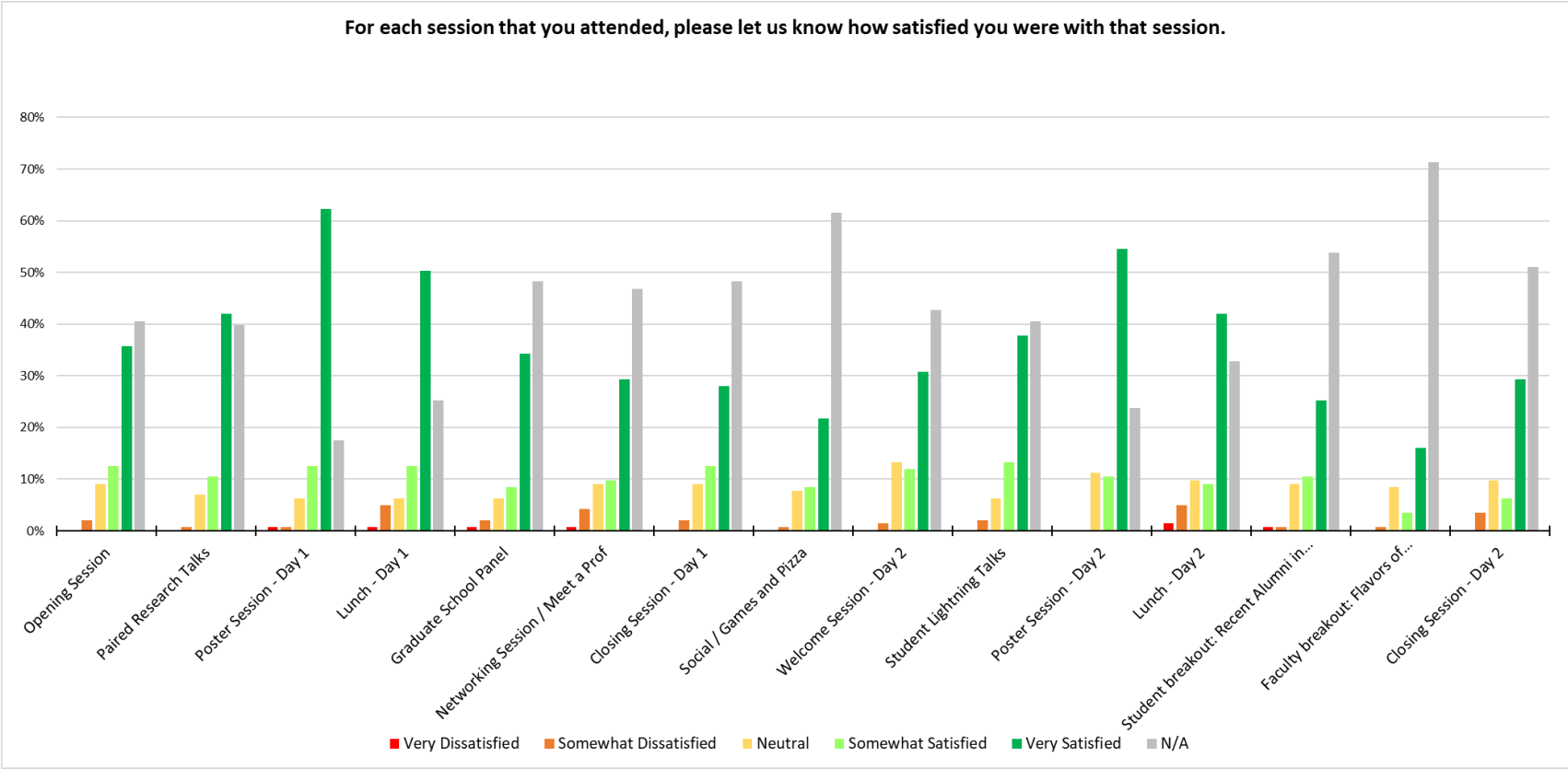
Please tell us how satisfied you were with the following aspects of the conference.

	Very Dissatisfied		Somewhat Dissatisfied		Neutral		Somewhat Satisfied		Very Satisfied		N/A		Total	
Aspect	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Registration Process	1%	2	1%	1	6%	8	12%	17	70%	100	10%	15	100%	143
Abstract Submission Process	0%	0	1%	2	6%	8	13%	19	43%	62	36%	52	100%	143
Poster Sessions	2%	3	1%	1	9%	13	20%	28	62%	89	6%	9	100%	143
Breakout Sessions (other than poster sessions)	1%	2	7%	10	13%	19	19%	27	27%	39	32%	46	100%	143
Opportunities to Network	2%	3	3%	4	14%	20	22%	32	43%	62	15%	22	100%	143
Knowledge/Skills Gained	1%	2	1%	2	22%	32	22%	32	43%	61	10%	14	100%	143
Technical Assistance	1%	1	0%	0	14%	20	8%	11	26%	37	52%	74	100%	143
Check-in at the Venue	2%	3	1%	1	10%	14	14%	20	65%	93	8%	12	100%	143
Housing provided by Boise State	1%	2	3%	4	8%	12	3%	5	18%	26	66%	94	100%	143

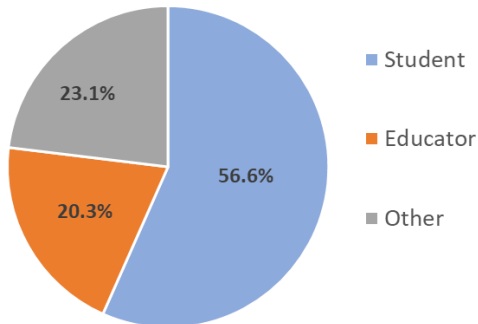


For each session that you attended, please let us know how satisfied you were with that session.

Session	Very Dissatisfied		Somewhat Dissatisfied		Neutral		Somewhat Satisfied		Very Satisfied		N/A		Total	
	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Opening Session	0%	0	2%	3	9%	13	13%	18	36%	51	41%	58	100%	143
Paired Research Talks	0%	0	1%	1	7%	10	10%	15	42%	60	40%	57	100%	143
Poster Session - Day 1	1%	1	1%	1	6%	9	13%	18	62%	89	17%	25	100%	143
Lunch - Day 1	1%	1	5%	7	6%	9	13%	18	50%	72	25%	36	100%	143
Graduate School Panel	1%	1	2%	3	6%	9	8%	12	34%	49	48%	69	100%	143
Networking Session / Meet a Prof	1%	1	4%	6	9%	13	10%	14	29%	42	47%	67	100%	143
Closing Session - Day 1	0%	0	2%	3	9%	13	13%	18	28%	40	48%	69	100%	143
Social / Games and Pizza	0%	0	1%	1	8%	11	8%	12	22%	31	62%	88	100%	143
Welcome Session - Day 2	0%	0	1%	2	13%	19	12%	17	31%	44	43%	61	100%	143
Student Lightning Talks	0%	0	2%	3	6%	9	13%	19	38%	54	41%	58	100%	143
Poster Session - Day 2	0%	0	0%	0	11%	16	10%	15	55%	78	24%	34	100%	143
Lunch - Day 2	1%	2	5%	7	10%	14	9%	13	42%	60	33%	47	100%	143
Student breakout: Recent Alumni in Industry	1%	1	1%	1	9%	13	10%	15	25%	36	54%	77	100%	143
Faculty breakout: Flavors of Undergraduate Research	0%	0	1%	1	8%	12	3%	5	16%	23	71%	102	100%	143
Closing Session - Day 2	0%	0	3%	5	10%	14	6%	9	29%	42	51%	73	100%	143

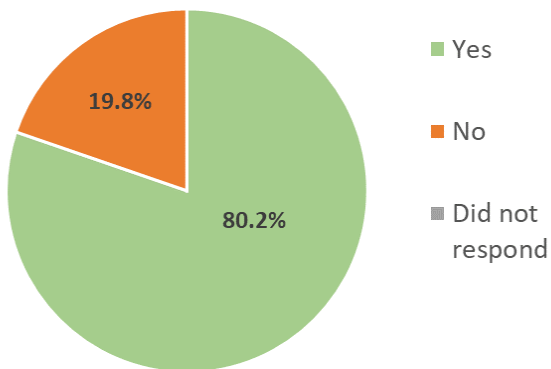


Please select your role.



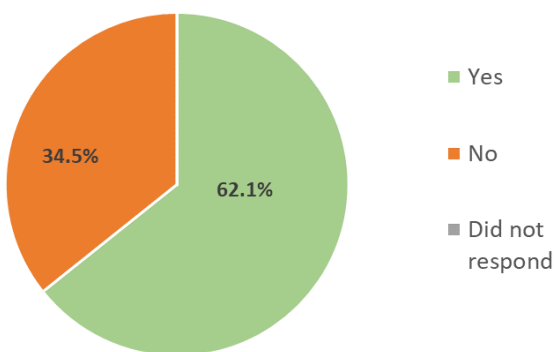
Answer	%	Count
Student	56.6%	81
Educator	20.3%	29
Other	23.1%	33
Total	100.0%	143

Did you present a poster? (This question presented only to the respondents who selected “Student” as their Role.)



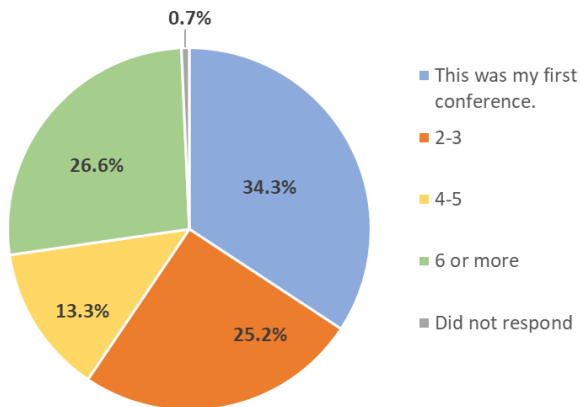
Answer	%	Count
Yes	80.2%	65
No	19.8%	16
Did not respond	0.0%	0
Total	100.0%	81

Were you a mentor of a student researcher who presented a poster? (This question presented only to the respondents who selected “Educator” as their Role.)



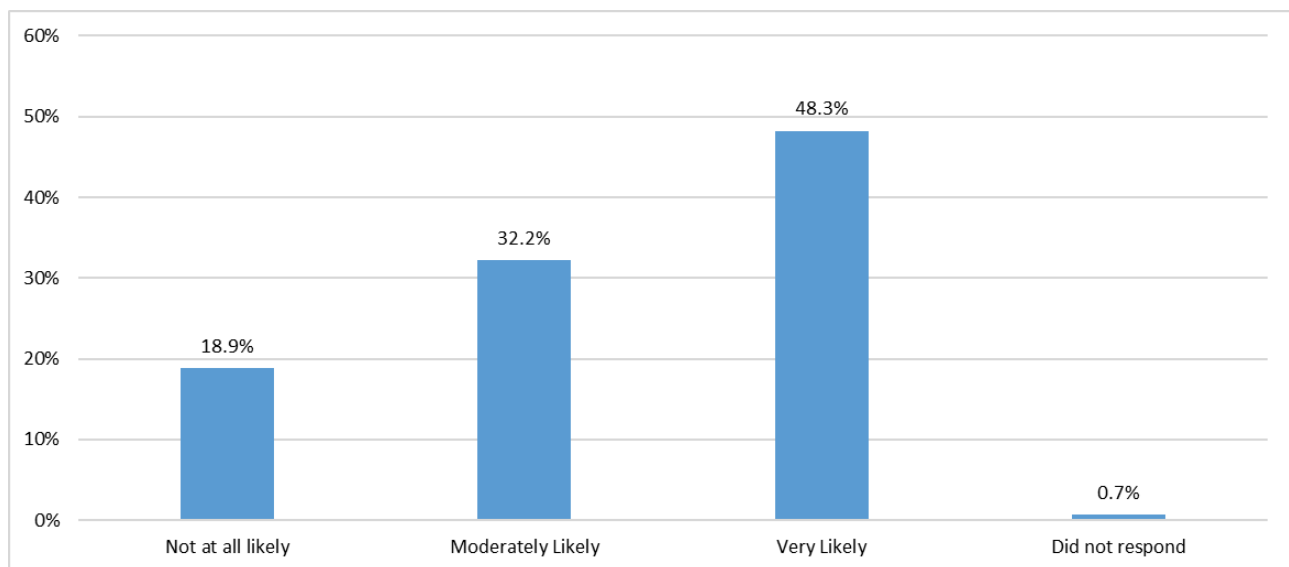
Answer	%	Count
Yes	62.1%	18
No	34.5%	10
Did not respond	0.0%	0
Total	100.0%	29

How many conferences (technical and professional conferences) have you attended including this one?



Answer	%	Count
This was my first conference.	34.3%	49
2-3	25.2%	36
4-5	13.3%	19
6 or more	26.6%	38
Did not respond	0.7%	1
Total	100.0%	143

How likely are you to attend ICUR next year?



Answer	%	Count
Not at all likely	18.9%	27
Moderately Likely	32.2%	46
Very Likely	48.3%	69
Did not respond	0.7%	1
Total	100.0%	143

How did you find out about ICUR?

The following table summarizes categories mentioned in the open-ended responses to this question and the count of respondents who mentioned them. The summary is sorted by the greatest number of mentions to the lowest. 117 respondents answered to this question.

CATEGORIES OF COMMENTS	COUNT
Specific faculty or staff member	36
I have previously attended	9
Email	8
Student	8
Friend/family	7
Office of Undergraduate Research (not necessarily BSU)	6
Project SEED	5
REU program	5
Student research participation (not specified)	5
Lab - not specified	4
McNair Scholars	4
Program requirement - not specified	4
Research supervisor/mentor	4
I was asked to be on a panel	3
Website	3
B2B	2
IFITS	2
Internship	2
Not specified	2
Other research event at my school	2
SRC	2
SURF	2
Advertisements or announcements (not specified)	1
Advisor	1
From a previous ICUR attendee	1
I was asked to volunteer	1
INPIRE Partners in Science	1
Poster	1
URCA	1
No response	26

What were your greatest lessons or take-aways from the conference?

The following table summarizes categories mentioned in the open-ended responses to this question and the count of respondents who mentioned them. The summary is sorted by the greatest number of mentions to the lowest. 104 respondents answered to this question; 23 mentioned more than one take-away.

CATEGORIES OF COMMENTS	COUNT
Learn about students'/others' research	22
Networking opportunities	12
Learn to communicate to a large audience/people outside my field	10
Opportunity to present/practice presenting research/poster	10
Students' enthusiasm	9
Diversity of research	8
Interacting with/meeting students	8
Graduate school info	6
Gained confidence to present/conduct research	5
Exposure to research conference experience	4
Interacting with/meeting faculty/professionals	4
Networking/interpersonal skills	3
Ability to support students	2
Different paths to research/careers	2
Lightning talks	2
Praise: ICUR organization	2
Seeing students' / mentors' / colleagues' success	2
Applicability of research to everyday life	1
Breakout sessions - not specified	1
Communication workshop	1
Criticism: Disciplines / range of subjects included	1
Feedback on my research	1
How to be a better researcher/succeed with research	1
I was not prepared	1
Increasing focus on students	1
Learn about research resources	1
Meet the Prof session	1
Not specified	1
Paired research talks	1
Poster sessions	1
Research opportunities	1
Value of collaboration	1
Value of research	1
Work hard/practice	1
n/a or no answer	39

Strong responses:

- STUDENT: *"It was valuable practice to refine my presentation before presenting at a larger more specialized conference"*
- STUDENT: *"It was amazing to see the undergraduate students present and have this conference focus on them."*

- STUDENT: *"Since the topics of people's research varied so much, I felt like I improved my ability to explain my research in a way that a broader audience could understand."*
- STUDENT: *"I thought the opportunity to network was incredible, it was a very welcoming atmosphere with admirable researchers and advisors. I enjoyed every conversation I had with people and was so inspired to meet peers who were working on such complex and unique projects."*
- STUDENT: *"Getting out and trying is the biggest part, I saw projects that I had no idea about and people put so much time and effort to make it real. Talking to people is the first step and so you should just do it. Start that conversation."*
- EDUCATOR: *"There is some excellent research going on in the state of Idaho and the next generation of scientists are very bright, passionate and inquisitive."*
- EDUCATOR: *"Seeing all the amazing research done by undergraduate (and high school) students, and seeing their confidence grow as they present"*
- EDUCATOR: *"The students' enthusiasm, both for the research and the opportunity to meet other students and faculty researchers"*
- OTHER: *"I loved the presentations on those researching psychology and loneliness. It was insightful and the presenters were delightful. In fact, all of the presenters (and I talked to many) were professional, courteous, and very excited about their work."*

The complete list of comments grouped by role follows, excluding "n/a" responses.

STUDENTS	
Student	All the networking that I did to better help my project in the future.
Student	Being able to see what it was like to be at a conference and what I will be doing when I go to present my poster for the first time.
Student	Communicating science
Student	Definitely the presentations.
Student	Everyone was well organized and put together. The talks were amazing.
Student	Getting feedback
Student	Getting out and trying is the biggest part, I saw projects that I had no idea about and people put so much time and effort to make it real. Talking to people is the first step and so you should just do it. Start that conversation.
Student	Getting to know the diverse works of other students and understand their passion for research.
Student	Getting to network with other students in different disciplines and discuss our research experience.
Student	Getting to work present my research and learn how to better communicate my research
Student	How passionate people are about theyre research
Student	How to present a poster to a non-stem audience
Student	I enjoyed seeing the passion my peers had for their research
Student	I gained more confidence in my place among undergraduate researchers and presenting scientific material.
Student	I got to learn about a broader range of study within my own field which was very interesting to learn as I make plans for my future.
Student	I learned about the importance of tailoring my poster for different audiences.
Student	I learned the ability to effectively communicate research results
Student	I liked getting experience with poster presentations.
Student	I loved hearing about people's research that was social-based and talking to anthropology professors!

Student	I really enjoyed the lightning talks. I thought that it was cool to hear about research outside of my field.
Student	I think I excel at communicating research and complex ideas to general audiences.
Student	I thought the opportunity to network was incredible, it was a very welcoming atmosphere with admirable researchers and advisors. I enjoyed every conversation I had with people and was so inspired to meet peers who were working on such complex and unique projects.
Student	I was more comfortable sharing my research.
Student	I was not at all prepared.
Student	It was amazing to see the undergraduate students present and have this conference focus on them.
Student	It was my first poster presentation
Student	It was my first time presenting a poster so I'd say that is my biggest takeaway was learning how to present my research to someone with less knowledge in the area of our research.
Student	It was valuable practice to refine my presentation before presenting at a larger more specialized conference
Student	Just hearing about other student's research and their experiences
Student	Learning about different research fields and why it is important to continue research in as many fields as possible.
Student	Learning how to succinctly present my research!
Student	Meeting a professor from Idaho State University in my field of study
Student	Meeting new people
Student	Meeting other students in different fields and hearing graduate student advice.
Student	Met a researcher I would like to work with in the near future
Student	Most likely hearing from the graduate students during the panel or talking to the professor I selected during that breakout session.
Student	Network, network, network.
Student	Networking and confidence
Student	Networking with other students and learning about other disciplines.
Student	Networking with other students and professors involved in research.
Student	Other areas of research are very diverse and interesting.
Student	Overall I pretty much liked the whole conference and my greatest take-away was probably the networking and the grad school graduates in the field.
Student	Presentation practice
Student	Seeing all the students presenting about something they really care about was very impactful.
Student	Seeing my mentor and lab mates kill it
Student	Since the topics of people's research varied so much, I felt like I improved my ability to explain my research in a way that a broader audience could understand.
Student	Talking to people is important in every field.
Student	Talks with professors
Student	Technical communication
Student	That art can count as science when combined properly
Student	That it is amazing how we as a species can organize anything at all, let alone a conference.
Student	That working in industry doesn't mean I can't go back to school or even go on to work in a government lab.
Student	the amount of branches that research can take
Student	The connections and networking I was able to make
Student	The diversity of the students' research posters. So amazing!
Student	The grad student panel discussion on funding was a big take-away.

Student	The most impactful part of attending was finding out how conferences are typically structured.
Student	The most impactful part was preparing a student lightning talk and sharing my research in a way that was easily understandable for everyone.
Student	The most important thing is flexibility and a willingness to talk to and learn from your peers
Student	There are a lot of people from different fields you can learn frkm
Student	There's a lot of interesting undergraduate research going on.
Student	This was a great opportunity for my undergraduates
Student	What to expect for next year when I present
EDUCATORS	
Educator	Getting to meet with students in small groups.
Educator	Giving my students an opportunity to practice presenting and discussing their research
Educator	Great opportunity for students
Educator	Great opportunity for undergraduates to get conference and presentation experience
Educator	Having my students meet and talk to other students doing research.
Educator	I always love talking to students about research!
Educator	I was impressed that the number of research projects was conducted during summer at Boise State and other Universities in Idaho.
Educator	Learning about the amazing interests and accomplishments of the students. Watching my mentee shine.
Educator	paired talks
Educator	Peer collaboration to build and present your work is a valuable skill!
Educator	Seeing all the amazing research done by undergraduate (and high school) students, and seeing their confidence grow as they present
Educator	So much energy in the room!!
Educator	The conference provided many students with the opportunity to prepare their first-ever presentation.
Educator	The range of subjects covered is overly broad.
Educator	The students' enthusiasm, both for the research and the opportunity to meet other students and faculty researchers
Educator	There is a lot of research activity occurring in the summer time in Idaho!
Educator	There is some excellent research going on in the state of Idaho and the next generation of scientists are very bright, passionate and inquisitive.
Educator	This is an important and great opportunity for students intro to networking and technical conference attendance.
OTHER ROLES	
Other	I loved all of the posters and getting to connect with students from other institutions and high schools.
Other	Excitement for research.
Other	Great opportunity to showcase talent and skills
Other	Great projects for students.
Other	Great way for students to network.
Other	How much young students are learning
Other	I enjoyed seeing the variety of presentations and the excitement of the presenters. I learned a lot just walking around.
Other	I enjoyed the students and their research interests.
Other	I loved seeing all of the research taking place not only at BSU but across the state.

Other	I loved the presentations on those researching psychology and loneliness. It was insightful and the presenters were delightful. In fact, all of the presenters (and I talked to many) were professional, courteous, and very excited about their work.
Other	I really enjoyed being able to answer questions for students that were considering taking a gap year or that had questions about working for the USFWS. I felt like the agency was underrepresented and I was happy to be a resource for the community in that sense.
Other	I was happy to be able to share my grad school journey with undergrads and hopefully would be able to help them decide if grad school is for them.
Other	I was very impressed with the depth and the breadth of the research.
Other	Imparting my graduate student experiential knowledge to fellow learners.
Other	It showcases the levels of undergraduate research present in Idaho.
Other	Learn lots from the presenter
Other	Seeing the students' network
Other	Students worked very hard to attend
Other	Supporting undergraduates
Other	The breadth of research being done at undergraduate institutions
Other	The incredible research revealed by the presenters and their posters.
Other	The many applications of science
Other	To see all the work he was doing over the summer

What changes in the ICUR would significantly improve the conference experience for you?

The following table summarizes categories mentioned in the open-ended responses to this question and the count of respondents who mentioned them. The summary is sorted by the greatest number of mentions to the lowest. 68 respondents suggested at least one change; 11 made more than one suggestion. 84 respondents either did not answer this question or indicated they had no suggestions for improvement.

CATEGORIES OF COMMENTS	COUNT
Plenary/breakout/other talk sessions	27
Other logistics	19
Conference - general	9
Positive comment / no changes suggested	9
Discipline focus	8
Poster sessions	7
No changes suggested	75

Highlights:

- Poster sessions
 - 3 people said the room was too tight on space
 - 2 people made session structure redesign suggestions
- Plenary/breakout/other talk sessions
 - 5 people felt the sessions were too long.

- o 4 people felt the sessions weren't long enough. There were specific mentions of the "Meet a Prof" session.
- o 3 people suggested better/more networking opportunities.
- o 3 people requested more sessions.
- Discipline Focus
 - o 5 people suggested more focus on disciplines other than STEM.
- Other logistics
 - o 7 people suggested separating lunch from the poster session.
 - o 3 people asked for better/more networking opportunities.
 - o 3 suggested better/more communication of sessions and details before the conference*

**Repeat highlight from last year*

Strong criticisms:

- STUDENT: *"Communication during travel and during the conference. Also, I didn't appreciate being treated like a child rather than an adult regarding check-in. In other conferences, i have been given relatively free reign. I did not appreciate not being made aware ahead of time what we would be given ("linens" doesn't convey being given a towel and washcloth, and I would have liked to have known ahead of time we wouldn't be given fitted sheets) or where our bus was going to be and having to find out at the last minute"*
- STUDENT: *"For me, it would have been better if I could have met more than just one other professor during the "meet a professor" session, especially due to how much down time we had. Then, it would have been more helpful if we could have gotten more than just one or two responses from the graduate students during the panel. Only because not everyone's experiences are exactly the same. Additionally, it would have been nice if there was a separate time for lunch and the poster session because it was quite anxiety inducing to have to eat very quickly before anyone came to my poster."*
- STUDENT: *"I think that for me adding a diversity of professors and graduate alumni who are not all in STEM jobs or backgrounds would be helpful. I would have liked to talk to a professor about the process of an Education major same with a graduate alumni."*
- STUDENT: *"I would have appreciated if lunch was a separate time from the poster session. It feels kind of unprofessional for me to be trying to eat while trying to present my work. I also think it would have been cool if there were people on the grad school panel that weren't pursuing their grad degrees at BSU. While I entirely get why the individuals chosen were there, it would have been helpful to hear from somebody who had maybe done their undergrad in Idaho but had gone somewhere else for grad school. While I can't speak for everyone, I know myself and many of the people I work with are really looking to leave the state for further education and it would have been nice to have a perspective that catered to that."*
- STUDENT: *"I think ICUR is a great conference for students who have never attended it or especially if they're new to research. As someone who has had to attend the conference and weekly sessions for 3 years, I feel like there's not as much for me to take away since it is the same every year. I'm graduating this semester so I will not have the ability to attend again, but for the students who have attended before, it would be nice to have more panels to choose from instead of just the same ones every year. Like a panel on how to better communicate research or on how to search for research materials or something a little more practical instead of just talking to industry and graduate schools. Those panels are very important for some people but they can get a little old when you've sat through the same type of panel 6 different times. So I little more variety to choose from for the conference panels might be nice."*

- STUDENT: *"one on one time, like speed dating. When we did break outs or large sessions where we would ask the speakers questions I know a few students with questions that didn't ask cause they were nervous. The closest thing to this was the session where a group of students would see a different professor, I liked this because it was easier to get a more one on one time but it was very short and I only got to talk two scientist. "*
- EDUCATOR: *"While I realize that UG research is the main focus of this conference, UG research would not exist without mentorship. With that in mind, I would like to see more programming for faculty/mentors. This might also draw more participation from faculty/mentors."*

Changes/Comments by Category (sorted by the greatest number of mentions to the lowest):

CATEGORY > SPECIFICS	COUNT
<i>Conference - general</i>	9
Less about the value of research	1
More focus on my major / a specific discipline	1
More interesting sessions	1
More sessions for faculty/mentors	1
Narrow discipline focus	1
Scheduling suggestion	1
Session structure redesign suggestion	1
Sessions were repetitive/had the same info	1
Student recruitment	1
<i>Discipline focus</i>	8
More focus on disciplines other than STEM	5
More focus on my major / a specific discipline	2
Remove art posters / contributions	1
<i>Other logistics</i>	19
Lunch structure	7
Better/more communication of sessions and details before conference begins	3
Better communication re: transportation/travel	1
Better food/wider selection	1
Check-in	1
Deadline suggestion	1
Don't run out of food	1
Not enough time for lunch	1
Not specified	1
Parking	1
Registration process was confusing	1
<i>Plenary/breakout/other talk sessions</i>	27
Too long	5
Not long enough	4
Better/more networking opportunities	3
More plenary/breakout/other talk sessions	3
Session topic suggestion	3
Group by discipline	2
More info about specific grad school opportunities	2
Opportunity to speak with faculty one-on-one	2

Lightning Talks	1
More diversity of speakers	1
Session structure redesign suggestion	1
Positive comment / no changes suggested	9
Poster sessions	7
Too tight on space	3
Scheduling suggestion	2
Easier way to find specific posters	1
Too loud	1
No changes suggested	75

The complete list of comments grouped by role follows, excluding “n/a” and “none” responses that do not elaborate further.

STUDENTS	
Student	A better idea of what the schedule looks like (maybe in an email or something)
Student	A bit more networking time is all I would add or maybe a session on resumes and linkedin.
Student	A grad school fair with booths run by grad school recruiters from outside of Idaho would be valuable for me.
Student	A session on emotional and mental health and more diversity in research presenters and faculty!grad students speaking.
Student	A shorter opening session would be appreciated.
Student	Better communication about housing, check-in, and the bus pick-up/leave times
Student	Communication during travel and during the conference. Also, I didn't appreciate being treated like a child rather than an adult regarding check-in. In other conferences, i have been given relatively free reign. I did not appreciate not being made aware ahead of time what we would be given ("linens" doesn't convey being given a towel and washcloth, and I would have liked to have known ahead of time we wouldn't be given fitted sheets) or where our bus was going to be and having to find out at the last minute
Student	For me, it would have been better if I could have met more than just one other professor during the “meet a professor” session, especially due to how much down time we had. Then, it would have been more helpful if we could have gotten more than just one or two responses from the graduate students during the panel. Only because not everyone’s experiences are exactly the same. Additionally, it would have been nice if there was a separate time for lunch and the poster session because it was quite anxiety inducing to have to eat very quickly before anyone came to my poster.
Student	giving more time for some session. Parts of it felt rushed (though that could also be due to many groups not presenting much before)
Student	Have a lunch break instead of serving lunch during the poster session
Student	Have enough food available for all participants
Student	Have more time one on one time with research professors and have MD-PHDs at the conference.
Student	Having staggered poster slots for students. One of the more disappointing thing was that on the day I was presenting I was unable to take a look at the other students posters who where presenting that day.
Student	I am not sure. It was pretty good!
Student	I can't really think of anything that would make it better. It was rather good overall.

Student	I had little understanding of ICUR before the lightning talk. So, I think Lavanya did a great job getting me from point A to point B. It was very heavy on STEM projects.
Student	I know you guys can't control it, but I would love to see more representation of environmental sciences in the conference.
Student	I think have the poster presenters eat first, rather than last.
Student	I think ICUR is a great conference for students who have never attended it or especially if they're new to research. As someone who has had to attend the conference and weekly sessions for 3 years, I feel like there's not as much for me to take away since it is the same every year. I'm graduating this semester so I will not have the ability to attend again, but for the students who have attended before, it would be nice to have more panels to choose from instead of just the same ones every year. Like a panel on how to better communicate research or on how to search for research materials or something a little more practical instead of just talking to industry and graduate schools. Those panels are very important for some people but they can get a little old when you've sat through the same type of panel 6 different times. So I little more variety to choose from for the conference panels might be nice.
Student	I think more icebreakers and opportunities to encourage connections with students from other universities and majors would have improved my experience.
Student	I think that for me adding a diversity of professors and graduate alumni who are not all in STEM jobs or backgrounds would be helpful. I would have liked to talk to a professor about the process of an Education major same with a graduate alumni.
Student	I thought that the opening and closing sessions could maybe be a little shorter and instead have more time dedicated to meeting professors or grad students. I think the lightning talks were very enjoyable, I wouldn't have minded hearing some on both days.
Student	I would have appreciated if lunch was a separate time from the poster session. It feels kind of unprofessional for me to be trying to eat while trying to present my work. I also think it would have been cool if there were people on the grad school panel that weren't pursuing their grad degrees at BSU. While I entirely get why the individuals chosen were there, it would have been helpful to hear from somebody who had maybe done their undergrad in Idaho but had gone somewhere else for grad school. While I can't speak for everyone, I know myself and many of the people I work with are really looking to leave the state for further education and it would have been nice to have a perspective that catered to that.
Student	I would have liked to have more time to visit more than 2 professors in the "speed date" section.
Student	I would like more time with mentors, and ideally more advice for graduate admissions.
Student	I would separate lunch and poster sessions.
Student	If there could be a better way to format eating lunch with the poster sessions that would be nice. Additionally, I found that there was a lot of free time with the small prizes which was fun until it felt like it was starting to drag on for too long. I would suggest limiting how long that goes on for.
Student	it's weird to have people who are just visiting, register.
Student	Less "Here's why research is important" to an audience full of undergraduate researchers
Student	Many fields were covered, but personally I would enjoy to see some more physics research as it's my Major, or talks related to the field.
Student	Maybe adding a bit more diversity in fields and topics. For example, adding education or psychology.
Student	More diverse poster sessions. I did not see any posters that were related to psychology or sociology or behavioral science and I think I would've learned more or at least been impacted one way or another if there were more poster presentations amongst those fields.
Student	More productive use of time and more interesting talks.
Student	More research area-specific breakouts (CS/AI)
Student	More seminars.
Student	More to encourage student networking? I definitely talked to students from other institutions, but only during poster sessions and off handedly. I think it'd be nice to do breakouts by college (i.e. engineering, CLASS, science, etc.) but know that could be difficult

Student	Not eating during the poster session.
Student	one on one time, like speed dating. When we did break outs or large sessions where we would ask the speakers questions I know a few students with questions that didn't ask cause they were nervous. The closest thing to this was the session where a group of students would see a different professor, I liked this because it was easier to get a more one on one time but it was very short and I only got to talk two scientist.
Student	Perhaps remove the art things
Student	Shorter session times. A lot of the speakers seemed to drag out their research and dulled their message.
Student	Some of the panels could be much shorter and more concise.
Student	The lunch in the first day was really quick for the presenters and on day two the presenters had lunch after presenting and the forty minute break before presenting.
Student	The opening session of the first day was a little long, it was hard to keep focused under the lights in that room I felt
Student	The student lightning talks didn't feel necessary, and if replaced by breaks throughout the day, would have made the conference significantly more palatable. A lot of the presenters wound up advertising their posters anyway/not giving the full story away, defeating the purpose of a speed talk.
EDUCATORS	
Educator	As a social scientist, it seems like a lot of the program is more centered around the bio and physical sciences, engineering, or health. However, as several of the students mentioned during the 2nd day's closing, they really enjoyed learning more about social sciences and seeing how they can be integrated with the other fields. I mentioned this at the conference, but I really think students would benefit a lot from attending a panel where they are directly exposed to faculty and maybe grad students who can talk about what the other side actually does, and how this can benefit the students. In other words, those in the bio and physical sciences attend a panel where social scientists explain what they do and how they can help those in the bio and physical sciences to achieve their ultimate goals, and vice versa. Basically, really introduce these students to interdisciplinary research.
Educator	Being a day and a half conference instead of two full days
Educator	Expanding to solicit greater participation from arts and social sciences. Also, catering.
Educator	Given the broad range of subjects, many of which I have no interest in, either narrow the scope of the conference so that it is sciences OR social sciences OR art, etc. Alternatively, try a theme to unify these often disparate fields.
Educator	I feel that the meet is well planned for achieve the goals it has set out.
Educator	I heard after the fact that parking passes were available for local attendees. If I can offer these to students, I think many more would attend!
Educator	I think some concurrent sessions would be good and maybe some more focused on faculty. I was bit disappointed by the attendance at the one faculty session, as there were only about 8 people or so. For the 2nd lunch, hot dogs and hamburgers during a poster session didn't seem like a good idea. I saw quite a few ketchup stains. As a lifetime vegetarian, I also really have a hard time with impossible-type meats (they're too similar to real meat for me) and would prefer the options be more obviously vegetarian/vegan.
Educator	It is great as it is.
Educator	More balance of disciplines. Not All STEM
Educator	More information out sooner to students and faculty.
Educator	None I can think of right now. Providing opportunities for mentorship (Q&A with grad students and recent graduates) is a great idea that should be retained for future ICURs.
Educator	None, it was ran excellently.
Educator	Possibly making the abstract deadline a week earlier. Compared to the past, it was very short between abstract submission and poster printing. Note, this is a minor suggestion (I don't think it would significantly improve the experience.)

Educator	The background noise is just too loud for the poster sessions due to too many posters packed in one room.
Educator	There were a lot of posters in the room and sometimes it was a little hard to move around. I am not sure if a bigger space is available.
Educator	While I realize that UG research is the main focus of this conference, UG research would not exist without mentorship. With that in mind, I would like to see more programming for faculty/mentors. This might also draw more participation from faculty/mentors.
OTHER ROLES	
Other	Easier way to find specific posters
Other	I only attended poster sessions. The posters were too crowded together, making it hard to hear the presenter over the others poster presenters around.
Other	I think it was great that it was in-person event this year. I think the poster presentations could all be held on one day.
Other	I thought it all went well from what I observed.
Other	More room between posters
Other	No suggestions. Can't wait for next year!
Other	Perhaps more breakout sessions for students.
Other	Recruit more students from community colleges to attend.

IGEM Grant Report

☐ Progress (due Jan. 1) ☐ Annual (due Jul. 31) ☒ Final (due Aug. 31)

IGEM Grant # IGEM 22-001 Principal Investigator Edward Vasko

Submission Date June 30, 2024 Primary Institution Boise State University

Instructions: Complete each section of this report directly on this template. Completed reports must be 4 pages or less in 12 pt Arial font, excluding the expenditure report. Reports that do not follow these requirements will be returned for revision. Submit reports by the appropriate due date to HERC@osbe.idaho.gov

Section 1: Summary of project accomplishments for the reporting period and plans for the upcoming reporting period.

Objective 1: Workforce development metrics:

For the reporting period, the Cyberdome project funded an equivalent of 22 six-month long student internships. During this period, student workers from 7 of our public institutions, including Boise State University, College of Western Idaho, College of Eastern Idaho, Lewis Clark State College, North Idaho College, Idaho State University, and University of Idaho worked together to monitor & detect client issues.

Objective 2: Risk reduction for clients:

For the reporting period, our technology platform reported a total of 75,704 client alerts to our student workers covering 33,812 assets total monitored assets in our client community. From these alerts, the students were able to analyze the reported data and filter this information to 8,219 cases possible incidents. These incidents were then further examined with our lead mentor team members for possible impact levels to our clients. Of the possible incidents, a total of 834 escalated to our clients. The team then worked with our clients to determine next steps and escalation paths. These alerts, incidents, and escalations would not have been caught without the technology, processes, and student workers in the Cyberdome.

Objective 3: Produce innovative research, tools, & techniques

Our Co-PIs and Graduate Assistants (GAs) submitted and published a total of five papers. Published papers range across topics such as: protecting data integrity for outsourced databases, email encryption methods, and nation-initiated cyber-attacks. Further work is being done on identifying anomalous events within complex enterprise networks that host a variety of event sources.

Other accomplishments during this period

Building recurring (annual) penetration testing offering for clients with vulnerability scans.
We established a centrally maintained and monitored vulnerability scanning tool. The technical challenges relating to the deployment of a vulnerability scanner that can effectively and expeditiously scan our clients' networks have largely been overcome, and we are now executing scans.

Continue development of the Virtual City/CyberRange as a training platform.

The largest non-direct action/learning lab activity that was engaged in this year by Cyberdome interns was the development of a lab environment that simulates a "standard-issue corporate network" that we refer to as the "Virtual City." The lab environment currently holds virtual images of desktops, server and attacker

environments, and can simulate a wide range of attack and defense scenarios. This project, developed in conjunction with NSA CAE funding received by Boise State's Computer Science department, established a base framework for this virtual environment that we can duplicate and use for a variety of different types of activities. We further built upon the Virtual City by creating a "SIEMulation Lab," used to test a variety of security monitoring tools¹. As part of their day-to-day efforts, interns use our SIEM, Stellar Cyber, to detect and categorize events of concern. However, our interns rarely get to see activity that they already know to be malicious. The SIEMulation Lab, enables attacks on a monitored network. Teams review the associated alerts these tools generate and use that information to establish baselines for what different types of security concerns look like in the real world. This enriches our documentation and allows our interns to clearly see alerts that are generated by the types of malicious activity they are looking for during their daily monitoring of our customers' networks.

Continue activating Cybedome clients.

Increasingly complex clients provide real world experience for our engineers and analysts as they architect and implement solutions. We have 11 clients and approximately 20 prospective clients in varying stages of movement forward towards activation, far exceeding our original grant goal of five clients.

Training improvements

The team continues to improve onboarding materials and training procedures for new students. The Canvas course material has been completely re-worked with direct student involvement. Further, a job-shadowing program has been implemented through which students are teamed together to exchange critical knowledge. Other improvements include enabling workflows for self-sufficiency in the worker decision cycle. One key aspect of this effort is the formalization of "Tier Two Interns" that provide guidance and quality assurance on responses intended for clients.

Platform refinement & automation

Cyberdome engineers implemented a tool that integrates our ticketing platform into our primary monitoring tool. Workers are now able to log new issues with minimized effort; clients can see the status of and recommendations for important logged issues, and regular status reports and recommendations can easily be created from the issues documented inside our ticketing platform. This ongoing effort has been maintained through multiple revisions of the core environment and is developed in such a way to continue to be usable even if our security tools change or expand.

Section 2: High-level summary of budget expenditures for the period just completed. If budget is underspent at time of report, explain why and plans for expending funds. Costs associated with Other Expenses (software, AWS, and student certification expenses) continue to increase over time. AWS expenses have risen throughout the period as a result of the increased number of Cyberdome clients exceeding the five Cyberdome clients projected in the original grant application. In 2H FY'24 we examined storage cost models to align our client demand with short-term and long-term budget needs. We expect to consume the entire FY'24 budget.

¹ *Also known as Security Information and Event Management (SIEM) tools.

Section 3: Demonstration of economic development/impact, including the following as applicable: patents, copyrights, plant variety protection certificates received or pending; technology licenses signed, start-up businesses created, and industry involvement; private sector engagement; jobs created; external funding; any other pertinent information.

Industry Involvement/Private Sector Engagement:

A wide range of industry partners continue to express interest in supporting the Cyberdome's mission. We are actively filtering partners based on showing a willingness to fit rural client risks and offer licensing for low-/no-cost.

Economic Development via Jobs Created:

Since the beginning of the grant period in July 2023, twelve departing interns responded to surveys indicating that they had accepted a full-time job offer and reported their salaries. The median wages for these students were \$70,000. The median wage for those with a bachelor's or master's degree was \$70,000 while those with an associate's degree earned \$46,800.

Grants Received

Four Federal grants leverage the Cyberdome data/platform. The first is a \$750,000 2-year grant from the NSA Center for Academic Excellence program. The grant is to develop AI/ML analysis graphs leveraging the Cyberdome datasets and platforms. The second grant is a \$280,000 2-year grant for a GenCyber instructor camp that will leverage the Cyberdome platform. Finally, Boise State is the recipient of a \$3.2M NSF Scholarship for Service (SFS) grant and a recurring DoD Cybersecurity Scholarship Program (CySP) scholarship. The Cyberdome was a key differentiator for our grant applications.

Technology Transfer/Licensing Opportunity:

We examined the possibility of licensing integration work performed by a Cyberdome worker and found this to not be a viable solution.

Section 4: Number of faculty and student participants as a result of funding, and brief description of student efforts.

Student Participation

Funding has sponsored 22 student internships; Section 1 outlines various accomplishments of the student team. Three Graduate Assistants (GAs) are also supported by this project.

Faculty / GA Participation

There are a total of three GAs and four Co-PIs working on the specific research areas of this grant. Specific Co-PI/GA accomplishments include

- Utilizing our VirtualCity environment to tackle the challenge of identifying anomalous events within complex enterprise networks that host a variety of event sources. This team recently submitted a paper detailing a new system that excels in automatically detecting anomalies from multiple event sources, outperforming existing methodologies (named Captor). Further, this research extends to the automated interpretation of these anomalous events through the utilization of artificial intelligence.
- Further research on forecasting targeted attacks from adversarial nations based on news and conflict data. A particular emphasis on targeting specific organizations or

types is now underway. This approach involves integrating detailed textual descriptions of organizations with news data to enhance the precision of predicting targets beyond mere country-level analysis.

Paper Submitted / Published

A total of five papers were submitted and published in this period. The papers range across topics such as: anomaly detection in process execution, malware polymorphism mitigation, cybersecurity predictive models, useful certificateless email encryption, and election security.

Published papers / submitted, include:

- Jyh-haw Yeh, Md Mashrur Arifin*, Ning Shen*, Ujwal Karki*, Yi Xie* and Archana Nanjundarao*. "Integrity Coded Databases - Protecting Data Integrity for Outsourced Databases," Computers and Security (Elsevier), Available Online October 2023, <https://doi.org/10.1016/j.cose.2023.103569>
- Jyh-haw Yeh, Srisarguru Sridhar* and K. Dakota White^. "Developing Accessible Email Encryption Using a Certificateless One-Way Key Agreement Scheme," 2023 4th Information Communication Technologies Conference, May 2023.
- "Unveiling the Efficacy of BERT's Attention in Memory Obfuscated Malware Detection," to the *19th International Conference on Information Security Practice and Experience (ISPEC 2024)*, which will take place in October 2024.
- Lakha, B., Duran, J., Serra, E., & Spezzano, F. (2023, October). Prediction of Future Nation-initiated Cyberattacks from News-based Political Event Graph. In *2023 IEEE 10th International Conference on Data Science and Advanced Analytics (DSAA)* (pp. 1-8). IEEE.
- Detecting Anomalies in Voter Registration Data", Nahid Anwar and Amit Jain. Published and presented at 8th Annual Summer Conference on Election Science, Reform, and Administration on 16-17th May at University of Southern California

Other accomplishments during this period:

Two GAs successfully defended their PhD thesis and/or presented papers at international conferences. Paper development continues leveraging research on temporal graph neural network approaches to predict whether government organizations will be affected by a specific type of cyber-attack and a survey paper around the detection of fraud in elections.

Section 5 : Updated details and/or progress on the long-term sustainability plan for the project and description of future plans for project continuation or expansion.

Federal, State, and private funding sources

Funding requests have been put forward in support of Governor Little's Cybersecurity Task Force objectives, of which PI Vasko was a member. The Cyberdome specific request included state appropriations equal to four (4) full-time support mentors, paid internships for up to 70 students across the state, and platform support for up to 70 rural communities. Further collaboration occurs with Idaho Office of Emergency Management (IOEM) for funding related to cybersecurity support for rural & underserved communities.

Section 6: Expenditure Report – Attach an expenditure report as a separate document showing expenses toward the original budget submitted for this project. The expenditure report does not count toward the page limit. A written summary of budget expenditures should be provided in section 2 of this report.

See attached expenditure report below. Explanation for line items that are under budget are provided in Section 2.

Expenditure Report

	Revised Budget	Projected Spend	Projected Funds Remaining
Salaries	\$476,008.85	\$476,008.85	0%
Benefits	\$86,603.56	\$86,603.56	0%
Other Expenses	\$130,387.59	\$130,387.59	0%
Capital Equipment	\$7,000.00	\$7,000.00	0%
Totals	\$700,000.00	\$700,000.00	0%

*Projected spend includes anticipated expenses incurred through 6/30/2024; \$624,398 of this budget has been spent as of 6/3/2024.

IGEM Grant Report

☐ Progress (due Jan. 1) ☐ Annual (due Jul. 31) ☒ **Final (due Aug. 31)**

IGEM Grant # IGEM22-002 Principal Investigator: Owen McDougal

Submission Date 8/28/2024 Primary Institution: Boise State University

Instructions: Complete each section of this report directly on this template. Completed reports must be 4 pages or less in 12 pt Arial font, excluding the expenditure report. Reports that do not follow these requirements will be returned for revision. Submit reports by the appropriate due date to HERC@osbe.idaho.gov

Section 1: Summary of project accomplishments for the reporting period and plans for the upcoming reporting period.

Extramural Funding: In year 3 of the IGEN HERC project, we proposed to construct Food and Dairy Innovation Center (FDIC) labs and submit 12 grants to generate \$1.5M in external funding. Our accomplishments associated with the lab construction and grant activity are as follows. Construction of the three and a half FDIC lab modules of 650 sq ft per lab for a total of more than 2,000 sq ft., began on October 25, 2023. The lab construction project was completed, and we moved into the new space on August 5, 2024. Our project team is currently managing 20 sponsored projects, for a total budget of \$21,952,792. Another four proposals have been awarded and contracts are in the process of being finalized. The budget for the four grants in-contract is \$15,631,478 (**Table 1**).

Table 1. Summary of FDIC extramural funding activity

External Funding / Grants & Funding	YR1 (\$500K)	\$	YR2 (\$1M)	\$	YR3 (\$1.5M)	\$
Grants Administered			15	\$4,579,541	23	\$37,584,270
Grants Awarded	5	\$668,541	8	\$2,437,351	19	\$21,952,792
Grants In-contract					4	\$15,631,478

Personnel/Students: In FY24, the FDIC team trained 17 graduate students, 23 undergraduate students, and employed 7 staff. In addition, we were able to place 4 students into internships, where two gained full time employment. Of the staff, two obtained different jobs following the end of this IGEN HERC grant, and another three have been funded by different grants.

Publications: Our team published 5 papers during FY2024 that included topics in pulsed electric field (PEF) applied to potato chips to reduce acrylamide formation, PEF technology to accelerate barley germination and improve malt extraction, chemometric software to rapidly identify and quantify dairy proteins in milk, radio-frequency wave-based bacterial biofilm detection in dairy processing facilities, and characterization of plant alkaloids that have therapeutic properties.

Analytical work: A milk transportation tube model and a commercial heat exchanger/pasteurizer model were studied using simulation, and it was observed that a 1 µm thick

layer of biofilm in a milk filled pipe shifted the reflection coefficient from 0.229 GHz to 0.19 GHz. Further sensitivity analysis revealed the shift in frequency from 0.8 GHz to 1.2 GHz for a film thickness of 5 μm to 10 μm with the highest wave reflection (S11) peak of approximately -120 dB for a 6 μm thick biofilm. For the case of the resonant cavity/heat exchanger, the same antenna approach was used to excite the modes in the heat exchanger with fins and filled with milk and biofilm. The simulated resonance frequency shifted from 1.52 to 1.54 GHz, for a film thickness varying from 1 to 10 μm . A proposal to study the response experimentally will be resubmitted to USDA NIFA.

Section 2: High-level summary of budget expenditures for the period just completed. If budget is underspent at time of report, explain why and plans for expending funds.

The overall budget expenditures equate to 100% of the total funds having been spent on infrastructure, instrumentation, and equipment.

Section 3: Demonstration of economic development/impact, including the following as applicable: patents, copyrights, plant variety protection certificates received or pending; technology licenses signed, start-up businesses created, and industry involvement; private sector engagement; jobs created; external funding; any other pertinent information.

The FDIC has been exceedingly engaged with private sector companies as partners on external grants and as sponsors of funded projects. The companies that have contributed time, resources, and funds in FY24 include; Agropur, Glanbia Nutritionals, Daisy Brand, Jones & Company Flavorings, Valley Food Tec, Genesis Organics, Ingredion, Dairy West, Cinder Wines, Telaya Winery, Food Physics, Anheuser Busch, Mountain Malt, Southern Fabrication Works, J.R. Simplot Co., McClain Foods USA, Gibby Group, Top Onion USA, Amalgamated Sugar, Chobani, Brabender, National Dairy Council, Pacific Process, Agilent Technology, Idaho National Laboratory, and Schmidt Futures. These partnerships led to the continued employment of three postdoctoral researchers, two research technicians, and a program director. Of the 20 grant funded projects in 2024, 17 of them were with industry partners. The four additional grants that have been recommended for funding, all have industrial collaborators that contributed to the success of the proposals.

Internship opportunities for students in FY24 are shown in **Table 2** along with an overview of internships and jobs for students since the FDIC was first funded. The YR3 partners are Daisy Brand, Food Physics, Carollo Engineering, National Renewable Energy Laboratory (NREL), Idaho National Laboratory (INL), and the BSU FDIC.

Table 2. Summary of internships and jobs for students who have worked with the FDIC.

Internships/Jobs	YR1 (2-4)	YR2 (5-10)	YR3 (10-20)
Internships	6	5	5
Jobs	2	0	3

Section 4: Number of faculty and student participants as a result of funding, and brief description of student efforts.

Table 3 provides a summary of student, staff, and faculty participation in the FDIC. The students work with the FDIC faculty in independent research through Vertically Integrated Project (VIP) courses in Food Systems and Plasma Medicine and Agriculture. The staff are postdoctoral researchers and research technicians working with FDIC faculty. The faculty are FDIC team members and the expanded network of professors that collaborate on extramural grant activity or industry engagement through FDIC-sponsored projects.

Table 3. Summary of participant engagement with the FDIC.

FDIC Student Training	YR1 (3-5)	YR2 (5-10)	YR3 (5-10)
Undergraduate Students	25	40	23
Graduate Students	6	11	17
Staff	6	6	7
Faculty	5	16	12

Table 4 provides a summary of students, their degree program, and a brief description of their project activity associated with the FDIC. The student academic program has been provided to demonstrate the interdisciplinary nature of work happening in the FDIC.

Table 4. Brief description of student effort associated with the FDIC.

Student (Graduate*)	Title/Position	Project/Topic
Mark Skinner*	MSMSE PhD	PEF in potato chip processing
Alyssa Hendricks	CHEM BS	PEF in potato chip processing
Taurus Rimkus	CHEM BS	PEF in potato chip processing
Rianat Lukman*	CHEM MS	Dairy protein analysis by NIR and HPLC
Matt Lorentz*	CHEM MS	PEF treatment of grapes to make wine better
Kylie Johnson*	CHEM MS	Separations Technologies that Enable Production and Use of High-Value Biomass Streams from Agricultural and Food Processing Wastes
Alder Escobar	CHEM BS	PEF treatment of grapes to make wine better
Mia Rheede*	BMOL PhD	Bioactive ingredient degradation in ready-to-mix drinks and protein bars
Amber Hawley*	CHEM BS/MS	PEF treatment of grapes to make wine better; PEF algae
Morgan Fong*	CHEM BS/MS	PEF in potato chip processing; Dairy byproduct utilization
Anna Shuey*	BMOL PhD	Investigating Bioactive Alkaloids in Kratom
Jordan Hoover	BIOL BS	Investigating Bioactive Alkaloids in Kratom
Delaney Odell	CHEM BS	Investigating Bioactive Alkaloids in Kratom
Christopher Orizaba	CHEM BS	Investigating Bioactive Alkaloids in Kratom
McKenzi Riggs	CHEM BS	Investigating Bioactive Alkaloids in Kratom
Gracie Garringer	CHEM BS	Cold atmospheric-pressure plasma array for inactivation of plant pathogens
Sarah Knowlton	CHEM BS	Gas mix impact on ROS generation by cold atmospheric-pressure plasma discharge
Mason Feerar	BIOL BS	Cold atm.-pressure plasma array for inactivation of plant pathogens
Jocelyn Stephens	CHEM BS	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Krystal Sosa*	BMOL PhD	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Kaden Falkner	CHEM BS	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Hassan Mohammed	CHEM BS	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Sumona Islam*	ECE MS	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Gretchen Kunz*	BMOL PhD	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Matthew Ostapovich	BIOL BS	Use of cold atmospheric-pressure plasma array for inactivation of plant pathogens
Stephanie Rood*	BIOL MS	Gas mix impact on ROS generation by cold atmospheric-pressure plasma discharge
Konnor Sjulie	BIOL BS	Cold atmospheric-pressure plasma devices for inactivation of foodborne pathogens
Dalton Miller*	CHEM MS	Biofilm experiments in Medicine; Gas mix impact on ROS generation by cold atmospheric-pressure plasma discharge; Cold atmospheric-pressure plasma inactivation of bacterial biofilms in porcine wound models
Cale Thorton*	CHEM MS	In cell NMR, analysis of metabolites
Joseph Collins*	BMOL PhD	Whey protein isolation, structure evaluation and degradation monitoring
Madison Dirks*	BMOL PhD	GMP bioactivity assessment
Elizabeth Ryan*	BMOL PhD	PEF to improve whey protein spray dry efficiency and powder quality
Habeeb Babatunde*	CS PhD	Chemometric software development for real time monitoring of casein protein throughout a processing facility

Jamison Rawley		Food Systems (VIP)
Braydn Fielding	CHEM BS	Food Systems (VIP)
Logan Mallory	BIOL BS	Food Systems (VIP)
Logan Maynaugh		Food Systems (VIP)
Ajay Atkinson	CHEM BS	Food Systems (VIP)
Tessa Sprague	CHEM BS	Plasma Science (VIP)
Maggie Shirazi	BIOL BS	Plasma Science (VIP)

Table 5 provides a summary of publications and patents associated with the FDIC activity. In FY24, we proposed to publish 5-10 papers/patents and have published 5 papers and one provisional patent.

Table 5. Summary of publication and patent activity associated with the FDIC.

Patents & Publications	YR1 (6)	YR2 (10)	YR3 (5-10)
Publications	6	4	5
Patents	0	0	1

Section 5 : Updated details and/or progress on the long-term sustainability plan for the project and description of future plans for project continuation or expansion.

The long-term sustainability plan for the FDIC will be dependent on grant support and industry engagement. Our team will continue to submit proposals under topics of advanced manufacturing or center programs that build capabilities for support staff and academic programs to leverage sustainable operations along with the CHIPS and Science Act, Schmidt Foundation Virtual Institute for Feedstocks of the Future, and the Department of Energy Cross-Sector Technologies. We will adopt (1) a recharge center model to include infrastructure for industry to supplement financing for the center, (2) industry funds “facility use agreement” for their people to come in to use the center equipment, and/or (3) industry directly funds research. We will incentivize start-up companies to utilize FDIC facilities to develop IP to promote economic development.

A grant proposal titled “Detection of Bacteria Biofilm at Dairy Processing Facilities using Radio Frequency Waves” on biofilm detection using RF method was submitted to USDA NIFA. The total cost of the proposed project was \$298,056. Most of the comments were positive. The proposal was rejected for further improvement. Based on the comments of the reviewers, the proposal is being updated and will be resubmitted. Simulation results were published in Intern. Conf. on Plasma Science 2023 (Detection of Biofilm Formation at Dairy Facilities Using Microwave,” 2023 IEEE ICOPS, Santa Fe, NM, USA, 2023, pp. 1-1) and in a journal paper (“Simulation of a Radio-Frequency Wave Based Bacterial Biofilm Detection Method in Dairy Processing Facilities”, Appl. Sci. 2024, 14(11), 4342).

Section 6: Expenditure Report – Attach an expenditure report as a separate document showing expenses toward the original budget submitted for this project. The expenditure report does not count toward the page limit. A written summary of budget expenditures should be provided in section 2 of this report.

FINANCIAL REPORT

Award: 3742016 **Start Date:** 7/1/2023
Project: 2000002890 **End Date:** 6/30/2024

Project Budget	<u>Budget</u>	<u>Expended</u>	<u>Encumbered</u>	<u>Remaining</u>
Salary	\$181,948.58	\$181,948.58		\$0.00
Fringe	\$63,278.03	\$63,278.03		\$0.00
Other Expense	\$68,820.09	\$68,820.09		\$0.00
Travel	\$7,061.09	\$7,061.09		\$0.00
Capital	\$378,892.21	\$378,892.21		\$0.00
Student Costs				\$0.00
Total	<u>\$700,000.00</u>	<u>\$700,000.00</u>	<u>\$0.00</u>	<u>\$0.00</u>

IGEM Grant Report

☐ Progress (due Jan. 1)

☒ Annual (due Jul. 31)

☐ (due Aug. 31)

IGEM Grant #23-001

Principal Investigator – Prof. Michael Haney

Submission Date – 2024.07.31

Primary Institution – University of Idaho

Library of Reconfigurable Immersive Attack and Defend Scenarios for Cybersecurity Research and Workforce Development

Section 1: Summary of project accomplishments and upcoming plans.

- Continuing to build and expand the Reconfigurable Attack-Defend Instructional Computing Laboratory (RADICL) at the University Place campus in Idaho Falls. This novel, immersive environment is integrating physical processes, full-scale enterprise IT systems, and Internet-scale cyber-attacks on-demand to offer researchers, students, and trainees a controlled live-fire environment like no other currently available. The laboratory will be a hybrid virtual and physical environment allowing access from across the state through the Idaho Cyber Range.
- Worked with Idaho Congressman Mike Simpson to submit a NIST Community Project that will expand the laboratory capabilities initially foreseen in this (HERC-funded grant).
- Continued efforts, including two initial workshop meetings, have resulted in further discussions with industry partners and new partners at area K-12 schools. We are forming a more formal partnership in eastern Idaho to expand access to cyber-physical systems and cybersecurity training using our immersive and engaging environment.
- Development began of the laboratory focused on power system communication and control systems. We have expanded our relationships with industry partners, including Schweitzer Engineering Laboratories, Westinghouse (now WESCO), Datacast Technologies, and Edge Velocity to begin integrating their technologies into the laboratory. This includes significant donations from the vendors to complement Idaho's investments through the HERC IGEN program. We have also used matching funds provided by the university to procure the real-time digital grid simulator and have begun initializing it.
- Delivered a report to the U.S. House of Representatives regarding the cybersecurity of the electric distribution system to be made public in the coming months.
- Continuing to use RADICL spaces and equipment to train college students, active professionals, and high school students and teachers in an immersive research environment.
- Hosted two regional workforce and collaboration workshops with stakeholders in October and April under the UI Level II Intermountain Center for the Cybersecurity of Critical Infrastructure (IC3I) Attendees included representatives from INL, ISU Curtis Wright, City of Idaho Falls, and local industry.

Plans for the upcoming reporting period include a first new graduate research course developed in this environment offered Spring of 2024, and plans for teacher training and K-12 school visits with our mobile lab components.

Publications

- (1) McBride, S. (2024). "Curricular Guidance: Industrial Cybersecurity Knowledge." 125 pp. Joint publication of: United States Department of Energy, International Society of Automation Global Cybersecurity Alliance, Idaho State University, Idaho National Laboratory. [isagca.org/hubfs/2023 ISA Website Redesigns/ISAGCA/PDFs/Industrial Cybersecurity Knowledge FINAL.pdf](https://isagca.org/hubfs/2023%20ISA%20Website%20Redesigns/ISAGCA/PDFs/Industrial%20Cybersecurity%20Knowledge%20FINAL.pdf)

Proposals submitted

- (1) R. A. Borrelli (PI), Michael Haney (co-PI) - University of Idaho, Thomas A. Ulrich (co-PI) - Idaho National Laboratory. Nuclear Power Plant Cyber-Risk Assessment with Real-Time Reactor Operations. NEUP 25-34477. Preproposal. \$1,000,000. 2025.08.01 - 2027.07.31.
- (2) Sean McBride (PI) - Idaho State University, Dakota Roberson (co-PI), R. A. Borrelli (co-PI), Constantinos Kolias (co-PI) - University of Idaho. Industrial Cyber Security Research and Training Laboratory. National Institute of Standards and Technology. \$2,875,000. 2024.08.01 - 2026.07.31. [*noncompetitive*]

Section 2: High-level summary of budget expenditures for the period just completed.

- Funding of \$700,000 for FY24 is split between UI and ISU co-PIs to manage (\$300,000 subaward to ISU, \$400,000 allocated to UI.)
- During this grant reporting period the focus has been on continued acquisition of equipment, materials, and supplies having expended \$481,382.89 between UI and ISU.
 - Private cloud computing: server and networking equipment and infrastructure
 - Cyber Shooting Gallery: "gadget" components
 - Operations Technology training modules for advanced manufacturing
 - Information Technology training workstations
- At the end of the 2024 fiscal year, we had \$218,617.11 between UI and ISU that remained unencumbered and was approved by the council for a 9-month no-cost extension (NCE). This approved NCE will allow Drs. Borrelli, Roberson, and Kolias to fabricate the Balance of Plant: Heat Tank Loop System in the most cost-effective manner.
- We will continue to support, as requested, two graduate students in the place of the post-doctoral position.

Facilities, materials, and equipment under this grant specifically fall under one of several categories. In order to support the backbone of our cyberspace environment, we have created a private cloud environment that will support the reconfigurable virtual spaces for cybersecurity and energy research and training. We have now doubled the computing capacity of our private cloud environment from the previous year's acquisitions. We have also expanded our networking capacity and are continuing the work in progress to connect all of the associated lab spaces in the Center for Higher Education building in Idaho Falls. Combined, the current spending to date on our private cloud computing environment is over \$300,000.

We have also grown the footprint of the Cyber Shooting Gallery. This environment consists of 6 working and 3 in production target platforms of small-scale cyber-physical systems for students to design, attack, defend, and reconfigure. We have engaged students across our campuses and with a local high school, designing and offering a new course to attract and facilitate more students, all to help us brainstorm and then create the different platforms.

The balance of our expenditures to date are on budget and in accordance with the HERC IGEM requirements and the University of Idaho Office of Sponsored Programs.

Idaho State University

- Procured robotic module to Advanced Manufacturing Trainer and installed it in Idaho Falls.
- Student workers tested functionality of Advanced Manufacturing Trainer.
- Student workers designed red vs. blue attack defend activity involving Raspberry pi Platform. Platform has been used when giving perspective cybersecurity students a tour of ISU's cybersecurity programs. This low-cost kit and activity can be used in middle and high schools as an interest ignition exercise.
- Student workers began design of a hands-on industrial network security proficiency assessment. This included initial description of test objectives, creation of optimal network diagram, description of which equipment was to be virtual vs physical, identification of software to be used on each piece of equipment. This process was informed by input from an industrial cybersecurity network segmentation subject matter expert with experience at Phillips66, Idaho National Laboratory, and the Transportation Security Agency.
- Faculty and student workers designed a motor-control addition for the PLC programming stations procured by this project in the 2022-23 window. They build out an initial proof of concept that they will expand to all 20 trainers in the 2024-25 window.

University of Idaho

The major equipment acquisition for this first year of grant funding was for the RTDS Technologies real-time data simulator for electric grid operations research. This purchase was made possible by \$76,000 from this grant matched by funds from other sources. Additional equipment made available through partnership with Schweitzer Engineering Labs has helped enhance the complexity and realism of simulations for cybersecurity research. As part of this, the Western Services Corporation (WSC) nuclear reactor simulator is in process of integration into this system. WSC is used for a wide range of power systems and cybersecurity research. This integration will enhance capabilities in these fields considerably.

Section 3: Demonstration of economic development/impact.

During this funding period in order to support the sustainability of these and related efforts in the years ahead, the University of Idaho College of Engineering created the Level II Intermountain Center for the Cybersecurity of Critical Infrastructure (IC3I) with Prof. Haney as director. The development, and technology commercialization in support of the cybersecurity of our regional critical infrastructure's cyber-physical systems. We believe these grant efforts are core to the establishment of the IC3I and that the IC3I is core to the direct economic impact of these efforts across our region.

Further, the co-PIs of this grant are involved in the ongoing development efforts of the Idaho Cyber Range to make the Idaho Falls-based laboratories and equipment interoperable with research laboratories and training facilities across the state, including at the INL Cybercore Integration Center. Additionally, we are now working with Montana State University on the development of training and education curriculum for hands-on cyber-physical systems security.

Under the aegis of the Intermountain Center for the Cybersecurity of Critical Infrastructure, a kickoff meeting was held in October 2023 at Smokin Fins in Idaho Falls. Representatives from University of Idaho, Idaho State University, Idaho National Laboratory, College of Eastern Idaho,

Regional Economic Development for Eastern Idaho (REDI), and other local industry were in attendance. Discussion focused on mission and vision of the IC3I, and strategic directions for East Idaho cybersecurity efforts built around educational partnerships, research, workforce development, and economic priorities.

Dr. Sean McBride chairs the Regional Economic Development for Eastern Idaho (REDI) Initiative Cybersecurity Group. In April 2024, the Group held a meeting at the Melaleuca Event Center in Idaho Falls. The meeting was attended by representatives from Idaho State University, University of Idaho, College of Eastern Idaho, and Boise State University. Senator James Risch sent a staff member. Several area high schools, including Madison, Idaho Falls Tech Center, and Rigby sent instructors. Consensus was that the group should approach the state to organize resources to support cybersecurity education at the middle and high school levels.

The REDI Cybersecurity Group obtained the Cyber-Idaho.org Website domain, and began working with MOAT.IT, a Pocatello-based information services, and cybersecurity firm to design and host the Website.

We have made a significant impact on the national discussion regarding the cybersecurity of the electric grid, as Dr. Roberson was the lead technical contributor to a report to the U.S. House of Representatives, via DOE CESER, on the subject. He has also participated in high-level meetings on the topic representing INL through his joint appointment at the national level and is working to secure further funding to continue growing these efforts at UI-Idaho Falls.

Section 4: Number of faculty and student participants as a result of funding, with a brief description efforts.

- 2 Master's students directly funded during FY24
- 1 new student recruited to be directly funded in next reporting period
- 14 additional undergraduate and graduate students directly involved in supporting initial project efforts
- 7 Principal Investigators supported by this grant

This grant effort is by design both multi-disciplined and collaborative. We have set out to create a state-of-the-art research and training facility for advanced cyber-physical systems security. Together, over 20 faculty and students from both UI and ISU have been working together on multiple facets of this grant effort: from selection of components and shopping for available new or refurbished equipment, to designing network architecture and cyber-physical systems platforms, working with vendors and contractors, university procurement, and facilities personnel, installing and configuring software, running wiring and connecting gadgets, building up, tearing down, and building up again the various platforms and elements to support our vision.

Additionally, a mobile, small-scale RADICL laboratory was assembled. It includes 5 – 7 laptops and three mobile cyber-physical systems platforms, currently used for cybersecurity education purposes, with a variety of fundamental exercises for a junior high school to undergraduate level. The mobile RADICL debuted at the University of Idaho Engineering Exposition in Moscow in April 2024.

Section 5: Updated progress on long-term sustainability and description of future expansion.

- Continued submission of state grant proposals as opportunities arise.

- Continued engagement with private industry partners for workforce training needs.

RADICL and related research laboratory and training facilities have enabled education, research, and workforce development in Idaho Falls and will continue to expand through current and planned external funding. We are continuing development of our model for industry engagement and workforce training opportunities. Recently, the co-PIs, led by Dr. R.A. Borrelli, submitted a preproposal to the Nuclear Energy University Program (NEUP) for Nuclear Power Plant (NPP) resiliency under cyberattacks to expand our WSC capabilities and fund students in several disciplines. Additional grant proposals are in development by the research team as these opportunities arise.

We have begun to organize an advisory group to expand on the engagement we have with our community and industry partners across the region. With the development of our multiple spaces, our private cloud computing environment, our shooting gallery, and the data created and collected for running multiple reconfigurable cyber wargame scenarios, we expect to engage and train a wide variety of industry professionals in different roles and critical infrastructure industries. This engagement will allow for a revenue stream to sustain our staff, equipment, software licensing and other operating expenses indefinitely.

The model for our Idaho Falls facilities and capabilities centers on our engagement with the community and industry partners here and across the region. With the development of our multiple spaces on campus, our private cloud computing environment, our shooting gallery, and the data created and collected for running multiple reconfigurable cyber wargame scenarios, we expect to engage and train a wide variety of industry professionals in different roles and vertical critical infrastructure industries. And now, with the expanded mobile capabilities, we can bring this environment anywhere we can drive. This industry and school engagement will allow for development of a revenue stream designed not for profit but to sustain our staff, equipment, software licensing and other operating expenses indefinitely. Discussion for commercialization paths is nascent, but on the agenda for the upcoming year.

Section 6: Expenditure Report

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University of Idaho
Itemized Expenditures
From 7/1/2023 through 6/30/2024

Grant: UA7231 - ISBOE IGEM HERC: Secure Cyberspace

Index: 855888 - ISBOE IGEM HERC Secure Cyberspace

Fund: 227231 - ISBOE IGEM HERC Secure Cyberspace

Salaries

E4108 Summer Salary

Borrelli, Robert	80 Hours	\$5,665.60
Haney, Michael	120 Hours	\$11,205.60

E4109 IA/GA Salary

Codling, Heidi	840 Hours	\$18,404.40
Vera, Sebastian	376 Hours	\$8,238.16

\$43,513.76

Fringe Benefits

E4280 Faculty CFR Benefit Expense		\$5,230.07
E4282 Student CFR Fringe Expense		\$666.06

\$5,896.13

Operating Expenses

E5199 Other Professional Service

5/31/2024	Q0057313	System Tech., I Install fiber, and interconnect	\$3,812.85
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E5310 Technology - Services

11/28/2023	Q0027658	xByte Technolog WAR-SARNWL-3YMFHD-XB	\$2,499.00
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E5724 Research Supplies

9/8/2023	Z1061527	Lab Supplies for IGEM HERC Shooting Doc Ref:	\$412.50
12/9/2023	Q0029482	Amazon Capital LEGO MINDSTORMS Robot Inventor	\$619.95
12/9/2023	Q0029482	Amazon Capital shipping	\$7.49
1/4/2024	B1920337	Amazon Capital Services Inc	\$0.00
1/8/2024	Q0032607	Amazon Capital 1 in x 30 ft Hook and Loop Roll	\$7.98
1/8/2024	Q0032607	Amazon Capital Gearmo USB to RS-422/485	\$23.69
1/8/2024	Q0032607	Amazon Capital Scissors Set of 6-Pack, 8" Scissors All	\$9.77
1/8/2024	Q0032607	Amazon Capital USB 3.0 HDMI KVM Switch, 4 Ports	\$60.99
1/8/2024	Q0032607	Amazon Capital USB to Serial RS-232 Adapter with	\$21.94
1/9/2024	Q0032632	Amazon Capital Cable Matters USB to RJ45 Serial	\$67.40
1/9/2024	Q0032632	Amazon Capital Gearmo Pro 5ft. USB to RS-485/422	\$24.24
1/18/2024	Q0034068	Amazon Capital ECSiNG 15 Sets PCB DIN C45 Rail	\$14.89
1/18/2024	Q0033962	Amazon Capital Prime-Line 9076244 Wing Nuts, Cold-	\$29.37
1/19/2024	Q0034154	Amazon Capital VIVO Black Universal TV Stand for 32	\$75.60
1/20/2024	Q0034450	Amazon Capital DIN Rail Mount Bracket for Raspberry	\$410.16
1/20/2024	Q0034454	Amazon Capital ECSiNG 15 Sets PCB DIN C45 Rail	\$44.67
1/20/2024	Q0034450	Amazon Capital VIVO Black Universal TV Stand for 32	\$75.60
1/22/2024	Q0034794	Amazon Capital VIVO Black Universal TV Stand for 32	\$50.40
1/23/2024	Q0034872	Amazon Capital VIVO Black Universal TV Stand for 32	\$50.40
1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00

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1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00
1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00
1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00
1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00
1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00
1/29/2024	B1922384	Amazon Capital Services Inc	\$0.00
2/2/2024	Q0036529	Amazon Capital Tripp Lite ISOBAR8ULTRA Isobar 8	\$476.16
2/3/2024	Q0036560	Amazon Capital ASUS ZenScreen Touch Screen	\$1,030.02
2/3/2024	Q0036585	Amazon Capital Brother Genuine P-Touch TZE-131	\$22.00
2/3/2024	Q0036585	Amazon Capital Cables Direct Online Grey 20ft Cat6	\$7.50
2/3/2024	Q0036585	Amazon Capital Coolwell RGB Full-Color LED Matrix	\$38.50
2/3/2024	Q0036585	Amazon Capital Logitech K400 Plus Wireless Touch	\$72.00
2/3/2024	Q0036585	Amazon Capital NETGEAR 5 Port PoE Gigabit	\$699.90
2/3/2024	Q0036585	Amazon Capital PowerBear 4K HDMI Cable 10 ft	\$7.19
2/3/2024	Q0036585	Amazon Capital Seadream High Speed Micro HDMI	\$32.36
2/3/2024	Q0036585	Amazon Capital TEKTON Everybit Ratchet	\$35.00
2/3/2024	Q0036585	Amazon Capital TEKTON Everybit Tech Rescue Kit	\$24.00
2/3/2024	Q0036556	Amazon Capital Tripp Lite ISOBAR8ULTRA Isobar 8	\$317.44
2/3/2024	Q0036585	Amazon Capital Tripp Lite Isobar 8 Outlet Surge	\$102.99
2/7/2024	B1922939	Amazon Capital Services Inc	\$0.00
2/7/2024	B1922939	Amazon Capital Services Inc	\$0.00
2/8/2024	B1923125	Amazon Capital Services Inc	\$0.00
2/9/2024	Q0036091	Amazon Capital ASUS ZenScreen Touch Screen	\$1,030.02
2/9/2024	Q0036090	Amazon Capital ASUS ZenScreen Touch Screen	\$1,030.02
2/9/2024	Q0036089	Amazon Capital ASUS ZenScreen Touch Screen	\$1,030.02
2/9/2024	Q0036088	Amazon Capital ASUS ZenScreen Touch Screen	\$1,030.02
2/9/2024	Q0036087	Amazon Capital ASUS ZenScreen Touch Screen	\$686.68
2/9/2024	Q0036086	Amazon Capital ASUS ZenScreen Touch Screen	\$1,030.02
2/10/2024	Q0037899	Amazon Capital DIYables LED Traffic Light Module for	\$9.99
2/10/2024	Q0037908	Amazon Capital Rapid Care First Aid 80095 4 Shelf	\$139.98
2/10/2024	Q0037896	Amazon Capital StarTech.com Anti-Static Mat - 25" x	\$277.80
2/11/2024	Q0037911	Amazon Capital Amazon Basics 48-Pack AA Alkaline	\$13.43
2/11/2024	Q0037914	Amazon Capital Arduino Uno REV3 [A000066]	\$297.55
2/11/2024	Q0037914	Amazon Capital Assurance Designed Black Grounding	\$83.94
2/11/2024	Q0037910	Amazon Capital Chanzon 40pcs 30cm Long Female to	\$6.99
2/11/2024	Q0037911	Amazon Capital Klein Tools 32717 Precision	\$332.64
2/11/2024	Q0037914	Amazon Capital Raspberry Pi 3 Model B+ Board (3B+)	\$49.91
2/12/2024	B1923222	Amazon Capital Services Inc	\$0.00
2/12/2024	B1923222	Amazon Capital Services Inc	\$0.00
2/12/2024	B1923222	Amazon Capital Services Inc	\$0.00
2/12/2024	B1923222	Amazon Capital Services Inc	\$0.00
2/12/2024	B1923222	Amazon Capital Services Inc	\$0.00
2/21/2024	B1923639	Amazon Capital Services Inc	\$0.00
2/21/2024	B1923639	Amazon Capital Services Inc	\$0.00
2/21/2024	B1923639	Amazon Capital Services Inc	\$0.00
2/21/2024	B1923639	Amazon Capital Services Inc	\$0.00
2/21/2024	B1923639	Amazon Capital Services Inc	\$0.00
2/21/2024	B1923639	Amazon Capital Services Inc	\$0.00
2/21/2024	Z1070178	CaseCruzer INV #148348 for Dr. Micha Doc Ref:	\$2,459.40
2/21/2024	Z1070178	CaseCruzer INV #148349 for Dr. Micha Doc Ref:	\$2,398.66
2/21/2024	Q0039406	Pi Shop Inc Full sized breadboard – 830 points	\$119.00
2/21/2024	Q0039406	Pi Shop Inc Micro-HDMI to HDMI cable for Pi 4, 3ft,	\$99.00
2/21/2024	Q0039406	Pi Shop Inc Raspberry Pi 27W USB-C Power Supply	\$326.40
2/21/2024	Q0039406	Pi Shop Inc Raspberry Pi 3 T-Cobbler Breakout Kit	\$179.00
2/21/2024	Q0039406	Pi Shop Inc Raspberry Pi 5/8GB	\$1,920.00
2/21/2024	Q0039406	Pi Shop Inc Raspberry Pi Case for Pi 5 Black/Grey	\$400.00
2/21/2024	Q0039406	Pi Shop Inc Shipping	\$39.44

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2/21/2024	Q0039406	Pi Shop Inc Type-C Power Switch for Raspberry Pi 4	\$99.00
2/21/2024	Q0039406	Pi Shop Inc USB Micro SD Card Reader - Black	\$59.00
2/21/2024	Q0039406	Pi Shop Inc microSD Card With Raspberry Pi	\$299.00
2/22/2024	B1923825	Amazon Capital Services Inc	\$0.00
2/26/2024	B1923880	Amazon Capital Services Inc	\$0.00
2/26/2024	B1923880	Amazon Capital Services Inc	\$0.00
2/26/2024	B1923880	Amazon Capital Services Inc	\$0.00
2/26/2024	B1923880	Amazon Capital Services Inc	\$0.00
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2/26/2024	B1923880	Amazon Capital Services Inc	\$0.00
2/26/2024	B1923880	Amazon Capital Services Inc	\$0.00
2/29/2024	!0536108	Pi Shop Inc	\$0.00
2/29/2024	!0536108	Pi Shop Inc	\$0.00
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2/29/2024	!0536108	Pi Shop Inc	\$0.00
2/29/2024	!0536108	Pi Shop Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/4/2024	B1924268	Amazon Capital Services Inc	\$0.00
3/15/2024	Q0040872	Amazon Capital Klein Tools MM325 Multimeter, Digital	\$419.64
3/15/2024	Q0040872	Amazon Capital OneLeaf 120PCS Cord Organizer 6 x	\$9.53
3/15/2024	Q0040732	Amazon Capital Antrader Breadboard Jumper Wires	\$5.49
3/15/2024	Q0040732	Amazon Capital Elastic Band for Sewing, 2 Inch x 12	\$7.09
3/15/2024	Q0040732	Amazon Capital GearIT Cat 6 Ethernet Cable 1 ft (24-	\$36.61
3/15/2024	Q0040732	Amazon Capital GearIT Cat 6 Ethernet Cable 2 ft (24-	\$43.54
3/15/2024	Q0040732	Amazon Capital GearIT Cat 6 Ethernet Cable 3 ft (24-	\$46.51
3/15/2024	Q0040732	Amazon Capital Lichamp 10-Pack Colored Electrical	\$19.79
3/15/2024	Q0040732	Amazon Capital Screen Cleaner Spray - TV Screen	\$9.99
3/15/2024	Q0040732	Amazon Capital Tripp Lite ISOBAR8ULTRA Isobar 8	\$83.74
3/15/2024	Q0040579	Amazon Capital MEAN WELL Ultra Slim Step-Shape	\$120.70
3/15/2024	Q0040579	Amazon Capital shipping	\$3.53
3/18/2024	B1925045	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00

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3/20/2024	!0537692	Amazon Capital Services Inc	\$0.00
3/26/2024	Q0045282	Amazon Capital Cherry Stream Keyboard TKL Wired	\$319.84
3/26/2024	Q0045250	Amazon Capital Cherry Stream Keyboard TKL Wired	\$79.96
3/26/2024	Q0045269	Amazon Capital Gloreen Clear Storage Bin, 16 Quart	\$92.97
3/26/2024	Q0045250	Amazon Capital Gloreen Clear Storage Bin, 16 Quart	\$30.99
3/26/2024	Q0045265	Amazon Capital Gloreen Clear Storage Bin, 16 Quart	\$92.97
3/26/2024	Q0045271	Amazon Capital Gloreen Clear Storage Bin, 16 Quart	\$92.97
3/27/2024	Q0045306	Amazon Capital LUBAN Led Signal Tower Stack	\$19.28
3/28/2024	Q0045649	Amazon Capital LUBAN Led Signal Tower Stack	\$38.56
3/28/2024	Q0045650	Amazon Capital LUBAN Led Signal Tower Stack	\$38.56
3/30/2024	Q0045987	Amazon Capital LUBAN Led Signal Tower Stack	\$38.56
4/4/2024	Z1072456	Bought for research purposes. Inclu Doc Ref:	\$128.19
4/4/2024	Z1072456	Sales tax returned. Sales tax had b Doc Ref:	(\$7.80)
4/4/2024	Z1072456	Supplies for research purposes. Inc Doc Ref:	\$9.53
4/15/2024	!0539997	Amazon Capital Services Inc	\$0.00
4/15/2024	!0539997	Amazon Capital Services Inc	\$0.00
4/15/2024	!0539997	Amazon Capital Services Inc	\$0.00
4/15/2024	!0539997	Amazon Capital Services Inc	\$0.00
4/15/2024	!0539997	Amazon Capital Services Inc	\$0.00
4/17/2024	!0540186	Amazon Capital Services Inc	\$0.00
4/17/2024	!0540186	Amazon Capital Services Inc	\$0.00
4/17/2024	!0540186	Amazon Capital Services Inc	\$0.00
4/17/2024	!0540186	Amazon Capital Services Inc	\$0.00
4/22/2024	!0540576	Amazon Capital Services Inc	\$0.00
5/12/2024	Q0053568	Amazon Capital Seadream High Speed Micro HDMI	\$97.08
6/3/2024	!0544922	Amazon Capital Services Inc	\$0.00
6/5/2024	Q0050713	Amazon Capital Seadream High Speed Micro HDMI	\$64.72
6/5/2024	Q0050327	Amazon Capital Cuberspeed Moyu rs3m Maglev 2021	\$109.80
6/5/2024	Q0050338	Amazon Capital ELOGGAA 120Pcs 20cm(7.9inch)	\$20.94
6/5/2024	Q0050231	Amazon Capital CanaKit 3.5A Raspberry Pi 4 Power	\$79.92
6/5/2024	Q0050231	Amazon Capital DARKROCK 3-Pack 120mm Black	\$8.99
6/5/2024	!0545406	Amazon Capital Services Inc	\$0.00
6/5/2024	!0545406	Amazon Capital Services Inc	\$0.00
6/5/2024	!0545406	Amazon Capital Services Inc	\$0.00
6/5/2024	!0545406	Amazon Capital Services Inc	\$0.00
6/5/2024	!0545406	Amazon Capital Services Inc	\$0.00

\$28,793.05

\$5K or > Capital Outlay

E6499 >5K Computer Equipment Other

11/21/2023	Q0027202	xByte Technolog Dell PowerEdge T630 Server	\$10,602.00
11/21/2023	Q0027202	xByte Technolog Shipping	\$235.00
11/27/2023	Q0027604	CDW Computer Ce DELL CTO PE MX750C 2X6334	\$12,998.26
11/30/2023	Q0028033	xByte Technolog Dell PowerEdge M640 Blade Server	\$20,890.00
11/30/2023	Q0028033	xByte Technolog Shipping	\$350.00
12/6/2023	B1919190	xByte Technologies Inc	\$0.00
12/6/2023	B1919190	xByte Technologies Inc	\$0.00
12/7/2023	B1919282	xByte Technologies Inc	\$0.00
12/7/2023	B1919282	xByte Technologies Inc	\$0.00
12/8/2023	Q0029475	CDW Computer Ce DELL CTO PE MX750C 2X6334	\$25,996.52
12/11/2023	Q0029523	CDW Computer Ce DELL CTO 10GB PASS THROUGH	\$1,046.32
12/11/2023	Q0029523	CDW Computer Ce DELL CTO PE MX750C 2X6334	\$12,998.26
1/30/2024	Q0035851	Structured Comm 48PORT EX2300	\$11,865.66
2/6/2024	Q0037061	Structured Comm MULTIYEAR CUSTOM CP SUP SVCS	\$2,986.04
2/8/2024	B1923200	Structured Communications Systems,	\$0.00
2/15/2024	B1923566	Structured Communications Systems,	\$0.00

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2/20/2024	Q0039274	Structured Comm QFX5120-48Y AIRFLOW IN RED AC	\$14,365.95
2/26/2024	Q0040106	Structured Comm MULTIYEAR CUSTOM CP SUP SVCS	\$5,933.09
3/4/2024	B1924419	Structured Communications Systems,	\$0.00
3/7/2024	B1924697	Structured Communications Systems,	\$0.00

\$120,267.10

< \$5K Non-Capital Outlay

E7830 <5K Computer Equipment Other

11/20/2023	Q0027117	Dell, Inc. Special Pricing_Mobile Precision3580 -	\$34,999.80
11/30/2023	B1918622	Dell, Inc.	\$0.00

E7860 <5K Educational Equipment

3/12/2024	Z1071229	Walkata.com. Purchase of (1) Convey	Doc Ref: \$570.00
4/10/2024	Z1072838	Bambulab.com Purchase of (1) Bambu	Doc Ref: \$984.00

E7951 <5K Office Furniture

8/4/2023	Q0013763	W.W. Grainger I TK87870814T Computer Cart All	\$660.99
8/23/2023	B1912991	W.W. Grainger Inc.	\$0.00
9/2/2023	Q0018164	VWR Scientific CPU-HOLDER, FOOT MOUNTED	\$448.96
9/2/2023	Q0018164	VWR Scientific ROLL HOLDER	\$129.41
9/2/2023	Q0018164	VWR Scientific VWR 30 X 60 MANUAL LAMINATE	\$4,638.64
9/2/2023	Q0018164	VWR Scientific VWR 30X60	\$1,776.41
9/2/2023	Q0018164	VWR Scientific VWR 30X60	\$4,325.56
9/2/2023	Q0018164	VWR Scientific VWR 30X72	\$7,841.08
9/2/2023	Q0018164	VWR Scientific VWR 60IN BIN RAIL	\$178.62
9/2/2023	Q0018164	VWR Scientific VWR 72IN BIN RAIL	\$359.64
9/2/2023	Q0018164	VWR Scientific VWR BOTTLE HOLDER	\$57.03
9/2/2023	Q0018164	VWR Scientific VWR EQUIPMENT HOLDER - BAR	\$870.24
9/2/2023	Q0018164	VWR Scientific VWR LIGHT LED 22.44 IN IP50 SKIRT	\$669.40
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
9/13/2023	!0518075	VWR Scientific Products Corp.	\$0.00
10/4/2023	Q0021080	VWR Scientific EQUIPMENT HOLDER - BAR MOUNT	\$580.16
10/4/2023	Q0021080	VWR Scientific VWR EQUIPMENT HOLDER - BAR	\$580.16
10/23/2023	!0521817	VWR Scientific Products Corp.	\$0.00
10/23/2023	!0521817	VWR Scientific Products Corp.	\$0.00
10/25/2023	Q0023671	Workspace Devel Think; Chair, 3D knitColor Scheme:	\$5,721.94
10/30/2023	!0522620	Workspace Development LLC	\$0.00

\$65,392.04

Trustee/Benefits

E7140 Tuition and Fees - Grad Assistants

8/22/2023	J1339578	AWA3 for V01263740	\$35.00
8/22/2023	J1339578	G1GC for V01263740	\$866.00
8/22/2023	J1339578	SHI1 for V01263740	\$1,080.00
8/22/2023	J1339578	T1GC for V01263740	\$4,408.00
1/24/2024	J1348081	FFD2 for V01263740	\$35.00
1/24/2024	J1348081	G2GC for V01263740	\$866.00

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1/24/2024	J1348240	G2GD for V00950449	\$866.00
1/24/2024	J1348081	MG2T for V01263740	\$105.00
1/24/2024	J1348240	SHI2 for V00950449	\$1,080.00
1/24/2024	J1348081	SHI2 for V01263740	\$1,080.00
1/24/2024	J1348081	T2GC for V01263740	\$4,408.00
1/24/2024	J1348240	T2GD for V00950449	\$4,408.00
2/27/2024	J1350098	FFD2 for V00950449	\$35.00
5/24/2024	J1354661	G3HC for V01263740	\$288.00
5/24/2024	J1354661	KCP3 for V01263740	\$105.00
5/24/2024	J1354661	T3HC for V01263740	\$1,470.00

\$21,135.00

Totals for 227231

\$284,997.08

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Index: 855887 - ISBOE IGEM HERC Secure Cyber. SUB1

Fund: 227287 - ISBOE IGEM HERC Cyberspace-ISU Sub

Subcontracts

ES001 Subaward 1 Expenses

5/9/2024	Q0053233	Idaho State Uni Award UA7231-855887: Period	\$1,000.52
5/9/2024	Q0053234	Idaho State Uni Award UA7231-855887: Period	\$12,165.44
5/9/2024	Q0053232	Idaho State Uni Award UA7231-855887: Period	\$745.45
5/23/2024	Q0055838	Idaho State Uni Award UA7231-855887: Period	\$4,384.40
6/30/2024	Q0064609	Idaho State Uni Award UA7231-855887: Period	\$178,090.00

\$196,385.81

Totals for 227287

\$196,385.81

Totals for UA7231

\$481,382.89

BOISE STATE UNIVERSITY

SUBJECT

Annual Progress Report

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section I.M.3.

BACKGROUND/DISCUSSION

This submission fulfills the Board's requirement to provide an annual progress report on the institution's strategic plan, details of implementation, status of goals and objectives, and information on other points of interest in accordance with a schedule and format established by the Board's Executive Director.

Since our last annual report, we have continued to achieve incredible outcomes, including record-breaking success in student retention and graduation, in Idaho student enrollment, research funding, and in philanthropic investment. The attached report provides details of this work alongside other achievements and metrics.

IMPACT

Boise State University's strategic plan drives the university's planning, programming, budgeting and assessment cycles and is the basis for the institution's annual budget requests and performance measure reports.

ATTACHMENTS

Attachment 1 – Boise State University Annual Progress Report

BOARD ACTION

This item is for informational purposes only.

LEADING NATIONALLY IN INNOVATION

ANNUAL REPORT | 2025



**BOISE STATE
UNIVERSITY**



LEADING

NATIONALLY

IN INNOVATION

Guided by our strategic plan, Blueprint for Success, we continue to achieve remarkable results around student access and success, research, community engagement and more. We are using clearly defined metrics to measure our progress and to evolve our tactics to achieve the best outcomes.

We have set new records in student success and graduation rates, research awards and philanthropic investment in the university. It remains a goal of mine that no Idaho student will have unmet financial need at Boise State, and we have raised tens of millions of dollars in new endowed scholarships toward this goal.

We continue to strategize and innovate with incredibly impressive efficiency around academic programs, achieving financial strength and stability, and meeting student and workforce needs.

I am so proud of the work and accomplishments of our students, faculty, staff and leaders, presented here in our annual progress report.

All the best,



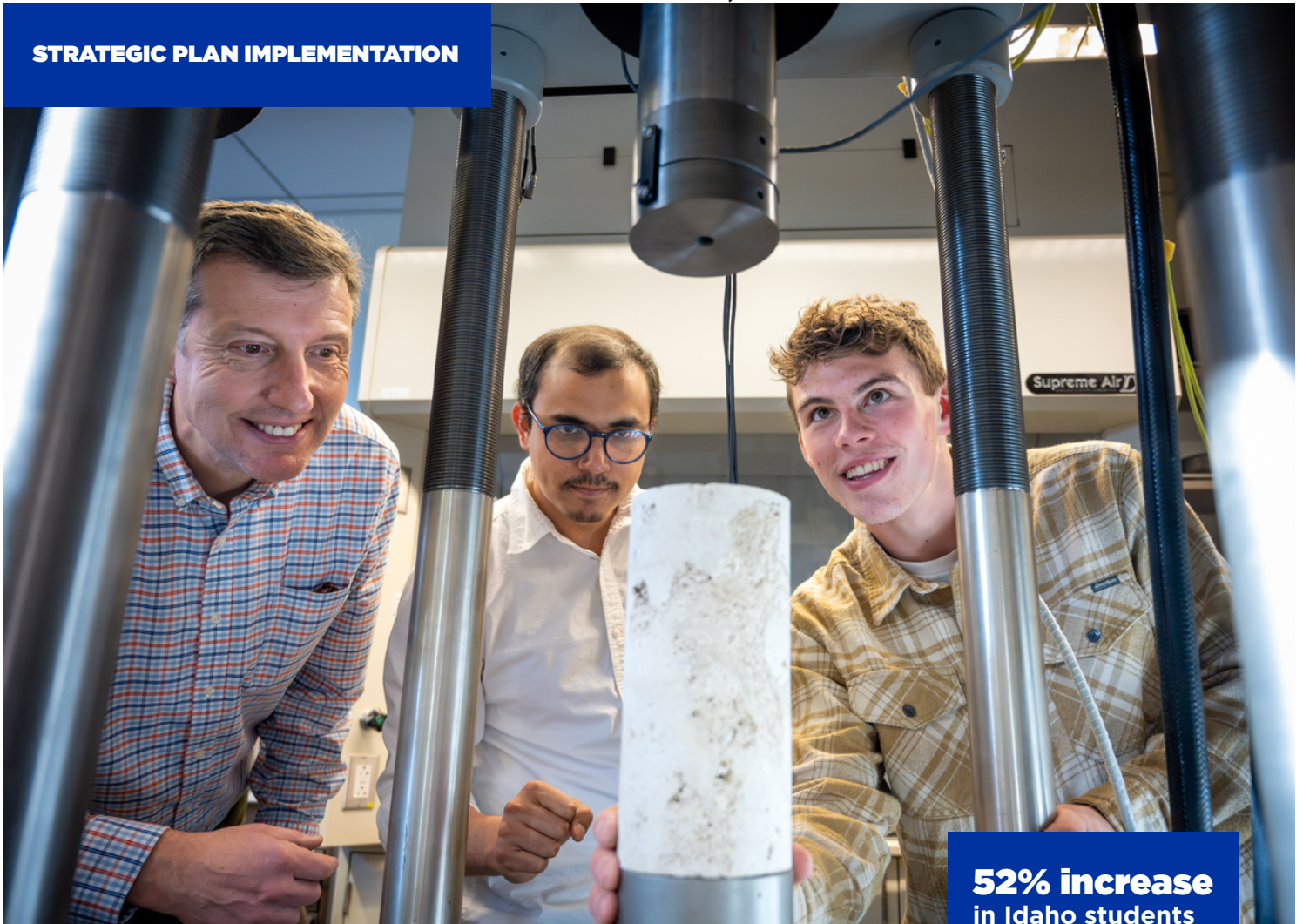
Dr. Marlene Tromp, President

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- | | |
|-----------|---|
| 4 | Strategic Plan Implementation |
| 16 | Collaborations and Partnerships |
| 18 | Institutional Data |
| 22 | Boise State University Foundation |
| 22 | College Highlights |
| 34 | Athletics |
| 35 | Facilities |
| 36 | Appendix - Program Prioritization Process |

MISSION: Boise State University provides an innovative, transformative and equitable educational environment that prepares students for success and advances Idaho and the world.

VISION: To be a premier student-success driven research university innovating for statewide and global impact. The trailblazing, innovative character that has always defined Boise State will help us foster student success, advance Idaho and Idahoans, and strengthen our culture of innovation and impact.

STRATEGIC PLAN IMPLEMENTATION



52% increase
in Idaho students

Goal #1: Improve Educational Access and Student Success.

Enhance the comprehensive student experience with a focus on student success and post-graduate outcomes.

We are very proud to have played a significant role in increasing the college attainment rate for Idaho. **Boise State confers more than half of all baccalaureate degrees from public institutions in Idaho and we have dramatically increased the percentage of Idahoans that we serve in the last two years**, growing our population of new Idaho students by 52% over the last five years.

Education not only **provides Idahoans the opportunity to develop the talents and skills necessary for employment**, but it can also transform the economic mobility and life satisfaction of students and their families. Students from all backgrounds must have access to and support for a college education to develop those skills and talents, develop their full potential and give back to our great state.

Education also **increases the size and competence of the state's workforce**, as captured in the "educational attainment goal" (Goal #3) of the Board's K-20 Public Education Strategic Plan, FY 2023-2028. Increasing the rate of college attainment in all groups, especially those populations presently underrepresented in college, is the most effective way to increase the size and competence of the workforce and achieve the SBOE's educational attainment goal.

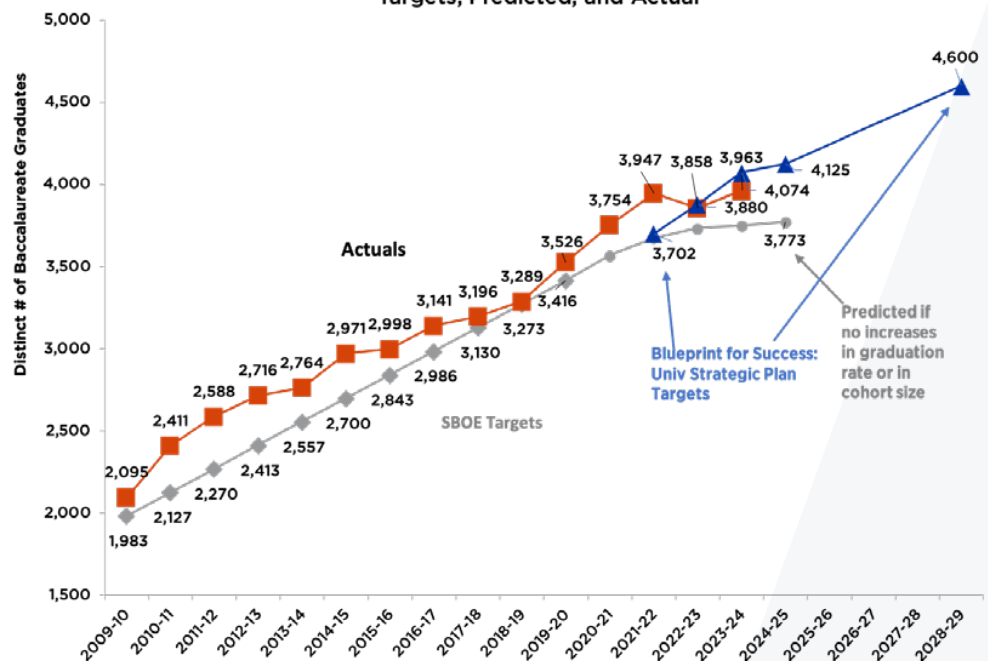




OVERALL PROGRESS

The number of **baccalaureate graduates** from Boise State has increased markedly over time. As illustrated in the chart at right, **Boise State has exceeded our targets nearly every year**, starting with the targets put forth by the SBOE in August 2010 and continuing through the targets in the Blueprint for Success. With 3,963 distinct baccalaureate graduates in 2023-24, Boise State continues to lead the way in contributing to a vibrant workforce.

Number of Baccalaureate Graduates from Boise State
Targets, Predicted, and Actual



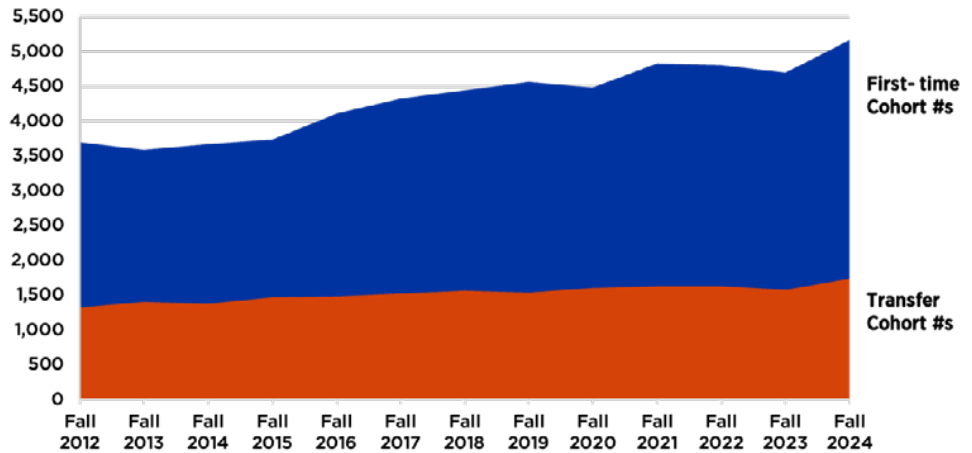
The increases we have seen in baccalaureate graduates have been, in large part, a result of **substantial increases in Boise State's retention and graduation rates**, as well as the number of students who enter the university, as shown.

After experiencing dips in first-to-second-year retention rates for the fall 2019 and fall 2020 first-time, full-time (COVID) cohort, university retention rates have rebounded and stabilized. The retention rate for the fall 2023 first-time full-time cohort was 78.9%. Retention of the full-time transfer cohort increased with the fall 2019 cohort and, despite some vacillation, remains strong at 75.9%.

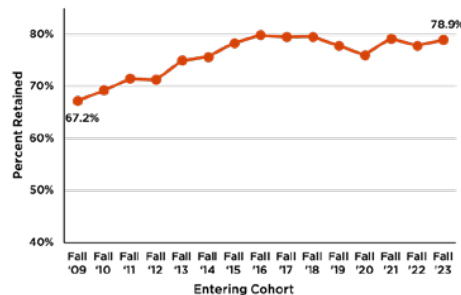
Boise State has continued its momentum in the six-year graduation rate with unprecedented growth over the last dozen years. The six-year graduation rate for the **first-time full-time freshmen** went from 29% for the fall 2006 cohort to **59.3%** for the fall 2018 cohort, or a 30-point increase. The four-year graduation rate for full-time **transfer students** reached an all-time high **rate of 63.4%** for the fall 2020 cohort, which is a 27-point increase over the fall 2008 cohort.

These incredible outcomes earned us **two national awards** in the 2023-24 academic year for student retention and success.

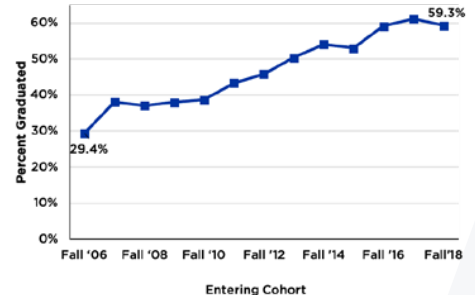
Fall Incoming Degree-seeking Undergraduate Cohort Enrollment



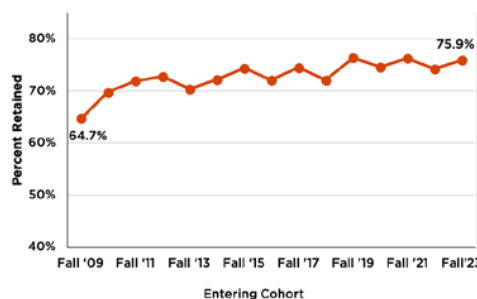
First-Year Retention Rate: First-time Full-time Freshmen



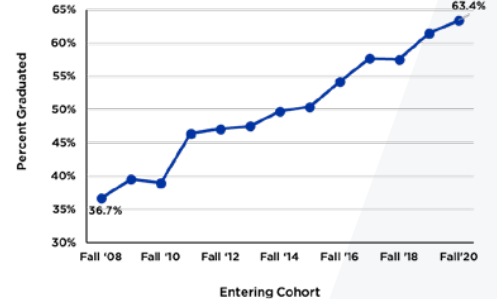
Six-year Graduation Rate: First-time, Full-time Freshmen



First-Year Retention Rate: Full-time Transfers

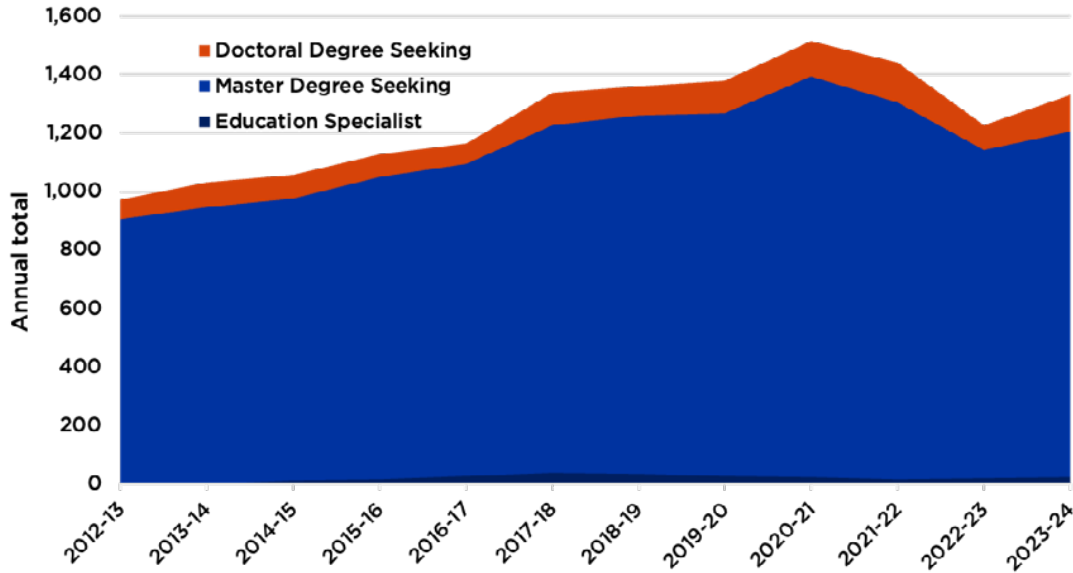


Four-year Graduation Rate: Full-time Transfers



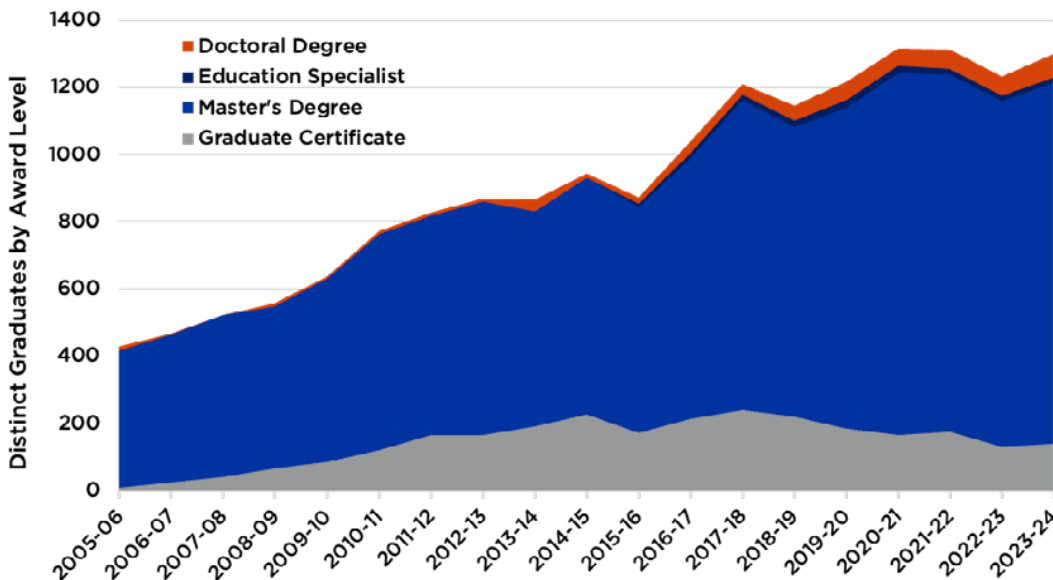
Graduate-level programs are also an important aspect of serving Idaho and Idahoans, and Boise State continues to develop new programs to serve the state. Industry, for example, has called upon Boise State to play a key role in American competitiveness and the success our nation seeks to achieve with its significant investment in the semiconductor industry. They have called upon us to grow our STEM programming at the graduate and undergraduate levels.

Incoming Degree-seeking Graduate Cohort Enrollment



The number of students graduating from **graduate degree and certificate programs** has maintained its upward trend with an **increase of 49%** over the last 10 years.

Graduate Degrees and Certificates Awarded



Success rates in our graduate degree programs continue to remain strong. The most recent one-year success rates (percent retained or graduated) were 85% for entering master's degree students and 88% for entering doctoral degree students.



Strategic Enrollment and Retention Plan

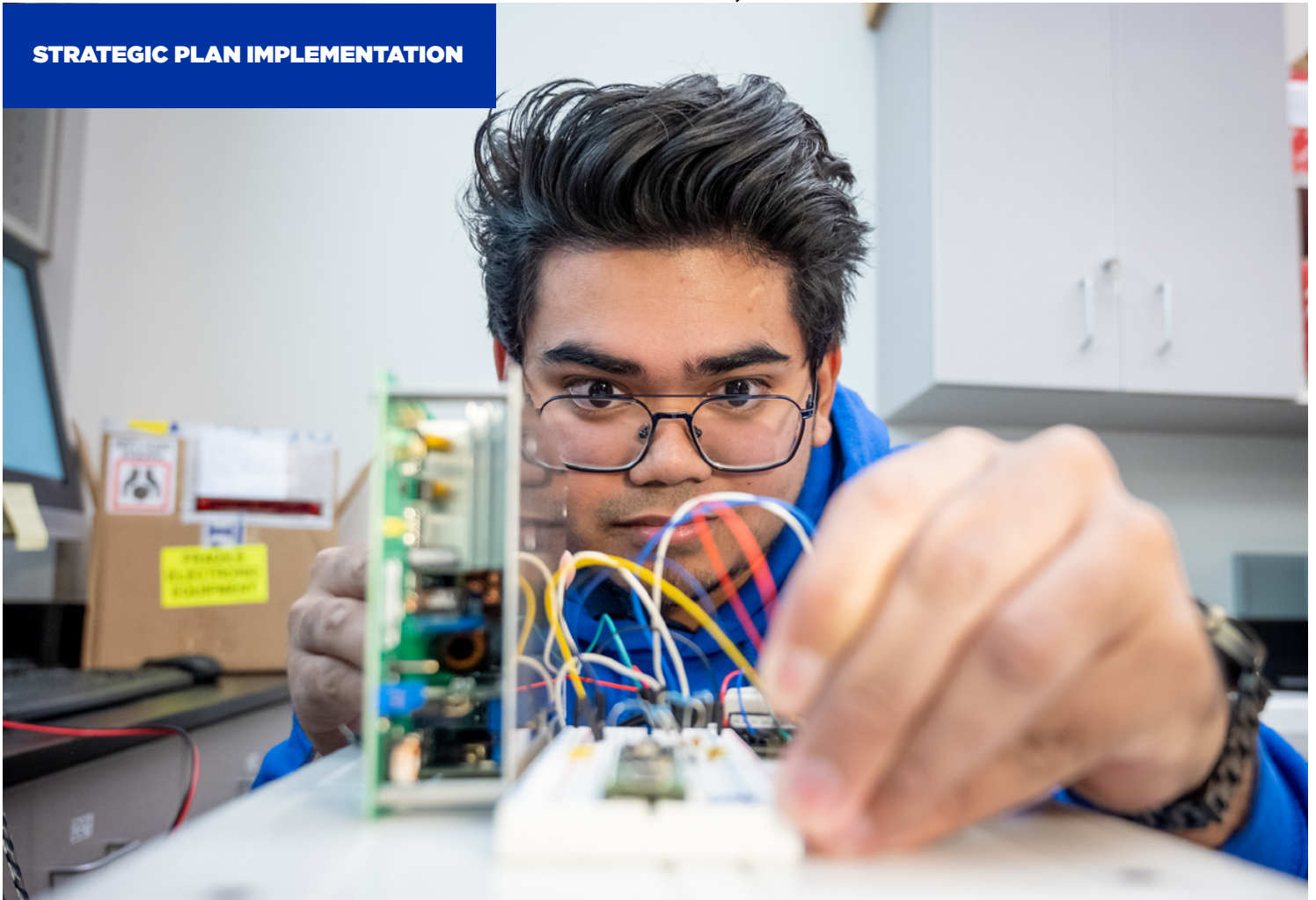
Engaging the university community in building a relationship-rich campus culture and creating effective student-centered systems/practice to support access and success so that every student can be successful.

The SERP Initiative, which is both a plan and a process, serves the university's first Blueprint for Success strategic goal: Improve Educational Access and Student Success. As the initiative completes its second year, there are three high-level takeaways from this year's work.

- 1. We are better serving Idaho.** We have made significant progress towards our access goals, which means the makeup of our incoming students better reflects that of our service region. Thus, we are increasing opportunities for Idaho students who want to earn a college degree. But access is only the first step; and increased access means increased importance of the work needed to retain these students to graduation. We are also working to strengthen our ability to **track our success by developing leading indicators**. We are also broadening our focus to include transfer students, and are developing strategies to serve this important group in our student body.
- 2. We are smoothing the path.** A significant theme in the SERP strategies is to make it easier for students to access and navigate our systems and processes; we are moving strategies forward to this end. From improvements to the **Major Finder tool**, which helps students and prospective students find an area of study that matches their interest and career goals, to the Experiential Learning Network, which seeks to make it easy for any student to be engaged with transformational experiential learning, the SERP is full of examples of work being done across the university to make the path to a degree smoother for our students. There is more work to do. Too many capable students hit a snag in a first-year course to meet academic expectations, or need help navigating financial planning and do not find their way to the support they need. At every level of the university, we can identify ways to make our systems, both in and out of the classroom, easier to navigate and help students who need them find the resources that will help them be successful, especially for students who experience more barriers to their success.
- 3. We are creating a relationship-rich environment.** A key lever in achieving the goals of the SERP is to help students feel like they belong at Boise State. As we learned at this year's SERP Summit, research shows that students who are connected — to other students and to faculty and staff — are more likely to persist and earn a degree. Additionally the students identified in the SERP tend to experience more barriers and frequently have fewer connections. From efforts to better understand patterns of student involvement, to work that supports students' First Year Experience, the SERP seeks to influence our campus culture to be more relationship-rich. Across the university, everyone who interacts with students or creates environments for students to connect with each other has a role to play. From forming deep connections with students to being a "mentor of the moment," these interactions help students feel seen and understood and increase the likelihood that they have the support they need to navigate the inevitable bumps in the road to their success.



STRATEGIC PLAN IMPLEMENTATION



Goal #2: Innovation for Institutional Impact.

Expand and implement leading-edge innovations to provide access to integrated high-quality teaching, service, research and creative activities.

Boise State has again been recognized as **one of the nation's most innovative universities**. We are building on a campus-wide culture of innovation — developing research that positively impacts lives, structures that transcend disciplines so researchers and students can collaborate on complex problems, and spaces and programs specifically devoted to innovation. This strategic goal recognizes our focus on innovation and seeks to expand and grow it in every aspect of what we do.



NEW ACADEMIC PROGRAMS

Boise State continues to expand its curricular offerings in targeted areas driven by an **analysis of student, industry and community demand**. We continue to innovate with new research related to enhancing student learning and positively impacting our state and nation.

Our diverse offering of new programs is designed to meet the **labor force demands** within Idaho and nationally. The programs fill shortages in healthcare, respond to needs expressed by community leaders, and upskill Idaho's workforce, which allows the Idaho economy and its communities to thrive.

NEW DEGREE-LEVEL PROGRAMS

Bachelor of Arts in Digital Innovation and Design (hybrid) - Fall 2024
Bachelor of Arts in Public Service Leadership - Fall 2024
Bachelor of Applied Science in Public Service Leadership - Fall 2024
Bachelor of Science in Exercise, Physical Activity, and Sport - Fall 2024
Bachelor of Science in Health Data Analytics - Fall 2024
Bachelor of Science in Neuroscience - Fall 2024
Master of Arts in Digital Communications Management - Fall 2024
Doctor of Philosophy in Engineering - Fall 2024

NEW GRADUATE CERTIFICATES

Generative AI in Education - Fall 2024
Organizational Development - Fall 2024

NEW UNDERGRADUATE CERTIFICATES

AI for All - Fall 2024
Applied Emotional Intelligence and Well-being - Fall 2024
Community-Driven Health Solutions - Fall 2024
Dance - Fall 2024
Design Thinking for Professional Purpose and Personal Fulfillment - Fall 2024
Disaster Preparedness and Response - Fall 2024
Early Childhood Program Administration and Leadership - Fall 2024
Evidence-Based Public Health - Fall 2024
Foundations of Public Health Practice - Fall 2024
Generative Language AI - Fall 2024
Health and Human Behavior - Fall 2024
Nonprofit Management (online) - Fall 2024
Semiconductor Materials - Fall 2024

NEW CENTERS AND SCHOOLS

School for the Digital Future - Fall 2024



STRATEGIC PLAN IMPLEMENTATION



Goal #3: Advance Research and Creative Activity.

Advance the research and creative mission of the university community by fostering transformational practices, and supporting faculty, staff and student excellence in these pursuits.

Boise State is **committed to fostering an environment where research and creative activity thrive.** Focus and attention includes providing comprehensive support for faculty during all phases of the research endeavor; facilitating relationships with industry for research and commercialization collaboration; and leading outreach aimed at fostering economic development in Boise and the region.

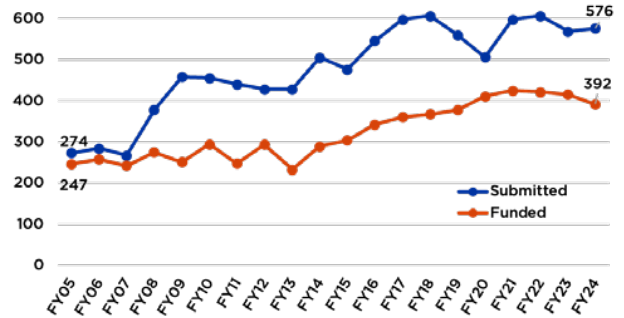


RESEARCH AWARDS

Boise State was awarded
\$83.4
million
in research awards
this past year, a **43%**
increase over the last
five years.

Boise State has fostered a steady increase in research proposal submissions — twice as many as we had 20 years ago — and in the number of globally competitive research awards. The total of proposal submissions has **more than doubled** over the last 20 years.

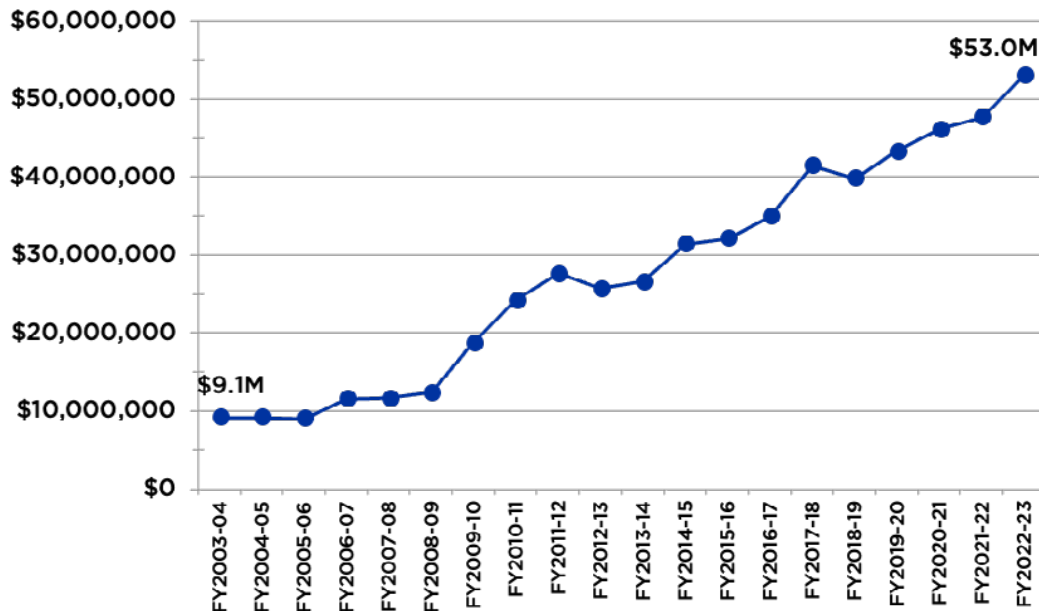
Proposals Submitted and Funded
(ARRA and Earmark not included)



Even more remarkable is the dramatic increase in research funding dollars awarded to the university. Over the last 20 years, total research and development expenditures have **increased six-fold**, from \$9.1 million to \$53 million. And despite the challenges presented by COVID-19 to the campus research community in the recent past, total research and development expenditures continued to grow, increasing by 22%, or \$9.7 million, from FY20-FY23.

Currently funded work ranges from researching election cybersecurity, to evaluating farmland conversion impacts in the Treasure Valley, to better understanding the earthquake that shook the region in March 2020, to revolutionizing aerospace manufacturing.

Total Research & Development Expenditures
as Reported to the National Science Foundation





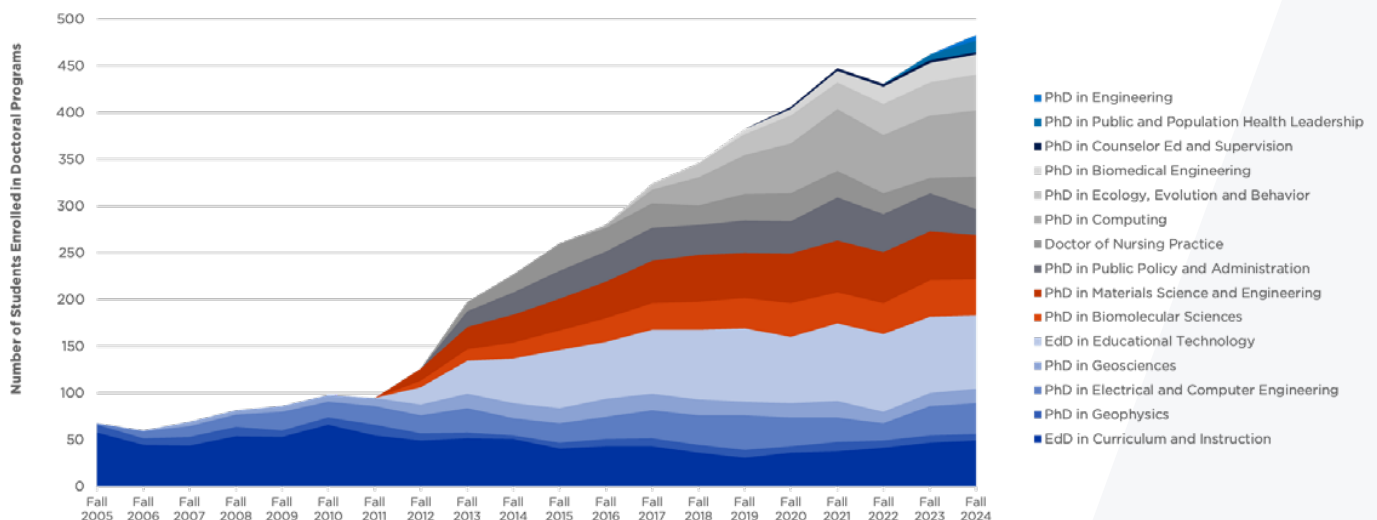
DOCTORAL PROGRAMS

Creating research intensive graduate programs, especially doctoral programs, and recruiting active research faculty to the university have helped advance not only our students, but Boise, the state of Idaho, and, more broadly, the world by fostering discovery and innovation.

Creating successful and impactful doctoral programs is at the core of Boise State's critical service to the community, state and region.

Boise State has continued to create new doctoral programs: Ph.D.s in materials science and engineering; biomolecular sciences; public policy and administration; ecology, evolution and behavior; computing; biomedical engineering; counselor education and supervision; public and population health leadership; an Ed.D. in educational technology; and a Doctor of Nursing Practice. In fall 2024, the Ph.D. in Engineering enrolled its inaugural class of students.

The following figure shows the growth in the number of doctoral programs and their enrollment over the last 20 years. Doctoral student enrollment has increased by 85% over the last 10 years, from 260 in fall 2015 to 482 in fall 2024.



STRATEGIC PLAN IMPLEMENTATION



Goal #4: Foster Thriving Community.

Promote and advance a fair, equitable and accessible environment to enable all members of the campus community to make a living, make a life and make a difference.

We are strongly committed to caring for our community and we embrace the opportunity to imagine and implement new ways to better serve the various communities within our sphere of activity, including and foremost all members of the campus community.

In 2006, Boise State was one of **only 76 universities** in the nation initially selected by the **Carnegie Foundation as a Community Engaged Institution**. That classification was renewed in 2015 in recognition of the myriad ways that Boise State actively works to align with the cares, interests and activities of our local and state community. This commitment to service has been, and continues to be, a defining feature of the university.

Boise State successfully renewed its classification as a Carnegie Community Engaged Institution, covering the period from 2024 to 2032.

This application report laid the foundations for our recently awarded National Science Foundation project (TRANSFORM), which is geared towards supporting faculty and staff to work closely with community partners. In addition, Boise State successfully received the inaugural Carnegie designation in **Public Service Leadership, becoming one of only 11 universities** that hold these two Carnegie classifications simultaneously.



ONLINE PROGRAMS

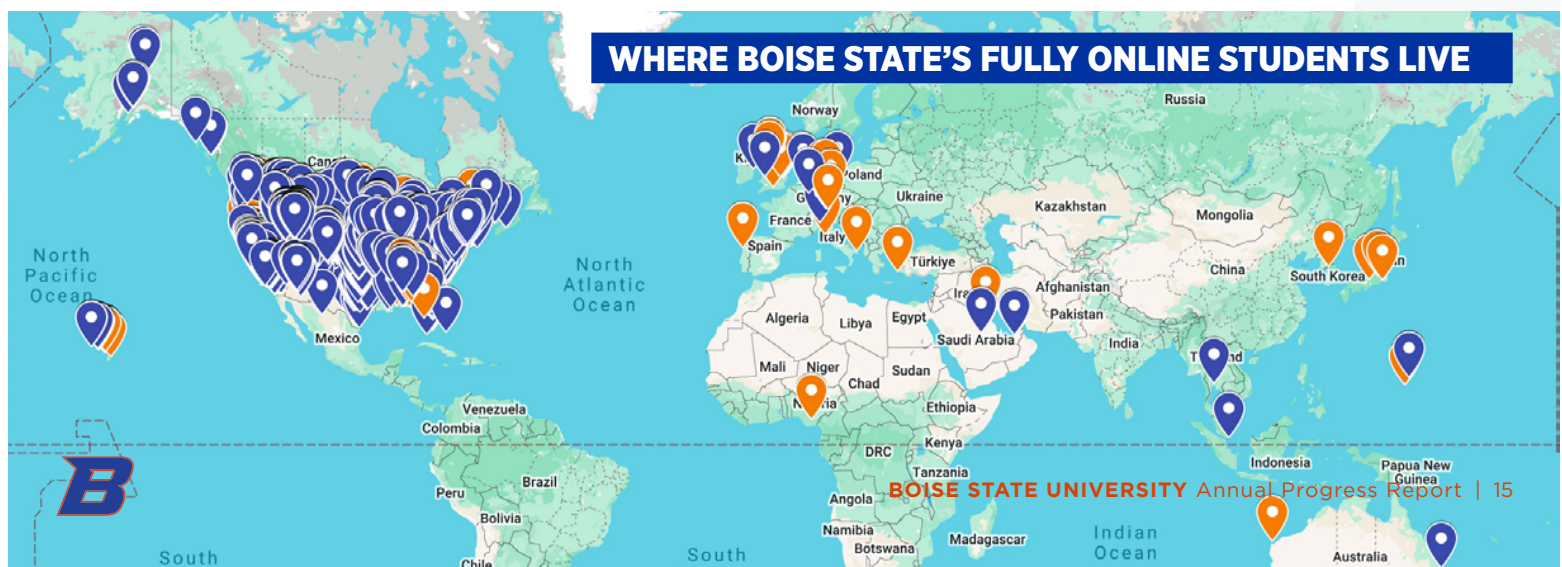
Boise State has greatly expanded educational access across Idaho and beyond, enrolling **5,698 degree-seeking students in fully online programs** in 2023-24. The university now has over 100 fully online degrees and certificates that can be accessed any time, creating opportunities for busy working adults and others who cannot come to a university campus.

5,698
degree-seeking students in
fully online programs

Over the past decade the university has made strategic investments in infrastructure and staffing to develop and deliver an array of online programs and to effectively serve online students. The vast majority of this was done with no new state funds. Instead, the university leveraged the SBOE-approved Online Program Fee and Self-Support funding models.

Boise State FY24 online highlights:

- Idahoans comprise 40% of the population (2,298 of 5,698).
- 28% of distinct graduates completed a degree or certificate in a fully online program.
- The majority of students enrolling in online programs are adult learners; they typically have jobs, have families, and don't live near campus. Despite these hurdles, students graduate from Boise State online programs at a rate of 74%.
- These online programs are created to address workforce needs and are intentionally designed to address the needs of online learners. Distinguishing features include: anytime/anywhere delivery; a year-round calendar featuring seven-week sessions and six entry points per year; holistic student support including intensive high-touch advising; and a stackable design that allows students to earn certificates on their way to a bachelor's degree.
- In 2022, a university working group looked at the future of online programs and made recommendations based upon a projected growth to 10,000 fully online students in this decade.
- In addition to the distance students who took all their courses online, our campus-based students took a number of online courses to add much-needed flexibility to their schedules. Altogether, 20,307 students took at least one online course, and 36% of all the university's credit hour generation was from online courses.
- These online courses and programs are taught by Boise State faculty embedded in the university's colleges and academic departments.



STRATEGIC PLAN IMPLEMENTATION



Goal #5: Trailblaze Programs and Partnerships.

Boise State University participates in many collaborative programs and community partnerships with academic, research, non-profit and other community organizations.

Our university is leveraging existing partnerships and programs and developing new opportunities with Idaho employers and private partnerships to address workforce, research, educational and service needs. Expanding partnerships across Idaho will help ensure rural communities have access to high-quality educational programming that fits their needs.



COLLABORATIONS AND COMMUNITY PARTNERSHIPS

MICRON PARTNERSHIP MEANS REAL-WORLD EXPERIENCE FOR BUSINESS AND ENGINEERING STUDENTS

Boise State students are gaining **real-world industry experience in semiconductor research and development** through a unique partnership with Micron that provides students hands-on experience and opportunities for future employment.

Micron shares real data related to their supply chain challenges with Boise State supply chain management and engineering students. Over four months, the students analyze the information, meeting regularly with the Micron team, then present their solutions to Micron leadership at the end of spring semester.

“So often students are given a problem and told to use a specific tool to solve the problem. Instead, we give them a problem and ask them to solve it using what they’ve learned,” said Jacob Garofalo, who participated in the program as a student and now works at Micron. “The pillars of the program are for the students to work as a cohesive team, develop data analysis and presentation skills, and to grow professionally so they’re ready to walk into a work environment. We see so many lightbulbs go off throughout the semester, and by the end the students can speak confidently about the work they’ve done.”





NEW POSITIONS
focused on growing
partnerships, both in
number and depth:

- Director for University Industry Collaborations
- President's Professor of Public Scholarship and Engagement

U.S. COUNCIL ON COMPETITIVENESS

Boise State, the Council on Competitiveness and Idaho National Laboratory partnered to host a national gathering of educators, CEOs, government officials and industry leaders in August 2024. Together, these leaders sought to uncover the best practices and policies driving regional innovation, attract national attention and greater support for the most promising regional initiatives, and develop strategies to scale and deploy place-based innovation best practices across the United States.

Three industries are setting the innovation pace across the state and the Mountain West — each primed to change fundamentally how we live and work, and how we secure America in an era of turbulence and transformation: semiconductors, cybersecurity and advanced nuclear. Boise State is advancing partnerships, academic offerings and research across all three critical areas.

Idaho's emergence as a semiconductor powerhouse is a result of distinct, harmonious, intentional and strategic collaboration between education, national laboratories, government and business to develop the platform technology — and its workforce — supporting innovation and growth in nearly every other economic sector.

A RENEWED PARTNERSHIP WITH VIETNAM

Boise State is proud of its **longstanding partnership with National Economics University**. The two universities have worked together for approximately 30 years, preparing students to be successful in business, government and as educational leaders. The recent establishment of a 2+2 Bachelor's of Business Administration program in Entrepreneurship Management for undergraduate students is an exciting step forward in providing the opportunity for students to earn a premium brand education that opens doors to working in global business. Students study for two years at National Economics University and for two years at Boise State University in earning an American bachelor's degree.



INSTITUTIONAL DATA

Enrollment

Enrollment Fall 2024 (October 15 census) <i>Source: IE University Enrollment Report</i>	Headcount
Undergraduate Degree-seeking	17,683
Graduate Degree-seeking	2,804
Early College/Dual-credit	6,152
Other Non-degree Seeking (Undergraduate and Graduate Combined) and Audit Only	611
Total	27,250

Annual Headcount Enrollment <i>Source: PSR-1 Annual Enrollment Report, reflects "system total" no exclusions</i>	2022-23
Undergraduate Degree-seeking	19,440
Graduate Degree-seeking	3,553
Early College/Dual-credit	7,446
Other Non-degree Seeking (Undergraduate and Graduate Combined) and Audit Only	2,587
Total	33,112

2023-24 Graduates

Degree and Graduate Certificate Graduates <i>Source: IPEDS Completions Report (IE)</i>	Distinct Number of Graduates
Associate Degree	316
Undergraduate Certificate	666
Baccalaureate Degree (Academic)	3,964
Graduate Certificate	141
Master's Degree	1,073
Educational Specialist Degree	15
Doctoral Degree	72
Total Distinct Graduates	5,464*

*Note: the sum of the distinct graduates does not equal the overall distinct number of graduates because students can complete more than one degree

Employee Nov 2023 Snapshot	Full-Time	Part-Time	FTE	%
Faculty	815	677	1,041	33.1%
Professional Staff	1,633	50	1,650	52.4%
Classified Staff	449	28	458	14.6%
Total	2,897	755	3,149	100.0%



Revenue and Expenditures for FY2024

Operating Revenue	FY2024
Student Tuition and Fees (Gross)	233,692,067
Scholarship Discounts and Allowances	(37,093,800)
Federal Grants and Contracts	61,089,368
State and Local Grants and Contracts	6,071,454
Private Grants and Contracts	4,622,534
Sales and Services of Educational Activities	10,927,147
Sales and Services of Auxiliary Enterprises	91,328,618
Other	1,936,827
Total Operating Revenues	372,574,215

Operating Expenses	
Instruction	162,541,444
Research	50,960,531
Public Service	31,829,583
Libraries	6,609,882
Student Services	25,227,042
Operation & Maintenance of Plant	38,452,381
Institutional Support	48,812,522
Academic Support	47,687,252
Auxiliary Enterprises	116,613,843
Scholarships and Fellowships	8,885,782
Depreciation	30,452,963
Total Operating Expenses	568,073,225
Operating Income/(Loss)	(195,499,010)

Non-operating Revenues/(Expenses)	
State Appropriation - General	131,631,655
State Appropriation - Maintenance	3,610,496
Pell Grants	22,780,165
Gifts	41,287,938
Net Investment Income	12,773,832
Change in Fair Value of Investments	1,435,909
Interest	(8,683,316)
Gain/Loss on Retirement of Assets	7,276,928
Federal Aid Grant Revenue	—
Loss on Perkins Federal Capital Contribution	—
Other Non-operating Revenue/(Expense)	(90,837)
Net Non-operating Revenues/(Expenses)	212,022,770



Other Revenue and Expenses	
Capital Appropriations	1,506,752
Capital Gifts and Grants	6,684,383
Total Other Revenues and Expenses	8,191,135
Increase in Net Position	24,714,895
Net Position - Beginning of Year	582,803,824
Net Position - End of Year	607,518,719

Research and Economic Development

	FY2020	FY2021	FY2022	FY2023	FY 2024
	Office of Technology Transfer				
Invention Disclosures	22	16	13	10	7
Patent Applications Filed	28	20	18	12	22
Patents Issued	5	1	8	8	7
Licenses/Options/Letters of Intent	19	22	32	51	46
License Revenue	\$15,996	\$8,500	\$14,456	\$25,678	\$31,585
Startups	0	0	1	1	1
FTEs	2.25	2.1	1.5	1	1

Number of protocols reviewed by:	Office of Research Compliance				
Institutional Biosafety Committee	68	68	68	74	97
Institutional Animal Care and Use Committee	82	68	67	76	73
Social and Behavioral Institutional Review Board	494	509	473	465	450
Medical Institutional Review Board	32	33	48	42	50

	Office of Sponsored Programs				
Total # of Proposals Submitted	506	598	606	569	576
Total # of Awards	411	425	422	416	392
Total Sponsored Projects Funding	\$58.2M	\$65.3M	\$68.0M	\$91.0M	\$83.4M
Total Research and Development Expenditures as reported to NSF	\$43.3M	\$46.1M	\$47.6M	\$53.0M	not available at this time
Externally Funded Research Expenditures	\$29.8M	\$34.7M	\$35.3M	\$39.9M	\$43.1M





BOISE STATE UNIVERSITY FOUNDATION

Fiscal Year 2024 — Another Record Fundraising Year

At Boise State University, we have a driving purpose and spirit that unites faculty, students, staff, alumni and friends as we tackle the most formidable challenges of our time.

The 2024 fiscal year was a significant one for University Advancement and the Boise State University Foundation. We publicly launched Unbridled: The Campaign for Boise State University in October 2023. We also broke our philanthropic record for the **third consecutive year**, with giving totaling \$61.3 million from 28,146 individual donors. In June 2024, we received approval to merge the division of University Advancement into the Foundation effective fiscal year 2025.

Endowment Performance

The Boise State Foundation exceeded its short-term objective of maintaining its purchasing power despite market fluctuations. In fiscal year 2024, the portfolio posted an annual return of 12.07%, comparing favorably with our benchmark return (13.1%) and the median return for foundation endowments less than \$500M (11.65%).

At the close of fiscal year 2024, the market value of the Boise State Foundation's total endowment investment portfolio grew to more than \$164.5 million, a function of market gains and new gifts from donors. Over the past 10 years, the foundation's total endowment has grown by more than 72% while supporting Boise State's students, faculty, research programs and athletics.

In 2024, 27% of the Foundation's total distribution to the university came from endowment payout. The Foundation made more than \$5.5 million available for distribution to augment the university's operating budget in critical areas such as student financial aid as well as research and academic program support.



Looking Forward

Unbridled: The Campaign for Boise State University is the university's most ambitious philanthropic and alumni engagement campaign in its history, with a fundraising goal of \$500 million by 2028 to make key investments in endowed scholarships, endowed faculty positions and Bronco Athletics.

As of June 30, 2024, the Unbridled campaign had raised \$346.9 million, including:

- **\$81.4 million in student support**, with nearly \$60 million of this for endowed scholarships
- \$37.0 million for faculty and research support
- \$130.8 million for Athletics' What's Next initiative

Momentum for the campaign continues at an exciting pace. A groundbreaking for the new Construction Management building is scheduled for early spring. This building will provide a state-of-the-art facility to provide students with academic and professional training, allowing them to ultimately contribute to Idaho's rapidly expanding growth and workforce development.

The Foundation continues its strong partnership with Athletics, particularly with fundraising for the North End Zone Project and the creation of BroncoPRO. Leadership in both the Foundation and in Athletics regularly collaborate to navigate the ever-shifting landscape of collegiate athletics and ensure Boise State remains competitive and at the forefront of emerging trends.

Unbridled's early success and its three key pillars—student access and success, faculty innovation and What's Next for athletics—strongly align with the university's strategic plan. The success of the campaign continues to support not only the university's strategic growth but also the educational and workforce needs of the state.

Increased Financial Aid

In 2024, donors endowed 35 new scholarships and one endowed graduate assistantship, totaling \$19.8 million awarded to students.

True Blue scholarships made up almost 18% of new endowed scholarships in fiscal year 2024. Awarded based on financial need and merit, they are an important tool for helping Idaho students receive a college education in their home state. New endowed scholarships included:

- Marjorie and Charles Williamson True Blue Business Endowed Scholarship
- Snowetti True Blue Endowed Scholarship
- Wolff Family True Blue Business Scholarship
- Flandro Family True Blue Business Scholarship
- Ewan Dodson Family True Blue Scholarship
- Moylan Family True Blue Business Scholarship
- Dr. Alan W. Frankle True Blue Scholarship
- Tenacity True Blue Business Scholarship

It is Boise State's mission to make a **college education accessible to all**. Endowed scholarships help more students pursue a higher education, regardless of their circumstances. The Foundation's Scholarship Endowment Bridge Program provides a match for these types of endowed scholarships, making their impact even greater.



COLLEGE OF ARTS AND SCIENCES

91

DEGREE PROGRAMS
OFFERED

49

UNDERGRADUATE
CERTIFICATES
OFFERED

5,923

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

NEUROSCIENCE

PROFESSIONAL AND
PUBLIC WRITING

MUSIC PRODUCTION



ARTS ENTREPRENEURSHIP MINOR SETS STUDENTS UP FOR CAREER SUCCESS

Morgan Kelly, a junior majoring in theatre and double-minoring in music and arts entrepreneurship, is a passionate advocate for the arts entrepreneurship minor at Boise State University.

Experiential learning is one of the keystones that brings the College of Arts and Sciences more than 20 departments together under a common banner, and the arts entrepreneurship minor in the School of the Arts is a paragon case of the sort of hands-on education the college prizes.

Arts entrepreneurship is a pathway for students to take their artistic talents out of the classroom and into the real world, where they develop the skills and mindset to become creative entrepreneurs.

The program requires courses that prepare students for work in the creative sector. They hear from working artists, learn business skills specific to creative careers and land internships in their chosen fields. The program also pairs well with add-ons like the new music production certificate or the +business certificate, which students can take in lieu of elective credits.

Sue Latta, lecturer in the School of the Arts, built the program in 2018 with post-graduation outcomes in mind.

"We're here to help students prepare for careers in the creative economy," Latta said.

Students experience the program's benefits firsthand, and they're among the arts entrepreneurship minor's most passionate supporters.

"The arts entrepreneurship program has been positively influential on my view of how to successfully live as an artist and how to exist in a cut-throat environment as a whole," said Kelly.

Kelly appeared in the 2024 campus production of *The Sound of Music* as Maria Rainer. She hopes to continue performing after graduation. The AE105 course, *Conversations with Working Artists*, has supported that goal by putting her in touch with successful artists like Eric Gilbert, co-founder of Treefort; Zach Voss, a local videographer and editor; and Mike Doherty, a New York City-based actor.

"Sue has **stressed the importance of learning business foundations** as a way to combat the stereotype of the 'starving artist,' and **empower young artists with tools for success** in their respective fields after graduating college," Kelly said. "Young and emerging artists need this program, even if they don't realize it."



COLLEGE OF BUSINESS AND ECONOMICS

29

DEGREE PROGRAMS
OFFERED

7

UNDERGRADUATE
CERTIFICATES
OFFERED

4,367

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

BUSINESS ANALYTICS

CYBERSECURITY
MANAGEMENT

INFORMATION
SYSTEMS AND
CONTROL

IGNITING A DRIVE TO SUCCEED

Nick Lloyd is a first-generation Idaho student studying accountancy and finance, and he's finding success at Boise State and beyond.

He spent summer 2024 on both coasts, taking part in two prestigious programs geared toward exceptional students in their fields.

First, he traveled to Boston, Massachusetts, for Harvard's competitive Summer Venture Into Management Program, where he attended classes and got a peek into life as an MBA student at Harvard Business School. Then he headed across the country to Redmond, Washington, where he was one of 48 of 4,000 applicants selected for a 12-week internship in the Microsoft Finance Leader Rotation Program. He interned as a summer analyst, and following that experience, he signed an offer with Microsoft to return to the program full-time after he graduates.

"As a COBE student, I've been fortunate to have many incredible opportunities which have driven my ability to succeed in various roles," Nick said. "The college's integration of club support, professional development and academic excellence has enabled me to complete five internships and hold leadership roles in eight student organizations, while double majoring. As a Pell-eligible first-gen student, attending college was frightening for a number of reasons, but the support system that continues to grow within the College

of Business and Economics was key to my success. I am a proud Bronco and will forever be grateful for the **relentless efforts that Boise State makes to help students succeed.**"

In 2023, Nick received the Public Company Accounting Oversight Board (PCAOB) Scholarship recognizing his academic excellence and ethical standards. This \$10,000 scholarship is awarded to a select group of accounting students nominated by an accredited accounting program.

Beyond the classroom, Nick is actively involved in the campus community. He serves as the ASBSU associate vice president of Academic Affairs, president of Beta Alpha Psi, holds leadership roles in several other campus organizations and co-founded both Boise State's Investment Banking Club and Special Olympics Club. In recognition for his dedication and involvement, Nick received Boise State's 2024 Commitment to Community Campus Award.

Nick will graduate in spring of 2025 with dual majors in Accountancy and Finance, and a minor in Analytics. You may have seen him in Boise State's Out of the Blue campaign, as one of the university's trailblazing students. Nick hopes to spend his remaining time at Boise State mentoring the next generation of accounting students.



COLLEGE OF EDUCATION

38

DEGREE PROGRAMS
OFFERED

6

UNDERGRADUATE
CERTIFICATES
OFFERED

1,385

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

GENERATIVE AI IN
EDUCATION

OUTDOOR EDUCATION
AND LEADERSHIP



MEET FIRST-GENERATION

COLLEGE STUDENT NAYELI SAMAGUEY

Nayeli Samaguey, a first-generation college student born and raised in Melba, always had a passion for working with children while helping them learn and grow.

Now in her professional year as an intern in a bilingual classroom at Reed Elementary in Kuna, Samaguey will graduate next spring with the experience she needs to make a difference in the classroom.

Though being a first-generation student comes with challenges, Samaguey found mentorship through the TRIO program in high school and at Boise State, and from parents who wanted a better life for themselves and Samaguey.

"Though my parents never went to college, they supported my dreams and have been with me every step of the way," said Samaguey. "They knew college was in my future before I knew."

The teacher education program in the College of Education provides an immersive experience for teacher candidates like Samaguey, **pairing them with a mentor teacher in a classroom to ensure candidates have on-the-job experience** and are prepared to teach in their own classrooms when they graduate.

"Being an intern has been a great and very rewarding learning experience," said Samaguey. "Being in the classroom is very hands-on. I am fortunate to have built relationships with students, to the point where they are comfortable to express themselves."



COLLEGE OF ENGINEERING

42

DEGREE PROGRAMS
OFFERED

21

UNDERGRADUATE
CERTIFICATES
OFFERED

3,242

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

PHD IN ENGINEERING

PHD IN BIOMEDICAL
ENGINEERING

CYBER OPERATIONS
AND RESILIENCE

SEMICONDUCTOR
OFFERINGS

MEET A FIRST-GENERATION RESEARCHER

ADVANCING FRONTIERS IN TISSUE ENGINEERING

Biomedical engineering doctoral student Mone't Sawyer didn't always see herself as a scientist or engineer.

At one time in her life, she thought scientists weren't allowed to be creative, so her creative spirit wouldn't be allowed to shine pursuing a career in STEM fields.

Boise State University and the College of Engineering have provided the space for Sawyer to bridge her creative passions with her background in materials science and engineering to her research in biomedical engineering.

In September, the doctoral candidate's creativity shone front and center in the American Chemical Society's Applied Bio Materials journal as her **first lead publication on tissue engineering applications landed her on the cover.**

When Sawyer started college, she enrolled as a dual major in psychology and criminal justice. Her goal was to become a profiler with the FBI. After two years, she realized the passion she once had for the things she was learning had fled.

"I wanted to go to NYU when I graduated high school but I am a first-generation college student and paying for school myself when scholarships weren't enough limited where

I could attend," Sawyer said. "Looking back, I'd say that the universe was guiding me here because the impact Boise State has had on me, and me on it, has guided my life in a direction that I am so incredibly proud of."

Sawyer then set her trajectory toward planes, specifically becoming a pilot. While a career as a pilot briefly lasted, she realized she was more interested in the intricacies of the plane, how it is made, what it is made of and how it can be optimized. Honing in on a new passion all that was left was an outlet to study it. It's here in the Micron School of Materials Science and Engineering where faculty like Eric Jankowski changed her trajectory once again.

"I owe my own discovery of my passion for research to him," Sawyer said. "Mentorship can make or break any research experience. I count myself incredibly fortunate to not have one, but two, advisors that have pushed me to be the best scientist I can be."



COLLEGE OF HEALTH SCIENCES

19

DEGREE PROGRAMS
OFFERED

13

UNDERGRADUATE
CERTIFICATES
OFFERED

5,729

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

NEUROSCIENCE

EXERCISE, PHYSICAL
ACTIVITY AND SPORT

HEALTH DATA
ANALYTICS



NEW PROGRAM, NEW STUDENT

*Getting excited about Boise State's
Neuroscience program*

Maddy Hughes grew up in Meridian. To her, Boise State has always been the hometown school and while it was fun to go to their football games, Maddy didn't think she wanted to attend Boise State. The launching of a brand new, unique bachelor's degree in neuroscience changed everything for her.

Hughes has been fascinated with neuroscience since she started researching psychology and physical traits of the brain — mostly on her own — as a high school junior. Her passion and fascination with neuroscience grew and grew. She quickly knew that she wanted to spend the rest of her life learning about the complexity of the human brain and conducting research to help people in new ways through neuroscience. Childhood cognitive development among cultures throughout the world is of particular interest to her and she hopes to study abroad while in college.

Hughes almost left Idaho for college. But when she was looking at Boise State's website a few days before her orientation, she discovered that Boise State was just starting a new undergraduate degree in neuroscience in fall 2024, which was to be her first semester of college too. Suddenly Boise State was interesting and exciting.

It's been several years in the making, but Boise State launched the first undergraduate neuroscience program in Idaho with collaboration from faculty in biology, psychology, kinesiology, special education, computer science, linguistics and more.

Each neuroscience major will participate in at least one year of formal research. Hughes is getting a jump start on this requirement in her first semester thanks to her faculty mentor and one of the founding faculty of the program, Bob Wood.

Hughes met Wood, the director of the School of Allied Health Sciences and associate dean of research for the College of Health Sciences, during her first week of classes. Wood helped her change out several classes to help align her studies with her interests. She's most excited about her neuroscience research course — a rare course for a first year student.

Hughes has found a mentor in Wood and she is grateful for all of his support and the support of her peers through the Neuroscience Interest Group that Wood formed. The group is made up of students, faculty, and others united by their interest in neuroscience.

"The neuroscience program has had a positive impact on me by just **how invested all of the faculty and staff are in their students' success**," Hughes said. "The excitement and adrenaline in this community is astronomical. Everybody wants everybody to succeed; the team they have put together to help us do it has really made the backbone for the students' success.

"It really feels like this was the track that was meant for me."



COLLEGE OF INNOVATION AND DESIGN

3

DEGREE PROGRAMS
OFFERED

9

UNDERGRADUATE
CERTIFICATES
OFFERED

236

CURRENT STUDENTS

**NEWEST
PROGRAM
OFFERINGS**

AI FOR ALL

FUNDAMENTALS OF
BEER AND WINE

STUDENT MAPS HIS INTERESTS TO NEW WAVE OF CAREERS

Jake Vegas's journey into the Digital Innovation+Design program at Boise State University started with a curiosity about media and a keen interest in design.

"I had recently stumbled upon Google's UX/UI Research and Design Certification and absolutely loved it," he said, "so much so that I wanted to see if I could make it a career."

After some exploring, Jake found Boise State's Digital Innovation+Design program and realized it was exactly what he had been looking for. Now, as a student in the College of Innovation and Design, Jake says, "The rest is currently unfolding, and I'm loving it!"

So far, Jake's coursework has taken him through subjects ranging from psychology to career hacking to creative conceiving. One of his standout classes? Leadership. "It's really inspiring and unique to see the different degree backgrounds of people taking the course," he says. The variety of perspectives has broadened his understanding of how leadership can manifest in diverse professional environments.

When asked if the program has prepared him for the "careers of the future," Jake is quick to affirm. "I 100% agree. **These courses give a major edge on the new wave of careers and how they are adapting,**" he explains. "I feel like I'm learning skills that leverage my creativity and critical thinking, and I'm already seeing the impacts in my school, work, and personal life."

But it's not just Jake's studies that inspire him. Last year, he embarked on a solo backpacking trip around the world, visiting 13 countries in 30 days. "A trip that I will remember forever is an understatement," Jake reflects. His journey pushed him out of his comfort zone, allowing him to explore new cultures and forge connections across the globe.

"Jake's curiosity, flexibility, and appetite for discovery are hallmarks of our Digital Innovation+Design students," says Jen Schneider, Interim Dean of the College of Innovation and Design, which focuses on designing programs that provide immediate value to students and prepare them to be creative leaders in the workplace. "It's a reminder that learning and growth often extend beyond the classroom."

SCHOOL OF PUBLIC SERVICE

21

DEGREE PROGRAMS
OFFERED

7

UNDERGRADUATE
CERTIFICATES
OFFERED

1,328

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

PUBLIC SERVICE
LEADERSHIP

LEGAL STUDIES

ENVIRONMENTAL
MANAGEMENT



FROM THE BLUE TURF TO A NEW TURF

Meet Saige Caldwell, SPS Capital Connection student

Last summer, Saige Caldwell received a flier in the mail advertising a brand-new opportunity at Boise State — the Capital Connection program, where students live, study and intern in Washington, D.C. for a semester.

A rising senior in the Political Science program at Boise State, Saige is interested in criminal advocacy and public interest law, and she recognized the value that an experience in D.C. would bring for her future career plans.

In the program, students complete an internship in addition to a full semester of online classwork. When choosing her internship program, Saige was drawn to an opportunity at Georgetown Law in their Public Defense Clinics, where new lawyers work as fellows in their first and second years post-graduation. Specifically, she interned for the Juvenile Justice Clinic alongside two lawyers and another intern. Her role in this program was as a primary investigator for every case brought to the clinic. Saige described the program as an intense but extremely rewarding learning experience that helped to solidify her future academic and career goals.

"To go and work in an office where I was directly working with clients- I was visiting people while they were incarcerated, I was taking them to services afterwards to get them the resources they needed to be successful... to have an impact directly on individuals' lives is something that really fueled me and was an experience that I had never been able to have before."

Through the connections she made in her internship, Saige was able to receive mentorship and direction from individuals who work in the career she is hoping to pursue.

"My alumni mentor through the Capital Connection program was Monica Hopkins, the executive director of the ACLU in D.C....we grew a really strong relationship while I was there and we bonded over our passions for civil rights and advocacy."

Saige's time as an intern in Washington, D.C. was an **experience that she feels is well worth it for learning more about a desired career field and forming invaluable connections that help students move forward** in their next steps. She was the first intern from Idaho in the Georgetown Law program, and she emphasized the importance of stepping outside your comfort zone and gaining experience in a completely different place:

"I cannot recommend this program enough, specifically the internship I did, for challenging yourself and gaining a new perspective that you might never have had the opportunity to experience before, especially coming from Idaho."

In spring of 2025, the Capital Connection program will be sending its second cohort of students to Washington, D.C. Learn more about the program and how you can support its students by visiting the Capital Connection website.

TWO STUDENT RESEARCHERS EARN

PRESTIGIOUS 2024 GOLDWATER SCHOLARSHIPS

Sara Alsaifi and Jasmine Baclig are the latest Boise State students selected for Goldwater scholarships — the country's most historic and prestigious national scholarships in natural sciences, engineering and mathematics.

Sara Alsaifi and Jasmine Baclig are the latest Boise State students selected for Goldwater scholarships — the country's **most historic and prestigious national scholarships in natural sciences, engineering and mathematics**. Alsaifi and Baclig were chosen for their potential to become the next generation of research leaders in these fields, and they join nine other Boise State students who have received Goldwater scholarships dating back to 1991.

"I am so proud of Sara and Jasmine," said Kate Huebschmann, Honors College assistant director and fellowships advisor. "Throughout their Goldwater application process, I was impressed at their ability to synthesize information, work proactively towards their goals and persevere through difficulty — all the same qualities that have made them fantastic researchers during their time here."

This is the third time in Boise State history that two students have won in a given year. They are among 438 fellow Goldwater Scholars out of a pool of 1,353 science, engineering and mathematics students (nominated by 446 academic institutions).

"They will have an incredible impact on the fields of drug discovery and disease treatment, and I look forward to celebrating their future successes," Huebschmann added.



SARA ALSAIFI

Sara Alsaifi hopes that her research will better understand the mechanisms of neurological diseases, finding more effective treatments for these ailments. Alsaifi is majoring in biology with minors in chemistry and psychology. She was born in Baghdad during the Iraq War. Her parents left their families and occupations as physicians to seek refuge in Syria before fleeing to the U.S. When she arrived in America, Alsaifi struggled with the language barrier and keeping up with the pace of her classmates. She had to relocate to three different schools for better support.

"Despite these hardships, my parents taught me to never limit my dreams and to relentlessly pursue them no matter the circumstances," she said.

Alsaifi will pursue a master's and Ph.D. in molecular biology after she completes her undergraduate degree next year.



JASMINE BACLIG

Jasmine Baclig is a chemistry major, minoring in computer science with a certificate in Spanish. Baclig's family moved from the Philippines to the U.S. when she was in the eighth grade, and she became the first in her family to study in America.

During her first year at Boise State, Baclig became passionate about research. "Though I was elated to start my first research project, I was also anxious and nervous about messing up," she said. "But upon doing my first experiment, a postdoc said I was the first to purify RNA in the lab, which boosted my confidence. So I thought, 'Maybe I'm cut out for research.'"

Baclig intends to pursue a Ph.D. in biomolecular science. She hopes to explore ways nucleic acids can be utilized in drug discovery to provide long-lasting, curative therapy for various diseases.

HONORS COLLEGE

1,141

STUDENTS CURRENTLY
SERVING

109

NATIONALLY
COMPETITIVE AWARD
WINNERS AND
FINALISTS
IN THE PAST 10 YEARS

IDAHO RECORD

In 2020,
5 Fulbright Scholarship
winners and
2 Truman Scholars

In 2023-24,
4 Fulbright winners,
2 Goldwater Scholars,
and a Critical Language
Scholar

ONLINE

104

DEGREE PROGRAMS
OFFERED

4,273

CURRENT STUDENTS

NEWEST PROGRAM OFFERINGS

NONPROFIT
MANAGEMENT

DESIGN THINKING
FOR PROFESSIONAL
PURPOSE AND
PERSONAL
FULFILLMENT

ARTIFICIAL
INTELLIGENCE
FOR ALL



IDAHOAN MARLENE VENCES RENDON ENHANCES WORK EXPERIENCE WITH ONLINE BACHELOR'S DEGREE

Marlene Vences Rendon earned associate degrees in anthropology and media arts from the College of Western Idaho (CWI) before combining them to fulfill her true passion for storytelling.

Now in her third year as a copywriter at Full Swing Public Relations, Vences Rendon is enrolled in Boise State University's online Bachelor of Arts in Integrated Strategic Communications.

"While I've had an amazing opportunity to gain hands-on experience at Full Swing, I've always sought the value of a formal education in preparing me to become an even stronger communicator," she said. "That's why I wanted to learn at Boise State. That's why I went back to school."

Although Vences Rendon didn't take a direct route, there were early indications in her career that she would find her way to becoming a writer.

"Everyone is a storyteller, but I love listening," she said. "Anthropology is the study of people — listening to people, learning about people. Now as a writer, I get to help write and tell people's stories."

The online format is working out especially well for Vences Rendon as she continues to gain real-world experience while earning a degree.

"The **online option was great for me as a working professional**," she said. "I can work

my nine-to-five job, and then pop on my laptop to work on homework afterwards from really anywhere. It alleviates some of the stress of being a working student.

Vences Rendon was born and raised in Nampa, Idaho, with two older sisters and hard-working immigrant parents. She began her career as an AmeriCorps VISTA public relations coordinator with LEAP Housing before moving on to Full Swing.

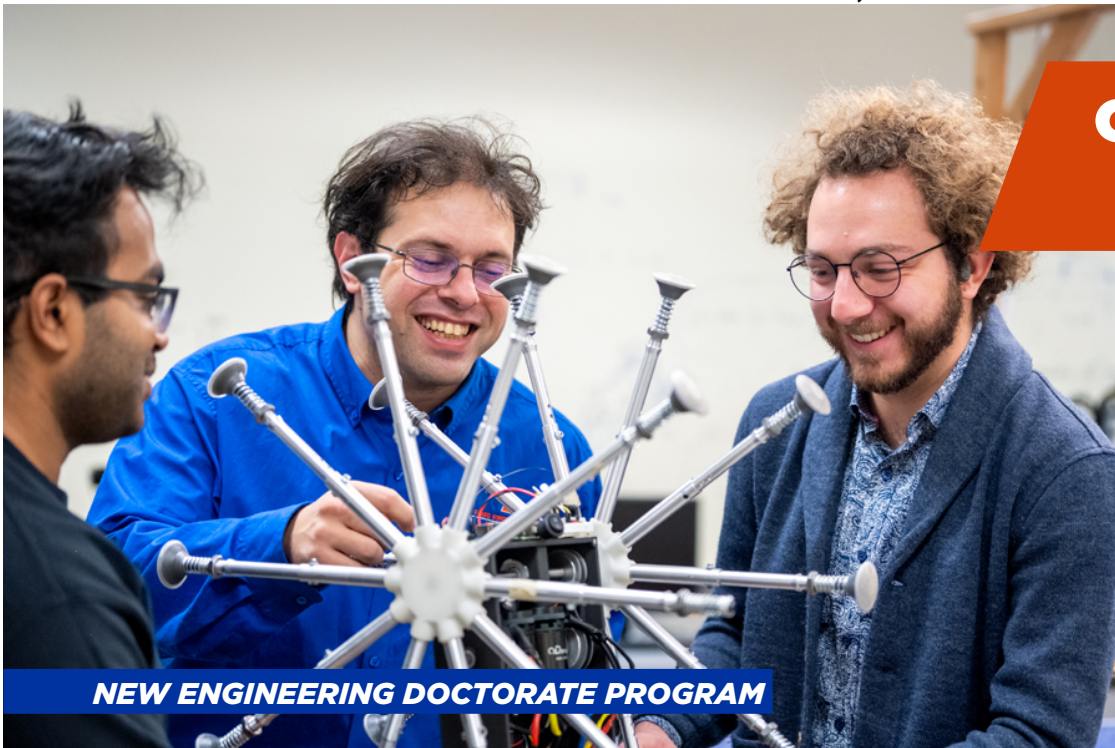
After completing her second associate degree in 2022, Vences Rendon was out of school until enrolling in the bachelor's degree program two years later.

"**Boise State was my top choice**," she said. "I am looking forward to getting those foundational writing skills from the program. My next seven-week course is Writing for Professionals, where I'll learn the skills to help my writing pack an even bigger and more meaningful punch."

As she continues to work toward her bachelor's degree, Vences Rendon hopes to become a product copywriter who writes product descriptions.

"If you're looking to get more hands-on experience building public relations campaigns or communications campaigns, this is a great program for you."

Vences Rendon believes a degree in integrated strategic communications from Boise State will help create career opportunities for her down the road.



GRADUATE COLLEGE

135

DEGREE PROGRAMS
OFFERED

2,748

CURRENT STUDENTS

NEW ENGINEERING DOCTORATE PROGRAM

Boise State University launched its 15th doctorate program — a Ph.D. in engineering — after approval from the Idaho State Board of Education this spring.

With more than 3,000 students in its programs, the College of Engineering identified the need for a new graduate program to broaden engineering education and research, continue to aid social and economic impact in the region and add substantially to the university's research capabilities.

"Boise State's new Ph.D. in engineering program will enable students to conduct **groundbreaking research in numerous engineering fields with potential benefits for our state, region and nation.**" State Board of Education President Linda Clark said. "This expanded research capability will provide limitless opportunities for today and in the future."

The program will have concentrations in civil and mechanical engineering and fuel future interdisciplinary research synergies with other departments, colleges and centers within Boise State in fields such as ecology, environmental studies, public policy and sustainability. The program features degree tracks in infrastructure systems, water and environment systems, energy systems, and mechatronics and control systems.

The program offers flexibility in designing an education that fits student needs and is conducive to cutting-edge, interdisciplinary scientific discovery with societal impact across Idaho. The program contributes to Boise State's role in the National Science Foundation's Innovation Corps Hub program within the region.

The primary goal of any engineering project is human welfare and thriving communities. The mission of the new program is to ensure student, graduate and faculty success by preparing graduates who can cross the disciplinary boundaries with the skills and knowledge to advance our communities through research and scholarship.

The program is designed to develop a workforce within Idaho that is capable of understanding the need to be more resilient and sustainable in creating lasting infrastructure that caters to local needs.

The program will be offered jointly by the College of Engineering's civil engineering and mechanical and biomedical engineering departments and the Graduate College.

NEWEST PROGRAM OFFERINGS

GENERATIVE AI IN
EDUCATION

DIGITAL
COMMUNICATIONS
MANAGEMENT

FAMILY NURSE
PRACTITIONER
EMPHASIS, DNP



ATHLETICS

BOISE STATE'S *BLUE TURF THINKING*

STRATEGICALLY POSITIONS THE DEPARTMENT FOR CONTINUOUS
ELEVATION IN ATHLETICS & BEYOND WITH A GOAL TO MATCH
FACILITIES & EXPERIENCES WITH A **CHAMPION** MINDSET

BUILDING THE NATIONAL REPUTATION

FOCUSES ON A MULTI-YEAR PLAN TO *ENHANCE* REVENUE GENERATION,
INFRASTRUCTURE, MARKETABILITY & STUDENT-ATHLETE EXPERIENCE
TO POSITION BOISE STATE ATHLETICS FOR **WHAT'S NEXT**

**8 MOUNTAIN WEST
CHAMPIONS**

3.42
HIGHEST CUMULATIVE GPA
IN DEPARTMENT **HISTORY**

163 STUDENT-ATHLETES
MADE THE DEAN'S LIST

STUDENT-ATHLETES ACROSS
ALL 18 SPORT PROGRAMS
EARNED A 3.0+ GPA **85%**

2,645 VOLUNTEER
HOURS

63 LOCAL ORGANIZATIONS **338** EVENTS



94%
GRADUATION
SUCCESS RATE
HIGHEST IN THE
MW SURPASSES
ALL-TIME
BEST

MOUNTAIN WEST ACCOLADES

FOOTBALL
OFFENSIVE PLAYER OF THE YEAR
ASHTON JEANTY

GYMNASTICS
SPECIALIST OF THE YEAR
ADRIANA POPP, BEAM
EMILY LOPEZ, BARS
GYMNAST OF THE YEAR
EMILY LOPEZ

WOMEN'S CROSS COUNTRY
FRESHMAN OF THE YEAR
JULIA KIESLER

SOFTBALL
FRESHMAN OF THE YEAR
SOPHIA KNIGHT

BASKETBALL
NEWCOMER OF THE YEAR
CINDY CONNER

WRESTLING
TOURNAMENT MVP
SAM SIPPEL

VOLLEYBALL
CO-PLAYER OF THE YEAR
PAIGE BARTSCH

REVENUE GENERATION

\$20.8M

THIRD CONSECUTIVE YEAR
TO EXCEED MILESTONE

TICKETS

\$8.1M

SURPASSED GOAL

**LED MOUNTAIN WEST
IN ATTENDANCE**

388,500 TICKETS
DISTRIBUTED

SEVEN TICKETED
SPORTS

17% INCREASE

FACILITIES UPDATES



RESIDENCE HALL

The new student residence hall is nearing its summer 2025 completion date. Crews are actively working on the building envelope, interior systems and finishes. The facility will welcome students during the fall 2025 semester, offering 452 beds for first-year students.

SCIENCE BUILDING

Planning and early design work is underway for the new science research building. The design team is assessing two potential sites, while working with campus stakeholders on early programming decisions. The project will have a Construction Manager/General Contractor (CM/GC) delivery, who has already been selected and is participating in these early conversations. With an overall timeline of five years, Boise State will welcome state-of-the-art research activities in this facility in 2029.

ESI CONSTRUCTION MANAGEMENT BUILDING

The facility is expected to break ground during the early portion of 2025, with initial occupancy later that year. The contractor and design team are finalizing plan review, with site preparation work anticipated in January. The facility will provide classrooms, offices, meeting and laboratory space, and is being constructed with considerable support from the construction industry.

NORTH END ZONE

Groundbreaking is expected for the North End Zone expansion in January 2025. Crews will remove the existing bleachers and begin extensive site preparation work for the future facility. When completed, the project will provide a 360-degree concourse at the stadium, expanded restroom and concession options for all fans, and two club spaces for North End Zone ticketholders. The project will provide a fully equipped commercial kitchen, nutrition accommodations for student-athletes, and storage for stadium operations. The project's completion date will precede the 2026 football season.



APPENDIX: PROGRAM PRIORITIZATION

Idaho State Board of Education Policy III.F: requires the university to engage in program prioritization. Between July 2020 and June 2021, under the direction and guidance of the Board Policy III.F, a total of 604 programs at the university were evaluated: 204 degree and graduate certificate programs; 236 minors, emphases and undergraduate certificates; and 164 administrative and support programs. Most importantly, we developed a **process that is sustainable and integrated with our strategic plan and our strategic budgeting process**, thereby creating a much more comprehensive and effective ongoing, systematic structure for measurement of institutional and unit-level effectiveness.

Integrated planning process

Our synchronized submission process allows for aligned and integrated thinking about progress being made on the strategic plan, continuous improvement action items and the funding needed to support them.

Results of the 2020-21 program prioritization pertaining to instructional programs and academic departments can be summarized as follows:

- Of the 440 evaluated instructional programs, 153 received assignments in the fourth or fifth quintile (79 in the fourth and 74 in the fifth quintile). Missing or insufficient data meant 44 instructional programs were not assigned to a quintile; all of these programs are new.
- Placement in the fourth or fifth quintile for a program that is established, rather than new (as these programs will not yet have had an opportunity to grow enrollments), triggered a requirement for the program to submit an action plan. In the fourth and fifth quintiles, 94 of the 153 instructional programs are not new and, thus, were required to submit the action plan report and to describe substantive changes they plan to make or to start a process for discontinuation.
- The most common deficiency for those programs in the fifth or fourth quintile was productivity, typically resulting from a low number of graduates.
- Twenty of the programs assigned to the fifth quintile are degree programs and graduate certificates. These programs must make substantial changes to increase their productivity, relevance, quality and/or efficiency or be considered for discontinuation. In the fifth quintile, 54 of the programs are undergraduate minors, emphases, and certificates. These programs must make substantial changes to increase their productivity, relevance, quality and/or efficiency or be considered for discontinuation.



PROGRAM PRIORITIZATION 2024 ANNUAL UPDATE

By December 2024, **47 instructional programs were discontinued** or are in the process of discontinuation in the current academic year.

Discontinued instructional programs:

Academic Year 2020-21 (six programs discontinued)

- Certificate in Applied Public Administration
- Certificate in Habilitative Services
- Bachelor of Arts in Dual Blended Early Childhood/Early Childhood Special Education, Elementary Education
- Master in Teaching in P-8 Special Education
- Master in Teaching English Language Arts
- Master of Applied Historical Research

Academic Year 2021-22 (15 programs discontinued)

- Minor in German for Business
- Minor in Iberian Studies
- Minor in French for Business
- Minor in Romance Languages
- Certificate in Early Childhood Intervention Services
- Bachelor of Arts in Dual Special Education, Early Childhood Special Education
- Graduate Certificate in School Technology Coordination
- Graduate Certificate in Early Childhood Special Education
- Graduate Certificate in Instructional Interventions and Supports
- Graduate Certificate in Healthcare Simulation
- Graduate Certificate in School Technology Coordination
- Graduate Certificate in History for Secondary Educators
- Executive Master of Business Operational Excellence
- Master of Education in Teaching English to Speakers of Other Languages
- Master of Education in Bilingual Education

Academic Year 2022-23 (seven programs discontinued)

- Bachelor of Arts in Economics, Social Science, Secondary Education
- Bachelor of Arts in Sociology, Social Science, Secondary Education
- Bachelor of Business Administration in Accountancy - Twin Falls Site
- Master of Social Work - Twin Falls Site
- Minor in General History with Geographic Focus
- Minor in Addiction Studies
- Certificate in Refugee Services

Academic Year 2023-24 (nine programs discontinued)

- Undergraduate Certificate in Creative Influence
- Undergraduate Certificate in Energy/Environment
- Undergraduate Certificate in Mechanical Materials
- Undergraduate Certificate in HVAC/Building Systems
- Undergraduate Certificate in Industrial Processes
- Graduate Certificate in Adult Gerontology Nurse Practitioner, Acute Care
- Graduate Certificate in Adult Gerontology Nurse Practitioner, Primary Care
- Minor in Dance
- Minor Spanish Interpretation



Academic Year 2024-25 (In process - 10 programs discontinued)

- Undergraduate Certificate in Evidence-Based Public Health
- Undergraduate Certificate in Health Data Management
- Undergraduate Certificate in Health and Human Behavior
- Undergraduate Certificate in Principles of Grant Writing
- Bachelor of Arts in Elementary Education TESOL
- Bachelor of Arts in Public Health (face-to-face)
- Bachelor of Arts in Public Health (online)
- Bachelor of Science in Applied Mathematics
- Minor in Gerontology
- Minor in Health Data Management

Summary of structural changes

In March 2023, the Division of University Affairs merged with Finance and Administration, a return to an administrative structure that Boise State historically used. This change is expected to create a leaner administrative team, preserving university resources for other initiatives. The new division, Finance and Operations, is overseen by Alicia Estey, now Chief Financial and Operating Officer and Vice President for Finance and Operations. The Division of Finance and Operations includes the departments currently in University Affairs, as well as the Controller's Office, Procurement and Vendor Services, Finance and Leasing, Student Financial Services, and the offices of Information Technology, Continuous Improvement, and Budget and Planning. In addition, the Children's Center moved from the College of Education to Finance and Operations.

Program Prioritization Progress Update on the Key Actions Outlined in Action Plans and Other Continuous Improvement Plans

Note: Due to the timing of when the university collects information on the program prioritization action plans as part of the integrated planning process, some of the information presented below is from spring 2024.

College of Arts and Sciences (COAS)

Interdisciplinary Research in the School of the Environment

The School of the Environment continued its partnership with the Division of Research and Economic Development (DRED) to sustain the Interdisciplinary Research Accelerator (IRA). IRA teams are actively developing proposals for numerous NSF opportunities, both at the individual project level and for larger center-level efforts. Diverse fields, including Biological Sciences, Geological Sciences, Materials Science, Art, Philosophy, Policy, Economics, and Environmental Studies, are collaborating on these projects. For example, Dr. Kendra Kaiser (Geosciences) recently secured a \$650K NSF grant for a one-year project, with the potential for a four-year, multi-million dollar extension. This community-engaged project involves collaborations with Dr. Wood (Theater, Film, and Creative Writing) and Dr. Parton (Economics).

Enhancing Student Success: COAS SERP Report

COAS completed its college-level Strategic Enrollment Retention Plan (SERP) report. A comprehensive analysis of COAS student data was conducted to identify equity gaps. The resulting 30-page SERP document and 30-page data appendix outline clear priorities and strategies to address these gaps and improve retention and graduation rates within COAS. To support these efforts, a COAS data team was established to provide departments with data and retention support. Additionally, a dedicated COAS SERP lead was appointed to be responsible for assessment, tracking, analysis, and reporting.



Credit for Prior Learning: A New Approach to Student Success

The Interdisciplinary Professional Studies and Bachelor of Applied Science programs piloted a Credit for Prior Learning (CPL) Accelerator workshop series to expand CPL opportunities across all disciplines and enhance student success. The four week intensive series provided faculty with comprehensive training on CPL best practices, including identifying eligible experiences, developing clear documentation processes, and assessing prior learning. Participants also had the opportunity to collaborate with peers and receive individualized support.

Games, Interactive Media, and Mobile: Beyond the Classroom

The Games, Interactive Media, and Mobile (GIMM) program hosted a successful coding camp for incoming freshmen, engaging 24 students in intensive workshops, team projects, and mentorship sessions. The camp effectively fostered student interest and retention, with a majority of participants continuing in the major. GIMM's impact extends beyond campus, as evidenced by collaborations with NASA on the Suits program, the creation of a VR driving simulation for ACHD, a mobile touring app for Gear Up Idaho, and augmented reality applications for various organizations, including the Anne Frank Memorial, the Department of Homeland Security, the Freeman Corporation, and the Boise park system.

Other Examples of Planned or Completed Actions in COAS

MS Geophysics

To enhance the quality of graduate student advising within the Master of Science in Geophysics program, a revised Graduate Composition Policy has been implemented. This change facilitates the inclusion of non-Tenure Track Geoscience faculty members on Graduate Committees and enables them to serve as student advisors. Additionally, research professors have been recruited to provide additional advising support. A formal process has been established to allow faculty from outside the department to serve as advisors, as exemplified by a current Physics Department faculty member advising a PhD student.

Human Environment Systems (HES)

Key accomplishments include the revision and implementation of promotion and tenure and workload policies, the development of core competency areas to inform a comprehensive exam question bank and curriculum revisions, the transition of the HES graduation program to the School of the Environment, the completion of the comprehensive exam question bank, the publication of the HES Graduate Student Handbook, the update of the strategic plan, and the improvement of the HES 500 and 600 curricula.

Curriculum Revision: Bachelor of Arts in Music

The Department of Music is revamping its BA Music degree to be more inclusive of diverse musical abilities and interests. By recognizing the potential of "non-music readers" and embracing technology as a musical instrument, the department aims to create a more innovative and accessible program. A dedicated subcommittee is developing a revised curriculum. The department is also fostering strong partnerships with organizations like Mirror Studios, Ableton Live, and Treefort Music Fest to provide students with valuable real-world experiences.

Open Educational Resources (OER) materials for Department of World Languages

In an effort to reduce costs for students related to textbooks, the French section has begun creating and implementing OER materials that replace the previous textbook in the first four semesters of the language. The first version of the OER Pressbook is complete for 101 and 102 and the OER team is working on the materials for 201 (fall 2023) and 202 (spring 2024). The Chinese section has been working on implementation of OER materials that will replace the current textbook in Chinese 101.



College of Business and Economics (COBE)

Empowering the Next Generation of Business Leaders

COBE actively engages with Idaho employers to address workforce, research, educational, and service needs. This includes leveraging existing partnerships with organizations like the Idaho Small Business Development Center and TechHelp/Studio/Blu to support entrepreneurship and small businesses. COBE's Copper CRM Database facilitates connections between faculty and staff with industry partners, fostering collaboration opportunities. Additionally, COBE faculty integrate real-world case studies and projects from businesses, non-profits, and government into coursework, providing high-impact learning experiences for students and benefiting clients. The Bronco Corps program, initiated during the COVID-19 pandemic, continues to place students in internships with small businesses and non-profit organizations, offering valuable experiences for both students and clients.

Innovation in Career Services and Industry Connections

COBE has embraced innovation by continually developing and implementing new career services programming that prepares students for success in the job search and workplace. Additionally, COBE Career Services has taken the lead in developing the Copper CRM Database, a tool designed to connect COBE faculty and staff with industry partners for potential collaborations, presentations, and research opportunities.

Advancing Knowledge Through Faculty Research

COBE faculty are actively engaged in research, producing high-quality work recognized in their fields. In 2023-24, they published numerous journal articles and book chapters, and presented at various conferences. To support this research, COBE invested significantly in faculty research projects, professional development, and research databases. To streamline research grant administration, COBE and COAS formed a partnership, with COAS administering COBE's research grants in exchange for funding support.

Professional Track MBA

The Professional Track MBA program has successfully transitioned to a compressed cycle with a revised curriculum. Two cohorts, PMBA 10 and PMBA 24, have graduated with impressive cohort graduation rates of 84% and 95%, respectively. The fall 2023 cohort, the first to fully experience the new curriculum, has maintained 100% retention. Course evaluations and student surveys indicate high satisfaction with the curriculum's relevance and applicability. Early recruitment for the PMBA 26 cohort is promising, signaling continued success for the program.

Department of Accountancy

The Department of Accountancy has implemented a scholarship program to support students pursuing advanced degrees in accounting. This scholarship covers the additional costs for in-person Master of Science in Accountancy and Master of Accountancy - Taxation students who earned their undergraduate degrees at Boise State and need to complete 150 credit hours to qualify for the Certified Public Accountant (CPA) exam. The first scholarships were awarded to students who applied in fall 2023 and began their graduate programs in spring 2024.

Department of Economics

The Department of Economics is committed to improving its program assessment reporting process (PAR) and program learning outcomes. To achieve this, the department is developing a more organized and centralized approach to recruiting and deploying teaching assistants (TAs), aiming to enhance the quality of TA services. Additionally, the department plans to utilize the "TA Incubator" program to encourage undergraduate students to consider its 4+1 master's program.



Department of Information Technology and Supply Chain Management (ITSCM)

The Department of ITSCM's flagship majors, Bachelor of Administration in Information Technology Management (ITM) and Bachelor of Administration in Supply Chain Management (SCM), are experiencing renewed growth after a period of decline. A departmental report focusing on major-only classes indicates a 16% and 31% increase in enrollment for ITM and SCM, respectively, in 2023-2024. This growth is attributed to new recruitment efforts. In response to Micron's expansion, COBE and ITSCM faculty have aligned the Supply Chain Program to meet industry needs. COBE's submission to the Boise State CHIPS and Science Act proposal highlights four Supply Chain classes in the Semiconductor for All initiative and identifies others for future inclusion. Micron has recognized BSU's Supply Chain Project as a model for higher education partnerships.

College of Education (COED)

Enhancing COED: Restructuring and Research Support

The COED Dean's Office is undertaking a year-long restructuring initiative to enhance operational efficiency, foster interdisciplinary collaboration, and optimize resource allocation within the college. Additionally, to address the findings of the 2022 Grants Management report, a dedicated COED Office of Research has been established to provide equitable research support, including grant management, to all principal investigators across the college.

Driving Innovation and Improving Student Outcomes

COED has made significant strides in advancing education through various initiatives. Lindsey Turner's \$16.1M grant will support innovation in school food systems. Michele Carney and Joe Champion's \$1.5M grant will accelerate math learning for Idaho students. To address the need for qualified teachers in rural areas, the college has hired Bethany Gochnour as a clinical instructor and offers the Noyce 2 scholarship and Micron Aspiring Rural Teaching Fellowship. Additionally, COED launched a new Generative AI in Education graduate certificate to meet emerging educational needs. These initiatives align with the COED's goals of improving student outcomes, enhancing teacher preparation, and fostering educational innovation.

CAEP Accreditation and Strong Student-Liaison Relationships

Teacher Education achieved full national accreditation from the Council for Accreditation of Teacher Education Programs (CAEP) with no areas for improvement or stipulations. Exit surveys consistently highlight the positive impact of strong candidate-liaison relationships on candidate satisfaction and professional development during the internship and student teaching semesters.

Bachelor of Arts in Special Education

Program curriculum changes in the teacher preparation program have been approved and are now reflected in the catalog. By restructuring the program into two age bands (P-8 and K-12), the department has seen an increase in overall enrollment. Additionally, feedback from advisors indicates that students now have a clearer understanding of the program's pathways, making it easier for them to navigate their academic journey.

Master of Educational Technology (MET)

Faculty in the MET Faculty program are collaborating on a peer review process to analyze similar programs and develop effective marketing strategies. Additionally, the department has secured a transfer credit agreement with National United University (NUU), with admissions beginning in fall 2024. The newest graduate and undergraduate certificate programs have seen increased enrollment as students become aware of these opportunities.



College of Engineering (COEN)

Enhancing the Student Experience

COEN is committed to enhancing the student experience through efficient advising and strategic recruitment. By improving curriculum navigation and increasing advising appointments, COEN aims to improve student outcomes, such as 4 and 6-year graduation rates and post-graduation employment. To attract and retain students, COEN is actively recruiting from community colleges like CWI and CSI. The college is developing metrics to track student progress through these pathways, and utilizing Slate to monitor interested high school students.

Rural Recruitment and Advising Efficiency

COEN is prioritizing rural recruitment efforts to engage with potential students and parents. By highlighting the value of higher education and career opportunities in engineering and computer science, COEN aims to attract and retain talented students. To better understand and improve student experiences, COEN is in the process of hiring a dedicated data analyst to track key metrics. Additionally, the college is addressing challenges related to intermittent surges in advising appointments, which can lead to longer wait times for students.

Expanding Access and Support for Students

COEN is prioritizing rural recruitment to engage with potential students and parents, highlighting the value of higher education and career opportunities in engineering and computer science. To enhance student experiences, COEN is in the process of hiring a dedicated data analyst to track key metrics and is addressing challenges related to intermittent surges in advising appointments. Additionally, COEN has awarded \$395K in scholarships through the NSF S-STEM track 3 award in partnership with CSI and CWI, and has hosted 6 remote recruiting events to reach rural students. To facilitate seamless transfer, COEN has developed degree pathway documents for engineering and computer science programs from CWI and CSI. These initiatives align with COEN's goals of increasing student access and success.

Micron Student Success Center

The Center has implemented several initiatives to enhance student experience and engagement. The COEN Ambassador program has integrated storytelling and community building, while the Visionary Employer Partner Program fosters industry connections. The successful return of the Engineering and Science Festival engaged over 4,000 community members in STEM activities. To improve student support, COEN has streamlined the emergency fund process and partnered with COBE Career Services to provide networking and career development opportunities. These efforts align with COEN's goals of enhancing student success and fostering industry partnerships.

Minor in Computer Science

The minor in Computer Science program experienced a significant increase in enrollment from 18 to 30 students this academic year. Despite a relatively small number of completions in the previous year, the program's minimal resource requirements and growing popularity make it a viable option for the department to maintain.

College of Health Sciences (COHS)

COHS Programs: Nationally Recognized and Top-Ranked

The College boasts several nationally recognized programs, reflecting its commitment to excellence in healthcare education. The Master of Social Work (MSW) online program secured the #1 ranking from both Fortune Magazine and EDUMED. The Adult Gerontology Nurse Practitioner (AGNP) program earned a top 10 ranking from U.S. News and World Report, while the Nursing undergraduate program ranked within the top 50 nationally by the same publication. Additionally, the MS in Respiratory Care program received the



APEX award from the Commission on Accreditation for Respiratory Care and was ranked #1 by EDUMED. Furthermore, the Master of Population and Health Systems Management program was recognized by CAHME/Canon with the Solutions American Award for Sustainability in Healthcare Management Education and Practice. These achievements highlight the exceptional quality of CHS programs across various healthcare disciplines.

Enhancing Occupational Health and Safety in Idaho

The Occupational Health and Safety Program (OSHCon), funded by the Centers for Disease Control (CDC), is housed within the Center for Excellence in Environmental Health and Safety. The program provides essential occupational health and safety consulting, assessments, and training services to Idaho businesses, particularly small and medium-sized enterprises. OSHCon's team of five professionals conducted over 100 site visits in the past year, contributing to a safer and healthier workplace environment for Idaho workers.

Department of Kinesiology

The Department of Kinesiology has experienced significant growth, adding 200 students in the past three years. To accommodate this growth, the department has hired additional faculty and graduate assistants to streamline processes and improve student support. While much of the growth is attributed to the Exercise Science program, programs like K-12 Physical Education are also seeing increased interest. As a result of this growth, Kinesiology is now the third-largest department at Boise State.

Department of Radiologic Sciences

The Department of Radiologic Sciences has successfully revitalized its programs by launching a new online Advanced Medical Imaging (AMI) program. This initiative has significantly expanded the program's reach, attracting a substantial number of students nationwide. With over 500 students currently enrolled or in the pipeline, the AMI program is poised for continued growth. This remarkable transformation is largely attributed to the leadership of Leslie Kendrick and her team, along with the support of COHS and Extended Studies.

K-12 Physical Education and Health

The K-12 Physical Education and Health program has implemented a new advising strategy to improve student retention and enrollment. By directing students to specific faculty advisors the program has seen a significant increase in both applications and declared majors. This proactive approach has led to a doubling of majors since the last program prioritization analysis.

Master of Science in Kinesiology

The Master of Science in Kinesiology (MSK) program, which was previously flagged for low graduation numbers, has implemented curriculum revisions and enhanced recruitment strategies to boost enrollment. These initiatives include targeted recruitment efforts at workshops and career fairs, website updates, and increased graduate assistant stipends.

School of Nursing - Adult-Gerontology Nurse Practitioner Certificate Program

Final admissions for the primary care certificate took place in spring of 2023, and the final admissions for the acute care certificate took place in the spring of 2024. These changes address objectives outlined in the College of Health Sciences three-year plan, including a mandatory accreditation move of nurse practitioner training to the doctoral level that will also include adding family and psychiatric nurse practitioner programs.



College of Innovation and Design (CID)

Collaborations and Initiatives

The College has collaborated with various campus units to conduct surveys, collect data, recognize innovation, facilitate an AI initiative, and research the Future of Work. Additionally, the Venture College has strengthened its partnership with the College of Business and Economics (COBE) to enhance its Incubator program by leveraging COBE's instructional support.

Driving Innovation and Student Success

The College has made significant strides in innovation, research, and student success. Key accomplishments include the launch of a new School for the Digital Future, and the successful graduation of students from key programs. Additionally, CID has fostered innovation through initiatives like the Innovation Incubator and Presidential Innovation Awards, and has collaborated with campus partners on an AI for All initiative.. Furthermore, CID has strengthened its community partnerships, including collaborations with the City of Boise and Trailhead, and has secured a sponsorship agreement with HP for the Esports program.

Innovation and Design Undergraduate Certificate

The program has implemented several initiatives to improve student success and program quality. These include monitoring certificate completion rates, updating and retiring courses, launching an online community, and enhancing student support services. The department has also focused on improving student engagement through the student work showcase and has actively participated in on-campus recruitment events

Other Examples of Completed Actions in CID

The Games, Interactive Media and Mobile technology and Human-Environment Systems programs have transitioned to the College of Arts and Sciences to leverage additional resources and support for future growth.

The College collaborated with diverse campus units to administer surveys, collect data, recognize innovation, facilitate an AI initiative, and conduct research on the Future of Work.

School of Public Service (SPS)

Enhancing Student Success through Experiential and Career Learning

SPS established experiential and career learning as a signature element of its degrees. SPS is positioning itself as a center of excellence in the university in the charge to guarantee high impact experiential and career learning (ECL) opportunities for every student in our public service programs. SPS took strategic actions to propel ECL as a signature element of SPS degree programs. Through strategic investments in staffing for ECL, combined with our incredibly deep community partner relationships, and a longstanding tradition of experiential and career-focused public service education, our efforts will facilitate student success and retention generally but particularly for students targeted in the Strategic Enrollment and Retention Plan (SERP).

Frank Church Institute

In 2023, the Frank Church Institute's Model United Nations program hosted 230 Idaho high school students on a three-day campus event. The program provided hands-on learning opportunities for students to address pressing global issues through diplomacy and civil discourse, fostering connections with Boise State University.



High-Impact Learning Opportunities in Washington D.C.

SPS has launched a new semester-in-DC program, the (student named) Capital Connection Program. This program offers a unique opportunity for students to gain valuable hands-on experience through internships in Washington, D.C. The program includes professional development seminars, online coursework, and mentorship from alumni, providing a comprehensive learning experience. The inaugural cohort of eight students secured internships with prestigious organizations such as the offices of Idaho's Congressional delegation and the National Institute for Civil Discourse.

New Programs to Support Critical Workforce Demands

The School has launched two new programs to address critical workforce needs. The online Certificate in Planning will equip students with the skills necessary to meet the demands of growing communities, while the interdisciplinary Master of Environmental Management program will prepare future leaders to tackle complex environmental challenges. These programs will enhance student preparation and employability in public service fields.

Pre-Law Advising Program

The School has established a comprehensive pre-law advising program to support students interested in pursuing legal careers. By hiring a dedicated pre-law advisor and organizing events like the Law School Fair, SPS is providing students with the resources and guidance they need to succeed in their law school applications and beyond.

Master of Arts in Criminal Justice

The Department of Criminal Justice has implemented strategies to increase enrollment in the master's program. These include targeted recruitment efforts within the Criminal Justice student groups, the development of promotional materials, and participation in relevant conferences. Additionally, the department is focused on attracting students from outside Boise State and improving the quality of promotional materials to enhance the program's visibility and appeal.

Non-Instructional College Program Prioritization Updates

Extended Studies

Extended Studies has significantly impacted higher education by serving over 5,400 online students, 7,000 concurrent enrollment students, 15,000 campus-based online students, and 1,500 Osher members. The division has also increased summer sessions enrollment to over 10,000 students annually. By leveraging entrepreneurial funding models, Extended Studies has incentivized academic departments to meet student demand. This integration highlights how eCampus's efforts directly contributed to the overall growth in online enrollment, which was a key factor in preventing a decline in university-wide enrollment.

Enhanced University Enrollment

- Facilitated the generation of 104,658 credit hours in fall 2023, comprising 39% of the university's total credit-hour generation.
- Drove significant growth in online programming in spring 2024:
 - eCampus significantly enhanced its support for faculty, offering:
 - Expanded professional development opportunities in online course design, open education resources (OER), Artificial Intelligence, and other relevant distance education topics
 - Increased individualized services and support
- Concurrent Enrollment and Community Educational Outreach play a significant role in expanding access to higher education, particularly in rural Idaho.



Innovative Partnerships and Programming

- With its expertise in both online and noncredit programming, Extended Studies is working with academic departments to extend access to new audiences.
- Partnering is in the DNA of Extended Studies, as every program offered for academic credit is done in partnership with an academic college. Moreover, Professional and Continuing Education as well as Community Impact Programs revolve around partnerships with businesses and/or communities. These partnerships can be expanded to greatly increase the university's impact.

Graduate College

Advancing Graduate Education at Boise State

- Enhanced Doctoral Program: Successfully hosted an external review for the College of Engineering's new PhD in Engineering program and submitted the proposal to the State Board of Education.
- Strengthened Graduate Student Recruitment: Launched the Graduate Student Ambassadors program to improve recruitment efforts and responsiveness to applicant inquiries.
- Recognized Graduate Student Excellence: Hosted the annual Graduate Student Showcase and Awards Celebration, honoring outstanding graduate students and awarding significant cash prizes.
- Improved Graduate Student Housing: Secured dedicated on-campus housing for incoming graduate students through a partnership with Housing and Residential Life.
- Achieved Excellence in Graduate Student Research: Garnered top honors in both the Idaho and Western Association of Graduate Schools Three Minute Thesis competitions.

Key Process Improvements and Restructuring

- Admissions and Degree: Streamlined application processing and reduced turnaround times for fully-online graduate programs through the use of the Slate application tool.
- Curriculum and Policy: Implemented a more efficient curriculum management process using Quali and streamlined the Graduate Council structure.
- Graduate Student Success Center: Optimized support services for graduate students by leveraging graduate teaching assistants for writing and tutoring.
- Recruitment and Admissions: Expanded recruitment efforts through strategic partnerships with academic departments and programs, and increased staffing to attract high-quality graduate applicants.

Honors College

The Honors College has made significant strides in recent months. A new lunch program has been initiated to foster connections between disciplinary deans and Honors students, and a new staff member has been hired to enhance data management and administrative tasks. A substantial \$300,000 endowment pledge was secured in December 2023 to support Honors scholarships, and a Basque study away program was approved. Additionally, the college is actively working to streamline the Honors curriculum to improve retention and completion rates, particularly addressing the "sophomore melt" through a dedicated sophomore course. Staff responsibilities are being reorganized to accommodate new team members, and two signature study away experiences are being developed in London and the Philippines.



Positive Trends

- Strong First-Year Retention: The program has seen a significant increase in first-year retention, reaching 96.3% for the current cycle.
- Increased Graduation Rates: Graduation rates have steadily improved, with a projected 138 graduates this spring.
- High Student Satisfaction: Students are highly satisfied with the program, as indicated by positive course evaluations, successful Honors experiences, and positive student-staff interactions.
- Robust Co-Curriculum: The program offers a diverse range of academic, social, and service events, attracting a significant number of students.
- Fundraising Success: The program has secured nearly \$500,000 in private funding.
- National Recognition: Students continue to excel in national competitions, with multiple Fulbright semi finalists, a Truman finalist, and several other competitive awards.

Challenges

- Declining Six-Year Completion Rate: Despite the positive trends, the overall six-year completion rate from the Honors program has decreased by over 10%.
- Impact of External Factors: While the Honors program contributes to student success, external factors also play a role in graduation rates.

Overall, the program is demonstrating success in attracting and retaining students, fostering a positive student experience, and achieving national recognition. However, there is a need to address the declining six-year completion rate to ensure long-term success.

College Administrative Units

College of Arts and Sciences

Biomolecular Research Center

The Boise State Research Initiative (BRI) has significantly contributed to the advancement of biomedical research at Boise State University since 2001. Through faculty career development programs, student mentorship, and financial support for research projects and conference travel, BRI has empowered researchers to establish independence and make significant contributions to the field. The initiative has supported over 550 students and 80 faculty members, fostering a collaborative research environment. As a result, NIH funding at Boise State has increased, and researchers have published over 200 peer-reviewed articles addressing various public health issues. The program has also been instrumental in developing the next generation of scientists, with approximately 40% of participating students pursuing advanced degrees.

College of Business and Economics

TechHelp Idaho

TechHelp Idaho has successfully delivered products and services that have resulted in significant economic impact across 21 Idaho counties, particularly benefiting small, rural, and startup manufacturing companies. Key factors contributing to this success include strong partnerships with academic institutions and industry organizations, consistent economic impact statewide, the development and deployment of innovative programs, experiential learning opportunities for students, and effective financial management. TechHelp assesses its performance in four key areas: economic impact, market penetration, customer



satisfaction, and financial performance. The center consistently exceeds its annual goals for economic impact, generating over \$100 million in sales, savings, and investments, and creating and retaining over 500 jobs. TechHelp also maintains high customer satisfaction and market penetration rates. Financially, the center is self-funded and generates significant revenue, including matching over \$1 million in federal awards.

Idaho Small Business Development Center (SBDC)

The Idaho SBDC has consistently outperformed its performance goals. This quality team forms relationships with Idaho businesses that work well. Additionally, the collaborative team approach to leadership at the state level keeps regional leaders engaged and motivated.

The unit's strategic plan is updated each year and includes three major categories:

1. Network Reach and Sustainability
2. Organizational Effectiveness
3. Employee and Team Development

The result of this plan is the development of statewide strategies to affect these goals in positive ways. Once the strategies are formed, team leaders develop annual action plans to implement on-the-ground executable tasks that flow up to the goals.

College of Education

Center for STEM Curriculum and Professional Development

The Center for STEM Curriculum and Professional Development (CSCP) has demonstrated significant impact through its partnerships with K-12 schools and districts, particularly in rural communities. In 2023, CSCP projects served over 1,000 educators through various initiatives, including iSTEM Summer Academies, Math Education projects, and SESTA. Additionally, CSCP's summer programs for students, such as Summer Academy camps and PREP Academy, reached hundreds of young learners. The center's success is reflected in positive sponsor feedback, timely completion of deliverables, and effective fiscal management. CSCP has also made significant strides in improving its internal operations. The center has increased collaboration among project directors and principal investigators, ensuring seamless administrative functions after the departure of the Associate Director, and maintained a fiscally responsible approach to ensure a reserve operating account.

College of Engineering

Micron Student Success Center

The College of Engineering has taken several steps to enhance student experiences and foster community engagement. By embedding storytelling and community building into the COEN Ambassador program, the college aims to strengthen the connection between students and the institution. Additionally, the launch of a visionary Employer Partner Program, in collaboration with COEN Advancement, will foster stronger industry partnerships. The successful hosting of the Engineering and Science Festival engaged over 4,000 community members in STEM activities, promoting STEM education and outreach. To ensure students receive timely financial assistance, the college has streamlined the COEN Student emergency fund issuance process, allowing for better data tracking and donor impact reporting. Finally, by partnering with industry and COBE Career Services, the college provides students with valuable networking and career development opportunities.



College of Health Sciences

Center for Health Policy

The Center for Health Policy (CHP) has made significant strides in rural health care research, developing and implementing the HPERC APGAR tool to assess community readiness for health-related student placements. This tool has been successfully used in Montana and North Dakota. Additionally, CHP researchers have developed an APGAR tool to measure CEO recruitment and retention in rural areas and are currently deploying it in North Dakota. In the realm of international research, CHP has collaborated with Australian partners to develop and implement an APGAR tool for pharmacists, resulting in peer-reviewed publications and presentations. The center continues to support a long-term rural nursing project in Australia. In the area of maternal and child health, CHP researchers have secured significant funding for projects evaluating maternal home visitations and addressing other maternal and child health issues. The CHP is committed to expanding its research capabilities and ensuring a smooth leadership transition as the current Director approaches retirement.

College of Innovation and Design

Venture College

During the last couple of academic years, Venture College exceeded its goals, successfully reaching students across Boise State's campus and Idaho. The hybrid model for pitch competitions expanded the program's reach, providing more opportunities for students to connect with mentors and advance their ventures. Key goals for the future include building stronger relationships with higher education institutions statewide, increasing industry partnerships, and developing a system to support student participation in external competitions. This will further enhance student opportunities and increase the overall impact of Venture College. Additionally, Venture College has experienced significant growth, both in the number of students participating in programs and the number of new business ideas launched.

School of Public Service

Andrus Center for Public Policy

In August 2022, the Andrus Center welcomed Dr. Emily Wakild as the Cecil D. Andrus Endowed Chair for Environment and Public Lands. As Andrus Center Endowed Chair, Dr. Wakild has been advancing the Environment and Public Lands mission of the Center, including the scholarship and development of the university's students interested in these areas of study.

The inaugural John Freemuth Student Congress, held in October 2022, brought together a diverse group of undergraduate and graduate students from across the nation to focus on wildland fire management. This event, a collaborative effort between the Andrus Center, the Public Lands Foundation, and the National Association of Forest Service Retirees, honored the legacy of John Freemuth. The student-authored report, presented in Washington D.C., showcased the caliber of the program. The 2024 Congress delved into public lands policy issues related to renewable energy, with a focus on climate change, decarbonization, and energy production and transmission. Selected students will engage in field work and policy discussions, culminating in a student-authored report presented to federal land management agency heads.

The Andrus Center has been actively working to establish a sustainable student program focused on environmental and public lands careers. The goal is to raise \$850,000 to fund a Program Coordinator position and make the program self-sustaining through fees and sponsorships. To date, over \$350,000 has been raised.



Albertsons Library

The Albertsons Library has been actively working to enhance its resources and services to better support students, faculty, and staff. By collaborating with other colleges and peer institutions, the library has identified significant gaps in its collection and advocated for a student Library fee to address these shortcomings, which was approved by the State Board of Education in the April 2024 Board Meeting.

Additionally, the library has implemented strategic space management initiatives to create a more welcoming and inviting environment, leading to a significant increase in library usage. Through partnerships with the Bronco Learning Commons, the Library has hosted successful social events, such as the Bronco Social, to foster community and student engagement. The Library is also investing in its technical infrastructure and staff to improve access to electronic resources and enhance career development opportunities for student employees.

Organizational Restructuring

- Realigned staff positions and reallocated resources
- Streamlined workflows and eliminated redundancies
- Consolidated contract review processes
- Realigned public services units and cross-trained staff
- Increased student employee positions and pay
- Relocated MakerLab equipment and increased visibility
- Increased partnership with Advancement and Dean of Students

Process Improvements

- Engaged the Office of Continuous Improvement to identify inefficiencies.
- Improved invoicing and payment processes
- Restructured Acquisitions and Collections Department
- Enhanced technical services through restructuring and hiring
- Implemented a new Integrated Library Platform
- Activated a Library assessment team to identify collection gaps
- Investigated funding mechanisms to address collection gaps
- Advocated for a library fee and explored textbook licensing options

Student Engagement and Support

- Increased library usage and foot traffic
- Implemented a Research Information Management System (RIMS)
- Hosted events and workshops to engage students
- Increased visibility and access to library services

Divisional Updates

Division of Finance and Operations

Office of Information Technology (OIT)

Boise State University's IT department has made significant progress in several key areas. These initiatives aim to improve efficiency, security, innovation, and support for students, faculty, and staff at Boise State University.

- Student Success: Implemented the first phase of the Salesforce Student Success Hub to support general advising.



- IT Consolidation: Consolidated support services for the Departments of Geoscience, Luminary, and Art, and streamlined classroom technology support and replacement rotations for the College of Arts and Sciences.
- Network Infrastructure: Expanded network redundancy and made architectural improvements to support modern educational needs, research, and cloud access. Successfully migrated to Nutanix, enhancing the university's IT infrastructure.
- Identity and Access Management: Initiated a multi-year plan to modernize user authentication and access control, moving towards a cloud-based Active Directory for a more sustainable and secure future.
- Data and Analytics: Implemented a next-generation data and reporting infrastructure to support critical operational and strategic decision-making. Created a one-stop reporting gateway to access university student, financial, and operational data.

Capital Planning and Space Management

Completed Projects:

- Lusk Neighborhood Joint Project: A pre-development agreement has been finalized with a selected development team, and extensive planning efforts have been undertaken.
- EHAP Program: A public-private partnership agreement is in place to deliver 31 new workforce housing units, and the project is currently in the design phase.
- Campus Master Plan Update: A consultant has been selected and is actively gathering data and conducting outreach.
- Pre-Planning for New Science Research Building: Pre-planning efforts are underway, with a focus on defining interfaces and coordination between the Architecture, Engineering, and Construction Services Management (AES) and Campus Planning and Space Management (CPSM) units.
- Space Allocation and Utilization: Ongoing discussions with the Division of Research and Economic Development (DRED) are taking place to refine space allocation standards and guidelines to accommodate remote and hybrid work.

Personnel: Two key positions have been filled, and position descriptions have been updated.

President's Office

ExtraMile Arena

ExtraMile Arena has made significant contributions to student success, community engagement, and operational excellence. The Arena has increased student employment and volunteer opportunities, supported major campus events like Convocation, Move-In Day, and Commencement, and hosted a diverse range of events, including athletic competitions, concerts, and community gatherings. The Arena's partnership with AEG to host the Luke Combs concert demonstrated its ability to attract large-scale events and contribute to the local economy. By prioritizing student engagement, fostering community partnerships, and delivering high-quality events, the Arena has solidified its position as a vital asset to Boise State University and the surrounding community. Additionally, the Arena has made strides in employee development, overcoming staffing challenges, and improving service levels. While there are opportunities to enhance certain aspects of the guest experience, such as restroom and food & beverage services, and parking and traffic flow, the Arena is actively working to address these areas and maintain its position as a premier venue.



The Arena has also played a key role in supporting the university's fundraising efforts and community engagement initiatives. It hosted the Unbridled Donor Cultivation event, which kicked off the public portion of the university's fundraising campaign. Additionally, the Arena attracted large crowds to concerts featuring popular artists, contributing to the local economy and enhancing the university's reputation. By leveraging its industry relationships and expertise, the Arena has successfully positioned itself as a premier venue for a wide range of events.

Furthermore, the Arena has generated significant revenue through ticket sales, with over 104,675 tickets sold for a gross of \$6.24 million+ during the fiscal year. This revenue has contributed to the overall financial health of the Arena and supported its ongoing operations and improvements.

Division of Student Affairs and Enrollment Management

Career Services

The Career and Professional Development Center (CAP) has made significant strides in enhancing student career readiness. By focusing on these areas, CAP has empowered students to achieve their career goals and make a positive impact. Key achievements include:

- **Expanding Career Readiness Education:** CAP has integrated career readiness education into academic curricula, increased outreach efforts, and provided one-on-one counseling to students.
- **Enhancing Experiential Learning:** The center has expanded internship and work-study programs, offering stipends and scholarships to increase student access.
- **Strengthening Employer Partnerships:** CAP has engaged with over 770 employers to provide students with valuable networking and job opportunities.
- **Supporting Student Success:** The center has collaborated with other campus units to support student success initiatives, such as Convocation, Move-In Day, and Commencement.

Financial Aid and Scholarships

The Financial Aid Office has made significant strides in improving efficiency and effectiveness. These improvements have positively impacted student services and operational efficiency. Key accomplishments include:

- **Streamlining Processes:** Re-engineered systems for Satisfactory Academic Progress (SAP) evaluations and scholarship reporting.
- **Implemented a team-based approach** for supporting Extended Studies students, reducing processing times for alternative loans, and standardized verification processes.
- **Enhancing Student Support:** Assisted Student Basic Needs with outreach to eligible students for SNAP benefits.
- **Improving Communication:** Developed a procedure directory for transparency and easy access to information.

Campus Recreation

Campus Recreation has made significant strides in enhancing student engagement, fostering community partnerships, and generating revenue. In 2023, the department successfully implemented the Summer Youth Sports Program, expanded club sports fundraising efforts, partnered with ExtraMile Arena for intramural basketball championships, and hosted the popular Yoga on the Blue event. These initiatives have contributed to the overall well-being of the campus community and strengthened the reputation of Campus Recreation as a vital resource for students, faculty, and staff.



Additionally, Campus Recreation has made significant improvements to its facilities and services. The replastering of the swimming pools ensures their longevity and compliance with safety regulations. The partnership with St. Luke's Medical Center provides enhanced athletic training services for club sports and Rec Center members. Additionally, the implementation of a Customized Training Program offers personalized fitness guidance to students and members. These improvements contribute to a positive and supportive fitness environment for the campus community.

Center for Service and Leadership

The Center for Service and Leadership has made significant strides in enhancing student engagement in service and leadership opportunities. These initiatives have empowered students to develop leadership skills, engage in meaningful service, and make a positive impact on their communities

Service:

- Increased participation: The center successfully increased participation in service programs by 23% in 2023 and expanded local service project offerings by 28.6%.
- Expanded Alternative Break Programs: The center piloted a fall Alternative Break program, partnering with local organizations such as St. Vincent de Paul, the Boise Farmers Market, the Idaho Food Bank, and Boise State's Food Pantry.

Leadership:

- Enhanced Leadership Programs: The center rebuilt leadership program availability and capacity, resulting in a 65% retention rate for LeaderShape participants and a 38.3% increase in registrations for Catalyst leadership workshops.

Division of Research and Economic Development

The Division of Research and Economic Development (DRED) has successfully secured major sponsored projects, including a \$24M NSF-EPSCoR award for energy-water system resilience, a \$6M NSF Accelerating Research Translation TRANSFORM award, a \$2M DOE award for consent-based siting, and a \$4.5M DOE EPSCoR Phase III for qDNA. These initiatives, involving partnerships with diverse stakeholders, aim to bridge the gap between research and real-world applications, contributing to economic development and societal impact.

DRED's commitment to excellence is further demonstrated by its focus on:

- Fostering Industry Partnerships: Developing innovative strategies to attract industry-sponsored research, including updated agreement templates and a unique intellectual property assignment process.
- Enhancing Operational Efficiency: Implementing new systems and streamlined processes to improve efficiency and reduce administrative burdens.
- Developing Research Talent: Investing in talent development and career pathways, creating opportunities for growth and advancement within the division.
- Promoting Interdisciplinary Research: Catalyzing interdisciplinary collaboration and innovation through the Grand Challenges initiative.



Center for Research and Creative Activity

The Center for Research and Creative Activity (CRCA) has made significant strides in advancing research and creative activity. Key accomplishments include:

- Enhanced Proposal Support: The CRCA has invested in front-end strategy and proposal support, assisting investigators and teams in securing funding.
- Expanded Professional Development: The center has developed and implemented a variety of professional development opportunities to enhance the research skills of faculty and staff.
- Supported Interdisciplinary Research: The CRCA has awarded five Grand Challenge Teams to catalyze interdisciplinary research in key thematic areas.
- Improved Efficiency: The center has streamlined processes and implemented new tools to enhance operational efficiency and support faculty research efforts.
- Enhanced Communication and Collaboration: The center has implemented a regular training calendar, coordinated funding opportunities, and fostered collaboration between researchers and administrators.



IDAHO DIVISION OF CAREER TECHNICAL EDUCATION

SUBJECT

Idaho Division of Career Technical Education (Division) – Annual Report

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section I.M.
Annual Planning and Reporting
Chapter 22, title 33, Idaho code

BACKGROUND/DISCUSSION

Chapter 22, Title 33, Idaho code, establishes the State Board for Career Technical Education, authorizes the Board to appoint an administrator to the State Board for Career Technical Education, establishes the Division of Career Technical Education and defines career technical education and the career technical education delivery system in Idaho. The Division of Career Technical Education serves as the administrative agency, under said Administrator, for the Board and is responsible for the administration of Idaho's career technical education system and implementing the Board's policies and state and federal laws relative to career technical education. The Division provides leadership, administrative and technical assistance, and oversight for career technical education programs in Idaho's public secondary (grade 7 through 12) schools and technical colleges on behalf of the Board.

For FY 2025, the Division is responsible for approximately \$57.2M in funding for postsecondary programs, \$27.5M for secondary and general programs (including CTE educator preparation), and an additional \$6.6M toward related programs such as adult education, workforce training centers, Centers for New Direction, apprenticeship programs, fire service training, and the STARS motorcycle training program. The Divisions annual report, see Attachment 1, provides details of program operations as well as program highlights and success stories.

In addition to the Division's Board approved strategic plan, the Division has developed an operational framework, see Attachment 2, through stakeholder feedback, designed to help identify and implement strategies to move the needle on the Board's strategic goals, as they relate to career technical education. The operational framework is a living document that is reviewed annually and updated based on continued stakeholder feedback and progress of the various strategies.

IMPACT

This annual report serves to provide a state of the Division update and inform the Board of the Division's annual priorities in alignment with the Board's strategic plan and how they are, and will be, used to guide the Division's work.

ATTACHMENTS

INFORMATIONAL
FEBRUARY 19-20, 2025

Attachment 1 – Idaho Division of Career Technical Education 2024 Annual Report
Attachment 2 – Idaho Division of Career Technical Education Operational Plan
Attachment 3 – Idaho Division of Career Technical Education Board Presentation

BOARD ACTION

This item is for informational purposes only.

We prepare Idaho's youth and adults for high-skill, in-demand careers.



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Highlights

The Idaho Division of Career Technical Education (IDCTE) made significant strides in fiscal year 2024, enhancing support for educators and learners while strengthening partnerships with employers. These initiatives have fostered a more robust and responsive career technical education (CTE) system across the state.

Implemented the First Steps Standards Professional Development Course



IDCTE launched a professional development course to prepare educators to help students in grades seven and eight get the most out of their career exploration course. Statewide, 419 educators completed the course, which represents 67% of schools and 71% of local education agencies (LEAs) that offer courses in grades seven and eight.

Increased customer satisfaction



IDCTE achieved a notable increase in customer satisfaction through enhanced communication and support services, ensuring a positive experience for learners, teachers and employers alike.

Improved employer engagement



IDCTE strengthened relationships with local employers, continuing to better align educational programs with workforce needs and ensure learners are job-ready upon graduation.

Increased collaboration with partner agencies for apprenticeships



IDCTE fostered greater collaboration with partner agencies, expanding apprenticeship opportunities that connect learners with hands-on experiences in their chosen fields.



Supported new CTE teachers through First Camp

IDCTE supported the growing number of new CTE teachers through InSplIRE Ready! and First Camp new teacher training programs and offered resources and mentorship to foster confidence and effectiveness in the classroom.



Expanded staffing to support educators

During the 2024 legislative session, IDCTE was provided three additional positions to better assist new CTE teachers, providing them with the necessary resources and mentorship to help them be successful in their roles.



Expanded Adult Education through new Integrated Education and Training Programs

IDCTE launched innovative Integrated Education and Training (IET) programs, resulting in participants earning \$2,000 more per quarter than nonparticipants, significantly boosting their financial stability, career prospects and contribution to Idaho's economy.



Increased the number of CTE diplomas issued

IDCTE experienced a 98% increase over three years in Workforce Readiness and Career Technical Education Diplomas issued during the 2023-2024 school year, reflecting the dedication to equipping learners with essential skills for future careers.

Program awards



CYBERSECURITY PATHWAY
SCHOOL DISTRICT 91'S CAREER AND TECHNICAL
EDUCATION CENTER



This innovative program stands out for its robust curriculum, which includes dual enrollment with the College of Eastern Idaho (CEI). While still in high school, students can earn college credits in key courses such as Computer Essentials, Operating

Systems Essentials and Fundamentals of Network Security. The pathway emphasizes practical experience through internships, with six students interning at the Idaho National Laboratory's Cybercore and three securing positions with Frontline Cyber.

In addition to gaining valuable hands-on experience, students can earn industry-recognized certifications like CompTIA A+ and CompTIA Security+, significantly enhancing their competitiveness in the job market. The program integrates hands-on labs and collaborative projects with industry partners, ensuring students develop essential skills for successful careers in cybersecurity. Moreover, the pathway has excelled in national competitions like CyberPatriot, consistently achieving top rankings and highlighting students' capabilities.

A strong focus on opportunities for learners has led to a 25% increase in overall enrollment and a doubling of female enrollment. Female students have taken the initiative to establish the first high school chapter of Women in Cybersecurity, promoting empowerment in the field. The program's success is evident in the stories of alumni who've secured lucrative positions with industry partners, highlighting its role in launching successful careers.



GRAPHIC COMMUNICATIONS PROGRAM
LEWIS-CLARK STATE COLLEGE



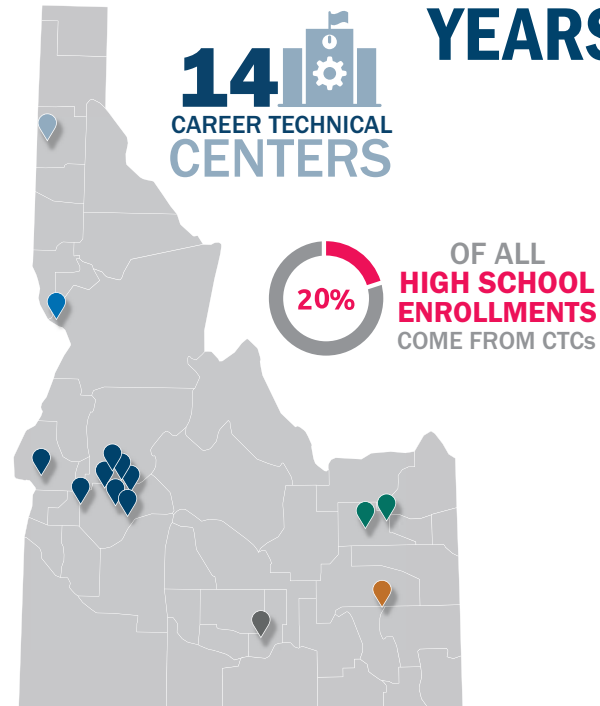
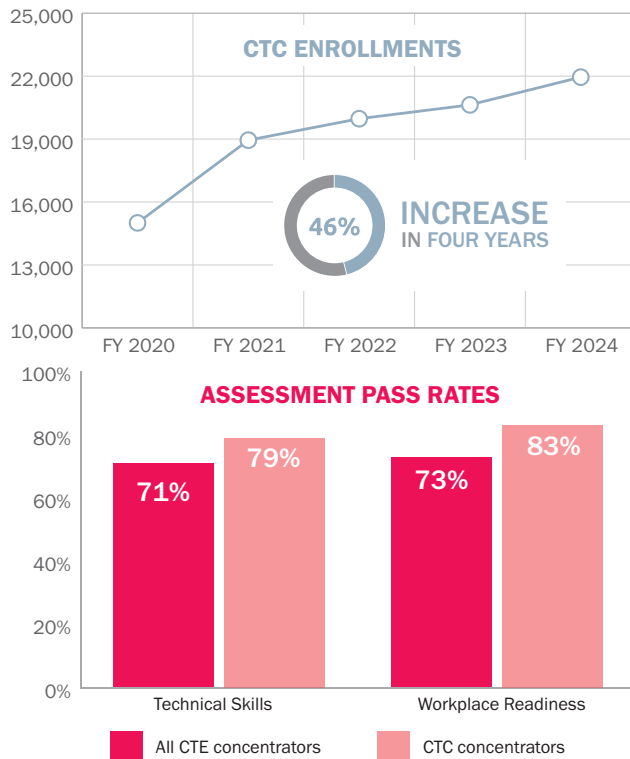
As one of the few programs in the nation integrating design and print production, Lewis-Clark State College's (LCSC's) program boasts the only packaging design curriculum in the Northwest. This unique combination provides

students with adaptable options to thrive in the creative industries, equipping them with a diverse skill set that meets the evolving demands of the field.

Service learning is a key program component, allowing students to engage in community projects within a live shop environment that mimics real-world industry settings. Under the guidance of experienced instructors and the print shop coordinator, students collaborate with community organizations with specific creative needs and limited budgets. This hands-on approach enhances students' creative, technical, and professional skills and fosters a sense of community engagement and responsibility.

The program's cutting-edge production lab, which offers invaluable hands-on experience, further bolsters student success. The combination of lab work and internships—both on and off campus—ensures that students are well-prepared to become immediate and impactful contributors to the industry. With a high placement rate, the program diligently supports students in executing creative and technically sound projects, paving the way for rewarding careers in graphic communications.

Career technical centers celebrate milestone anniversary



2024 marks the 25th anniversary of career technical centers (CTCs) in Idaho, highlighting their evolution and significant impact on CTE in the state. Pursuant to Idaho Code § 33-1002G and IDAPA 55.01.03.102, LEAs and cooperative service agencies must meet several criteria to qualify as a CTC. They must operate separately from other schools, have dedicated administration, offer state-of-the-art programs that prepare high school students for in-demand occupations and include opportunities to earn postsecondary credit. CTCs must also adhere to state standards, undergo a year-long planning process before opening and partner with local industries to ensure their programs remain relevant.

When CTCs were established in the 1998-1999 school year, the CTE landscape was quite different. Initially referred to as career technical schools, this framework encouraged educational programs to collaborate and share resources to enhance CTE offerings. Such partnerships facilitated the development of programs aligned with local industry demands, provided professional development for educators and strengthened connections between schools and businesses.

Each CTC has developed unique characteristics based on its location, administration and funding models. For example, the COSSA Regional Technology and Education Center in Wilder serves a regional population, transporting students from various districts to a central facility. In contrast, the Dennis Technical Education Center in Boise operates within a single district, providing local transportation for its students from high schools within the school district.

As CTCs celebrate this milestone, we reflect on their adaptability in response to evolving community needs. These centers have established themselves as vital components of Idaho's educational landscape, preparing students for careers in a dynamic economy. The success of CTCs is evidenced by their innovation and the expansion of programs that meet the demands of current and emerging occupations.

Looking forward, CTCs will continue to play a pivotal role in providing meaningful pathways for students. Committed to delivering high-quality, state-of-the-art programs and services, these institutions will remain cornerstones of CTE, preparing future generations for success in an ever-evolving job market.



BPA national champion pursues a career in education

In 2022, Sandpoint High School graduate Colton Moore embarked on an unexpected journey that would reshape his future. As the editor of his yearbook, he learned how to use industry standard software like the Adobe Creative Suite. Although he had dabbled in photography and graphic design, business education wasn't initially on his radar. That changed when his school's CTE teacher and Business Professionals of America (BPA) advisor, Melinda Nieman, encouraged him to join BPA and compete in the statewide Desktop Publishing competition during his senior year.

As a student, I was always striving for the best and focused on achieving the highest grades, whether in AP classes or yearbook. I think that mindset made me hesitant to join BPA, said Moore. "I worried I might not meet my own high standards in the competitive setting.

Despite his initial reservations, Moore quickly discovered that he had nothing to fear. That year, he took first place in the Desktop Publishing competition at the BPA National Leadership Conference (NLC) in Dallas. His experience at the state and national levels opened his eyes to the potential for learning and connecting with like-minded individuals.

4

"I realized it was about engaging with others, learning together, and sharing experiences, not just competing," said Moore.

This realization was pivotal in changing his trajectory. Initially aiming to become a creative director in the business world, Moore shifted his focus to pursuing a degree in business teacher education after witnessing the value of collaboration and mentorship.

Following graduation, Moore began his academic journey at North Idaho College (NIC), where he engaged deeply with the campus community as a college ambassador. He appreciated the small class sizes and interactive learning environment, realizing through this experience the unique strengths of community colleges. After earning his associate degree, Moore transferred to the University of Idaho, where he is now a junior completing a bachelor's degree in business and marketing education. He currently serves as the president of the University of Idaho's postsecondary BPA chapter and plays an active role in organizing the region's high school BPA event held on campus.



Students need these skills to succeed in both personal relationships and professional settings, particularly for those aspiring to leadership roles in business and marketing.”

—Colton Moore, business and marketing education major, University of Idaho

In addition to his academic pursuits, Moore is already making strides in his professional journey by securing a paid internship with CharacterStrong, a Tacoma-based company that develops character education content for schools.

“In CTE, soft skills, such as conflict resolution and responsibility, are as important as technical skills,” said Moore. “Students need these skills to succeed in both personal relationships and professional settings, particularly for those aspiring to leadership roles in business and marketing.”

Moore credits several mentors for shaping his educational journey. Although he didn’t take a formal class with Nieman, her passion for teaching and encouragement sparked his interest in the field.

“Kevin Hutchins, my yearbook advisor for two years, was also a mentor throughout high school,” said Moore. “We had many great discussions about business, marketing and education, which inspired me to become a business teacher.”

Moore hopes to inspire future students in the same way his mentors inspired him.

“I can’t wait to bring these experiences and teaching methods into my classroom,” said Moore.



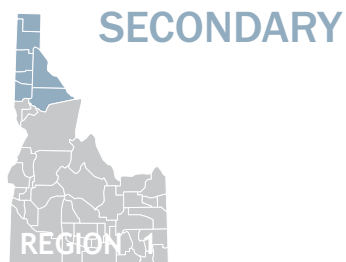
WHAT ARE CAREER TECHNICAL STUDENT ORGANIZATIONS?

Career technical student organizations (CTSOs) play a vital role in enhancing the educational experience of students enrolled in CTE programs. These organizations provide students with opportunities to develop leadership skills, engage in hands-on learning and network with industry professionals. By participating in CTSOs, students can apply the skills they learn in the classroom to real-world scenarios, further reinforcing their understanding of their chosen fields.

In Idaho, there are seven CTSOs aligned with their respective program areas: BPA and DECA align with Business and Marketing Education; Family, Career and Community Leaders of America (FCCLA) aligns with Family and Consumer Sciences and Human Services (FCSHS); FFA aligns with Agriculture, Food and Natural Resources; HOSA aligns with Health Professions and Public Safety; SkillsUSA aligns with Trades and Industry, and Technology Student Association (TSA) aligns with Engineering and Technology Education. These organizations often host competitions, conferences, and workshops, allowing students to showcase their skills and gain recognition for their achievements.

Additionally, CTSOs encourage community involvement and service, teaching students the importance of civic responsibility and leadership. Members frequently participate in community service projects, which enhance their resumes and provide practical experience in project management.

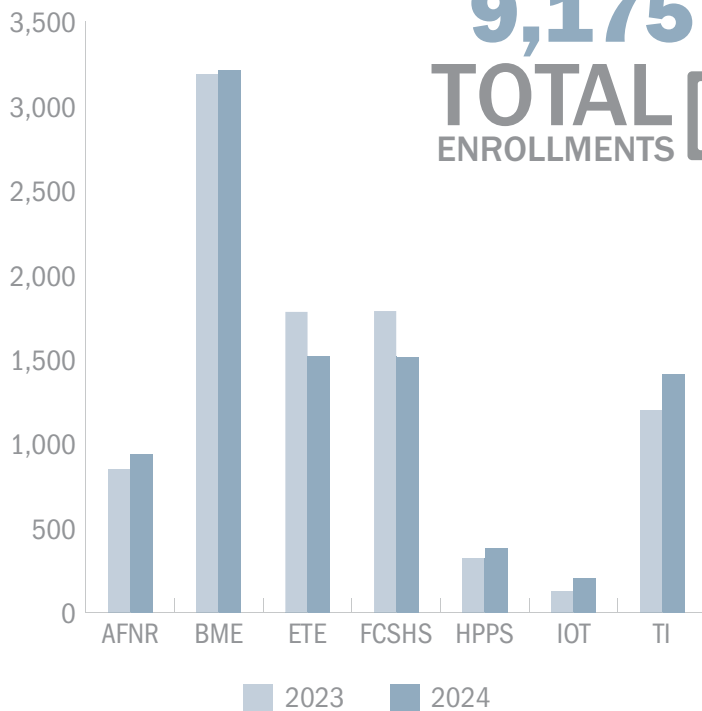
In summary, CTSOs enrich the CTE experience by promoting skill development, leadership and networking. Through active participation, students are better prepared for successful careers, making CTSOs an essential component of CTE.



SECONDARY

597
CTE
CONCENTRATORS

104 TOTAL PROGRAMS
14% INCREASE
OVER FY 2023



9,175
TOTAL
ENROLLMENTS

1,387
**SKILL
STACK**
BADGES ISSUED

17
LEAs
65% WERE RURAL

65% OF SECONDARY
STUDENTS
TAKE CTE COURSES

TOTAL ENROLLMENTS IN CTE PROGRAMS

Agriculture, Food and Natural Resources (AFNR); Business and Marketing Education (BME); Engineering and Technology Education (ETE); Family and Consumer Sciences and Human Services (FCSHS); Health Professions and Public Safety (HPPS); Individualized Occupational Training (IOT); Trades and Industry (TI).



129
CTE DIPLOMAS
AWARDED
AS REPORTED BY LEAs

TECHNICAL COLLEGE—NORTH IDAHO COLLEGE



47

Active
programs



566

Students enrolled
in CTE programs
(headcount)



11,742

Year-end
credits



194

Students awarded
degrees/
certificates



391

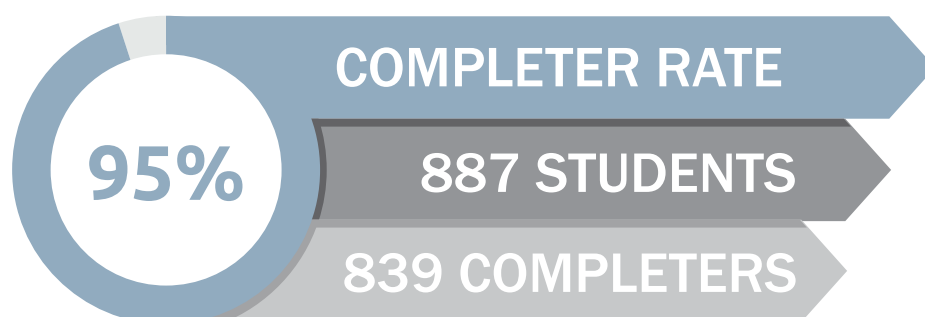
Technical college
FTE enrollments

WORKFORCE TRAINING CENTER

7,227
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Ginno Construction Company of Idaho, Inc.

Type of industry: Construction

Number of employees: 45

Training need: Employers in North Idaho's construction industry face an ongoing shortage of workers with the necessary skills and knowledge to complete projects. The lack of traditional licensing and training requirements in Idaho complicates efforts for companies like Ginno to build and maintain a skilled workforce.

How the WTC delivered: NIC's Workforce Training Center (WTC) developed a construction apprenticeship program that blends on-the-job training with classroom instruction. Ginno employees earn a wage while learning and receive National Center for Construction Education and Research certifications, enabling the company to build and retain skilled employees.



The apprenticeship program has helped our employees learn more about the construction industry and how all parts of the project fit together. They receive training from skilled instructors and can apply what they've learned in their everyday work."

—Gregorio Rodriguez, safety and environmental officer, Ginno Construction



North Idaho College



CTE programs transform futures for incarcerated youth

Since 2020, LCSC has collaborated with the Idaho Department of Juvenile Corrections (IDJC) to expand access to CTE programs for its residents. This initiative provides hands-on learning opportunities that can lead to real-world skills and better outcomes for incarcerated youth.

“Many of these students previously believed that education was not an option for them,” said Liz Weldy, a transition coordinator at LCSC. “Now, they’re earning dual credit or college credit, which opens doors they didn’t know were possible.”

The program began when IDJC reached out to LCSC to discuss developing more CTE opportunities for its residents. Initial discussions revealed significant barriers. Many academic institutions declined to participate due to these challenges, but LCSC was determined to find a solution.

“Incarcerated students face strict safety protocols; they can’t communicate with anyone outside their facility except for parents during visits,” said Weldy. “That means a traditional online classroom wouldn’t work.”

LCSC developed a secure instance of the online learning platform Canvas, customizing it to lock down certain features to meet safety requirements. This approach allows students to access course materials while adhering to the necessary restrictions.

Initially, LCSC offered courses in hospitality, basic electricity and heating, ventilation and air conditioning (HVAC) principles. A key feature of CTE classes is their hands-on nature, and classrooms often contain professional-grade equipment. To ensure students still had access to applied learning, Weldy had to get creative with the resources available at IDJC’s three facilities. For example, at the St. Anthony facility, students gain hands-on experience working in the Canteen, an onsite restaurant for the facility’s staff. They can also earn internship credits, aligning their practical experience with industry standards.

“They’re managing real-world tasks, from food preparation to customer service, which builds essential soft skills,” said Weldy.

The program also emphasizes support during students’ transitions back into society. Each student receives an



Education reduces recidivism rates, and we hope to see our efforts reflected in lower incarceration rates in the future.”

—Liz Weldy, transition coordinator, LCSC

admission letter upon enrolling, along with a CTE T-shirt to foster pride.

Looking ahead, Weldy envisions further program growth.

“We’re actively seeking grant opportunities to expand offerings like welding and other trades,” said Weldy. “The goal is to align our programs with workforce needs in the community.”

The impact of these programs is already evident.

“We’ve seen students who previously disengaged from education start to thrive,” said Weldy. “One student wrote to his parents, saying, ‘Getting my high school diploma at 16 instead of a GED was a huge accomplishment and before taking these college courses, I had decided that was good enough for me. Now, I want to pursue more! And I’m excited about doing so.’”

Feedback from educators indicates a strong demand for more CTE classes. In response, LCSC is exploring additional course offerings and certifications.

“Educators see how these programs positively influence student behavior and academic performance, and there’s interest in expanding into healthcare and science fields,” said Weldy. “Education reduces recidivism rates, and we hope to see our efforts reflected in lower incarceration rates in the future.”



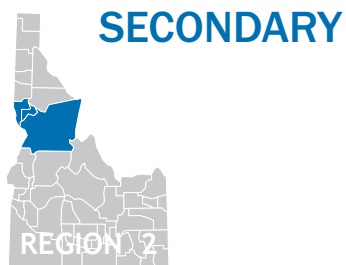
WHAT IS DUAL CREDIT?

Dual credit programs offer high school students the opportunity to earn college credits while still completing their high school education. These programs are designed to provide students with a head start on their postsecondary education, allowing them to fulfill both high school graduation requirements and accumulate transferable college credits simultaneously.

Idaho’s dual credit offerings encompass a variety of subjects, including general education courses like math and English, as well as CTE programs such as business, health sciences and engineering. Students can access these courses through local high schools or partner colleges like LCSC.

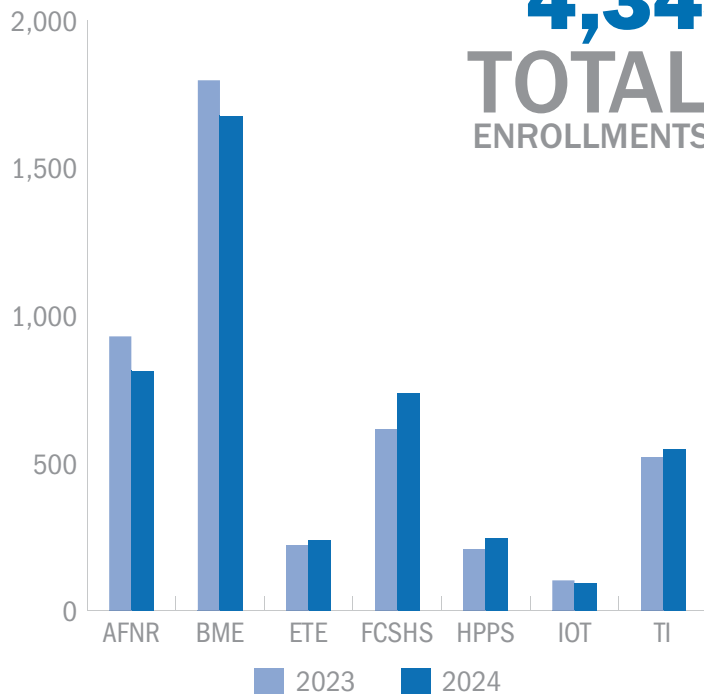
The Advanced Opportunities Program supports dual credit by providing each public-school student in grades seven through 12 with \$4,625 to use toward eligible educational expenses. This funding can cover costs associated with dual credit courses, allowing students to earn college credits at little to no cost. Students can receive up to \$75 per credit for dual enrollment courses, which can be taken online, at their high school, or directly at a college campus.

Research indicates that participation in dual credit programs enhances students’ readiness for college, increases graduation rates and improves overall academic performance. Students who engage in these programs often report feeling more confident and better prepared for the demands of higher education. With the partnership between LCSC and IDJC, even those in challenging circumstances can access these important educational opportunities, paving the way for brighter futures.



198
CTE
CONCENTRATORS

74 TOTAL PROGRAMS 
30% INCREASE
OVER FY 2023



4,343
TOTAL
ENROLLMENTS 

1,210
**SKILL
STACK**
BADGES ISSUED

17
LEAs
88% WERE RURAL

72% OF SECONDARY
STUDENTS
TAKE CTE COURSES

TOTAL ENROLLMENTS IN CTE PROGRAMS

Agriculture, Food and Natural Resources (AFNR); Business and Marketing Education (BME); Engineering and Technology Education (ETE); Family and Consumer Sciences and Human Services (FCSHS); Health Professions and Public Safety (HPPS); Individualized Occupational Training (IOT); Trades and Industry (TI).



49
CTE DIPLOMAS
AWARDED
AS REPORTED BY LEAs

TECHNICAL COLLEGE—LEWIS-CLARK STATE COLLEGE



31

Active
programs



324

Students enrolled
in CTE programs
(headcount)



6,459

Year-end
credits



77

Students awarded
degrees/
certificates



215

Technical college
FTE enrollments

WORKFORCE TRAINING CENTER

3,054
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

4J Electric

Type of industry: Electric

Number of employees: 13

Training need: 4J Electric partners with the WTC to oversee its Electrical Apprenticeship Program and provide various special topic classes.

How the WTC delivered: The WTC adapted its Related Supplemental Instruction to meet Idaho's requirements, supporting 4J Electric's needs as a company operating on the Idaho-Washington border. This partnership allows 4J Electric's employees to progress toward Idaho journeyman certification, enhancing their skills and providing greater flexibility for regional work opportunities.



LCSC workforce training has been a tremendous partner for many years, providing an exceptional apprenticeship training program with top-tier instructors. They continue to improve their program each year to adapt to industry trends."

—Kyle Johnson, owner, 4J Electric





Teacher's vision brews a future filled with opportunity for her students

With just 70 students in grades nine through 12, Council High School (CHS) may be small, but its FCSHS teacher, Jodi Cook, has big ambitions. Since 1992, Cook has been inspiring students with her passion for culinary arts, which took root during her own junior high experience. Her involvement in Future Homemakers of America (now FCCLA) and national culinary competitions in high school further fueled her desire to teach FCSHS.

Three years ago, Cook envisioned a student-run coffee shop to enhance her culinary arts program. This dream became a reality when the school remodeled its library, transforming a small closet into Jack's Coffee Shop, named after the school's mascot, the Lumberjacks. A Program Quality Initiative (PQI) grant provided the funding for the necessary commercial equipment, allowing Cook's initiative to come to life.

The coffee shop offers students the chance to earn valuable certifications for careers in the food service industry. All

students earn an online barista certification and the Idaho-specific Ready, Set, Food Safe Certification. Some even earn the ServSafe Manager Certification, which demonstrates advanced knowledge in food safety and sanitation.

"Running the coffee shop helps students develop essential skills," said Cook. "They build teamwork and a strong work ethic as they manage daily operations, research drink trends, and adapt to customer preferences."

Jack's Coffee Shop operates on weekdays from 7:30 to 8 a.m. Monday through Thursday, allowing students to manage it independently before classes. Students also run the coffee shop on Wednesdays during lunch. Students take pride in crafting seasonal menus and special drinks, such as the Lumberjack Special for homecoming. Recently, they introduced boba tea and nondairy alternatives based on customer feedback, displaying their ability to research and innovate.



I check in with them occasionally, but the coffee shop is entirely student-run and self-sustaining.”

—Jodi Cook, FCSHS teacher

Beyond coffee-making, the initiative teaches crucial skills in entrepreneurship, marketing and customer service. Students create drink menus, conduct surveys to understand customer needs, design promotional materials, manage inventory and handle transactions.

“I check in with them occasionally, but the coffee shop is entirely student-run and self-sustaining,” said Cook.

The practical experience gained from managing the coffee shop has enabled many students to successfully transition into jobs at local restaurants and coffee shops, including positions in nearby McCall. This initiative not only enhances their culinary knowledge but also equips them with essential workplace skills, fostering pride and a sense of community within the school.

“I wanted my students to learn how to be baristas because coffee shops are very popular,” said Cook. “This hands-on training provides them with skills they can use when they graduate. If they go to college, they could easily step right into a coffee shop, earn some money and do something positive and fun.”



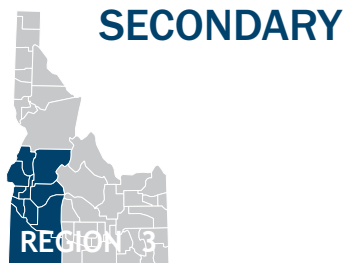
HOW ARE SECONDARY CTE PROGRAMS FUNDED?

IDCTE offers a variety of funding opportunities designed to support and enhance CTE programs. In addition to the funding sources below, IDCTE secondary programs also received \$10 million in one-time funding. Here’s a breakdown of key funding sources available to schools:

- **CTC funding:** Funding for CTCs is based on a formula established in Idaho statute and administrative code. This funding helps CTCs cover operational costs based on performance metrics, ensuring effective program delivery.
- **Idaho Quality Program Standards Incentive (IQPS) Grant:** AFNR teachers who create exceptional local programs can earn grants of up to \$10,000 each year. Qualified applicants must apply and meet the IQPS rubric’s standards and achieve an average score of “Distinguished” or higher. Additionally, up to four start-up grants are available annually, with a maximum award of \$25,000.
- **PQI Establishment Grants:** Qualified applicants can apply for competitive grants to help LEAs purchase essential equipment for newly approved CTE programs. Schools can apply for funding in their first and second year of program approval. This grant can only be received once.
- **PQI Incentive Awards:** High-performing CTE pathways automatically receive \$5,000 based on student completion and assessment scores. This funding is based on a formula for qualified applicants, and may be used to support instructional materials, equipment repair and professional development.
- **PQI Technical Assistance Grants:** Focused on improving program quality, qualified applicants may apply for grants to assist schools with low assessment pass rates in implementing effective strategies.
- **Program added-cost funding:** Specifically allocated for CTE-related expenses, this funding is based on a formula to cover specialized equipment and materials, ensuring resources are dedicated to unique program needs.
- **Perkins V:** These federal funds are based on a formula to support local educational programs identified through a comprehensive local needs assessment and are designed to help local education agencies enhance their CTE offerings.
- **Workforce Readiness Incentive Awards:** This incentive rewards CTE pathways for the number of students that pass assessments and earn SkillStack® badges. Amounts vary based on the number of eligible students meeting criteria.

These funding mechanisms are crucial in fostering the growth and success of CTE programs across Idaho, enhancing workforce readiness and creating valuable career opportunities for students.

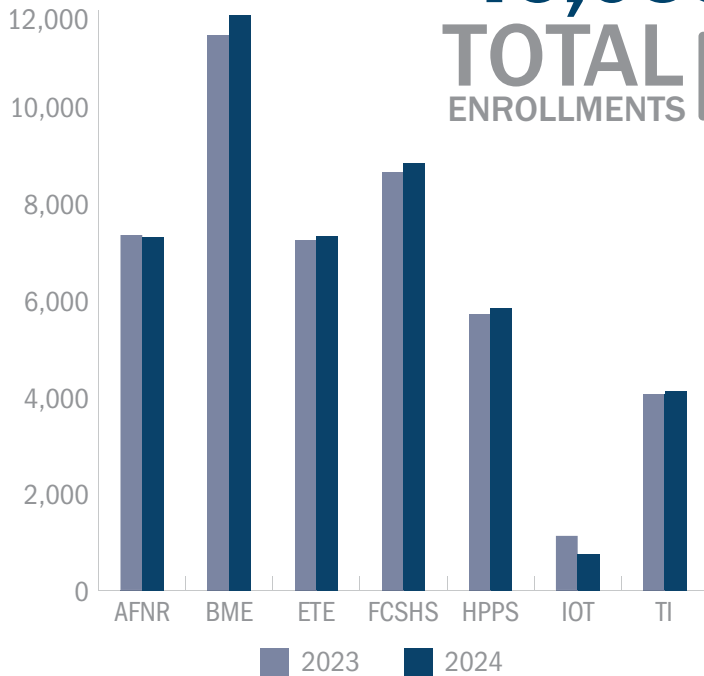
13



SECONDARY

3,584
CTE
CONCENTRATORS

456 TOTAL PROGRAMS 
13% INCREASE
OVER FY 2023



46,053
TOTAL
ENROLLMENTS 

23,739

BADGES ISSUED

54
LEAs
37% WERE RURAL

66% OF SECONDARY
STUDENTS
TAKE CTE COURSES

TOTAL ENROLLMENTS IN CTE PROGRAMS

Agriculture, Food and Natural Resources (AFNR); Business and Marketing Education (BME); Engineering and Technology Education (ETE); Family and Consumer Sciences and Human Services (FCSHS); Health Professions and Public Safety (HPPS); Individualized Occupational Training (IOT); Trades and Industry (TI).



1,716
CTE DIPLOMAS
AWARDED
AS REPORTED BY LEAs

TECHNICAL COLLEGE—COLLEGE OF WESTERN IDAHO



43
Active
programs



1,801
Students enrolled
in CTE programs
(headcount)



33,528
Year-end
credits



479
Students awarded
degrees/
certificates



1,118
Technical college
FTE enrollments

WORKFORCE TRAINING CENTER

6,316
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Engineered Structures, Inc.

Type of industry: Construction

Number of employees: 1,050

Training need: Engineered Structures, Inc. (ESI), which constructs large grocery stores nationwide, is developing an in-house division for refrigeration installation. To support this initiative, the company needed to train qualified construction technicians in commercial refrigeration but lacked the necessary facilities and curriculum.

How the WTC delivered: Eight ESI employees began an online bootcamp in March, covering topics such as brazing, workplace safety, effective communication and EPA 608 exam prep. The EPA 608 certification demonstrates that HVAC technicians possess the knowledge to safely handle refrigerants while complying with environmental regulations.



This is one of the better, if not the best, training courses I've been to. The instructors are easy to talk to and understand. It's giving me a steppingstone for the future."

—Chuck Evans, ESI employee



SkillStack® sees 34% increase in badges issued

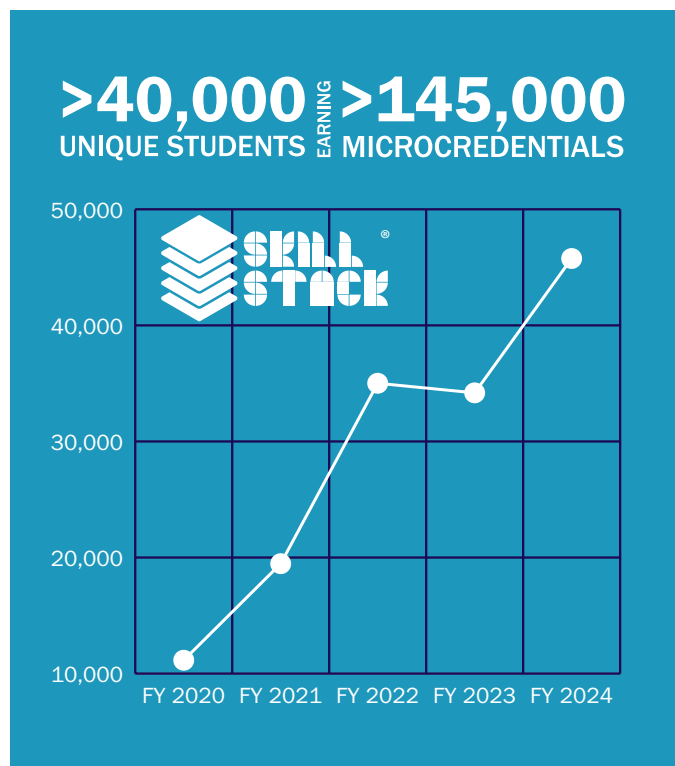
The SkillStack® microcredentialing program saw a 34% increase in the number of badges issued between the 2022-2023 and 2023-2024 school years. This growth follows the introduction of the Workforce Readiness and Career Technical Education Diploma in 2021, along with the expanded use of microcredentials in academic and CTE programs at the postsecondary level.

Launched during the 2015-2016 school year as part of Idaho's effort to enhance workforce readiness, SkillStack® provides students with targeted microcredentials that align with industry needs. The program aims to equip learners with essential skills necessary for today's job market. Each microcredential represents skills gained through rigorous training and assessment. This clarity allows employers to identify qualified candidates more easily, enhancing the employability of SkillStack® participants. With Board policy changes that went into effect during the 2023-2024 school year, postsecondary institutions can also award prior learning credit for stacked microcredentials.

The SkillStack® program uses the Open Badges standard, the world's leading format for digital badges, allowing learners to share their achievements across multiple platforms. This interoperability enhances learner mobility and supports their ability to present skills to potential employers, who can identify who issued the badge, when and where it was earned and what criteria were used to earn it.

SkillStack® has quickly become an integral part of Idaho's educational landscape. It bridges the gap between traditional education and the skills required by employers. By offering credentials that reflect specific competencies, SkillStack® prepares students for immediate entry into the workforce.

Due to its commitment to maintaining high standards, Idaho was one of 20 vendors and educational institutions invited to join the TrustEd Microcredential Coalition from 1EdTech, a global nonprofit community focused on improving the digital learning ecosystem for all learners. This coalition



includes leaders from higher education, educational technology suppliers, and K-12 districts. Additionally, representatives from Idaho have been invited to speak at several national conferences and webinars to share best practices.

"With the rise in demand for microcredentials, transparency and quality digital credentials are essential," said Heather Luchte, IDCTE's chief performance and accountability officer.

Engagement with local businesses is a critical component of SkillStack's® strategy. By collaborating with industry partners, the program regularly updates its offerings to reflect current workforce needs. This partnership benefits students and provides employers with a steady pipeline of skilled talent.

To remain at the forefront of workforce readiness, IDCTE accepted nominations for its new Idaho Microcredential Advisory Council, which will focus on developing best practices and building support for microcredentials and digital badging. Representatives from secondary and postsecondary institutions, industry partners, and employers across the state were invited to serve on the council.

"SkillStack's® growth and recognition reflect the ongoing shift towards skills-based hiring," said Luchte. "By focusing on microcredentials, the program enhances the employability of its participants and prepares them for the challenges of a rapidly changing job market."

CTSO highlights

12,730 AFFILIATED MEMBERS



Front row (L-R): Abby Foruria, Eliza Dugan, Aislyn King, Karmen Denuit, Reese Murphy, Kimber Smith, Cara Shuldberg; Second row (L-R): Alexis Saterfield, Joseph Bendel, Josh Nelson, Will Brackett, Chayse Van Eps, Makenna Denuit, Nicole Dumitrascu, Cameron Roth, Christopher Bright; Third row (L-R): Starr Hernandez Torres, Callie Sue Costello, Averie Lewis, Josh Bombersbach, Sara Seigler, Yvonne Shen, Parker Neddo, Emily Davis, Jentri Van Ackern, Sophia Francis, Kenzie Banks, Nicole Prosser; Fourth row (L-R): Roselynn Oviatt, Makaela Brown-Muthoni, Brooklyn Stoddard, Aubree Palmer, Jai Kommireddy, Jalen Yu, Cooper Yake, Isaac Simpson, Aiden Panicacci, Alexis Black, Noor Abdulkareem, Aiden Ward, Katie Kim, Ryan Howson, James Sullivan and River Gilbert.

- 411 total chapters
- 5,774 state conference attendees
- 1,694 national/international conference attendees
- Two national officers elected

CTSOs are intracurricular programs designed to help students develop skills and connections for their future careers. They're also a key component of quality CTE programs. CTSOs allow students to develop leadership skills through chapter, community and statewide involvement. Through CTSO competitive and leadership events, students hone their technical and professional skills and can gain a competitive advantage when applying for college and jobs. Idaho's seven CTSOs align with our six program areas and provide support and growth from secondary to postsecondary and beyond.

BPA

- **1,981** secondary members, **88** postsecondary members.
- **40** members earned **Statesman Torch Awards**.
- **1,396** members attended the **State Leadership Conference (SLC)**.
- **275** secondary members attended the **NLC**.
- **31** postsecondary members attended the **NLC**.
- **One** national officer was elected.

DECA

- **502** secondary members.
- **418** members attended the **State Career Development Conference**.
- **240** secondary members attended the **International Career Development Conference**.

FCCLA

- **1,148** members, **69** secondary chapters, **three** postsecondary chapters.
- **464** members attended the **SLC**.
- **80** members attended the **NLC**.
- **11** chapters earned **Outstanding/Exemplary Chapter Awards**.
- **34** members completed the **Power of One Program**.
- **One** student was selected for the **Japanese exchange**.

FFA

- **6,449** secondary and postsecondary members, **101** chapters.
- **1,790** members attended the **State Convention**.
- **303** members received their **State Degree**.
- **974** members attended the **National Convention**.

HOSA—Future Health Professionals

- **1,228** members, **44** chapters.
- **908** members attended the **SLC**.
- **236** members attended the **International Leadership Conference**.
- Earned the **Gold Standards of Excellence International Award**.

SkillsUSA

- **1,108** members.
- **663** members attended the **State Leadership and Skills Conference**.
- **112** members qualified for the **National Leadership and Skills Conference**.
- Earned the **2024 Gold State Standards of Excellence Award**.
- **Meridian Technical Charter High School (MTCHS)** earned the **Gold Chapter of Excellence Award**.
- **Duane Erickson** from MTCHS received the **Advisor of the Year Award**.
- **One** national officer was elected.
- **Dr. Harold Nevill** received the **SkillsUSA Honorary Life Membership Award**.

TSA

- **226** members.
- **135** members attended the **SLC**.
- **One** student from New Plymouth High School was inducted into the **TSA Honor Society**.
- **Renaissance High School** was designated as a **Top Performing Chapter**.
- **Jonathan Dransfield** from Rocky Mountain High School was named **Individual Student Performer of the Year**.



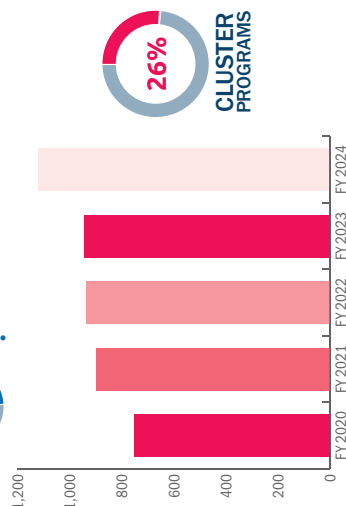
IDAHO



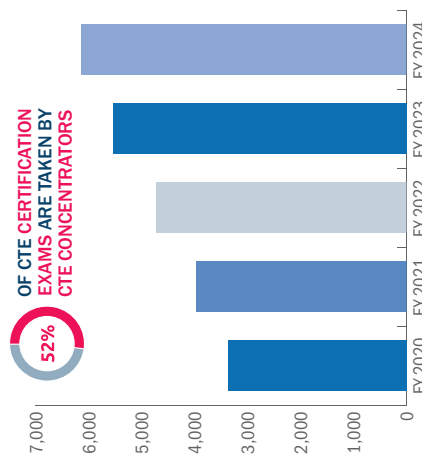
secondary

2023 | 2024
Year in Review

49%
↑
TOTAL PROGRAMS
OVER FOUR YEARS



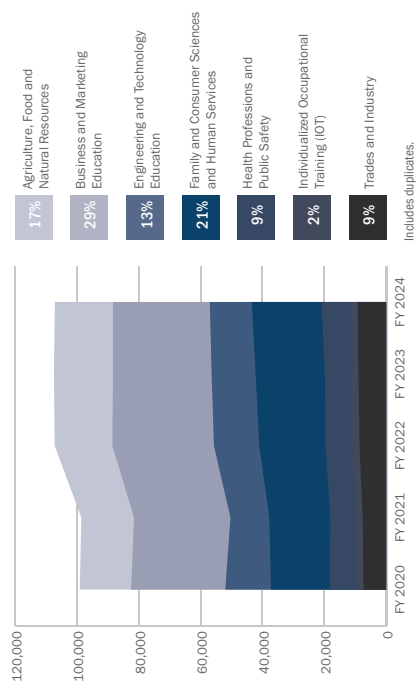
NUMBER OF CTE CERTIFICATION EXAMS TAKEN



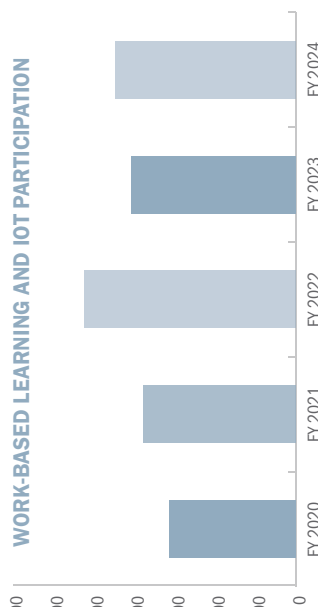
CTE CONCENTRATORS

A CTE CONCENTRATOR
IS A JUNIOR OR SENIOR

NEARLY 72K
STUDENTS ENROLLED IN CTE PROGRAMS



WORK-BASED LEARNING AND IOT PARTICIPATION

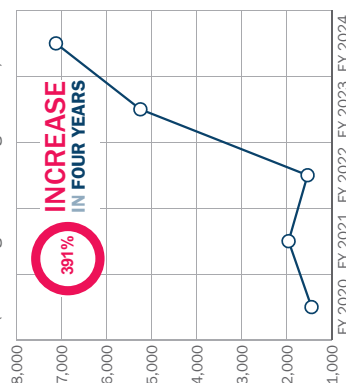


147
LOCAL EDUCATION AGENCIES

71%
OF ALL HIGH SCHOOL STUDENTS TAKE CTE COURSES

13%
GROWTH IN SECONDARY CTE STUDENTS OVER 5 YEARS COMPARED TO 10% GROWTH STATEWIDE

STUDENTS ENROLLED IN DIGITAL CTE COURSES (Idaho Digital Learning Alliance)



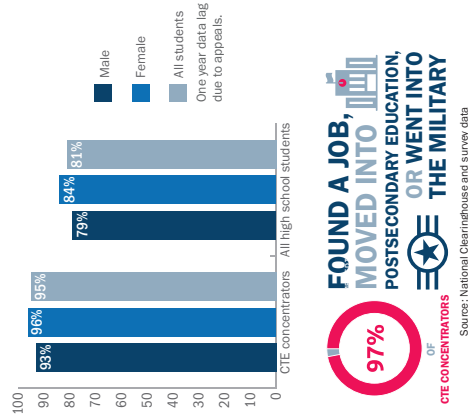
ASSESSMENT
PASS RATES



3,341
CTE DIPLOMAS AWARDED AS REPORTED BY LEAs

98%
INCREASE IN THREE YEARS

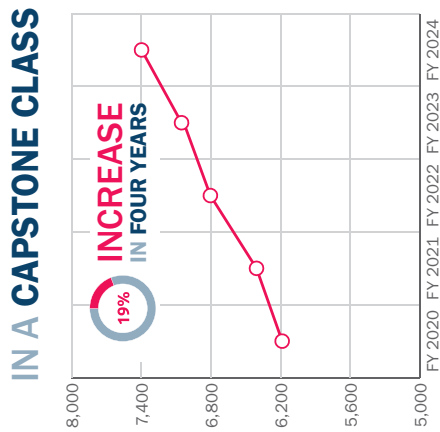
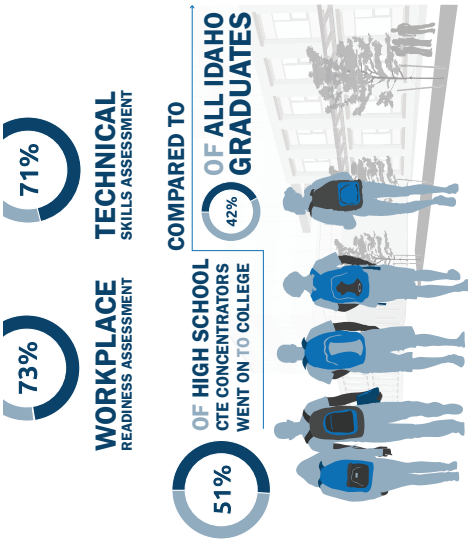
HIGH SCHOOL GRADUATION RATES



**FOUND A JOB,
MOVED INTO
POSTSECONDARY EDUCATION,
OR WENT INTO
THE MILITARY**

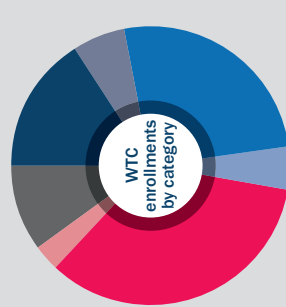
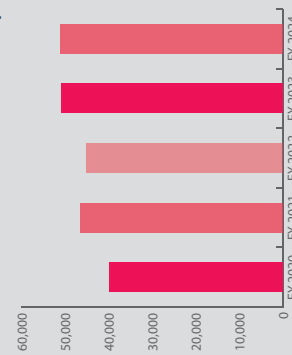
97% OF CTE CONCENTRATORS

Sources: National Clearinghouse and survey data



technical college system

WORKFORCE TRAINING CENTERS (WTCs)



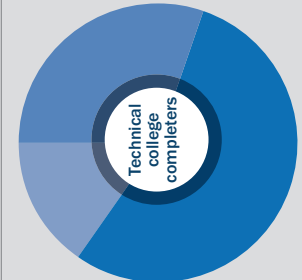
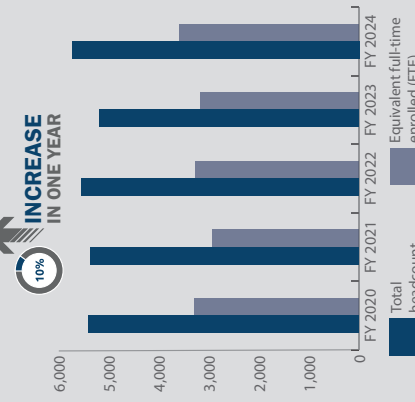
CERTIFICATE/DEGREE PROGRAMS

215 ACTIVE PROGRAMS

1,782 STUDENTS AWARDED CERTIFICATES AND DEGREES

7% INCREASE IN FIVE YEARS

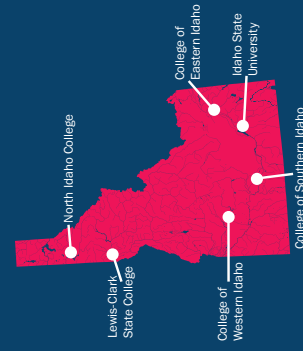
107,831 YEAR-END CREDITS



Sources: National Clearinghouse and survey data

4 TECHNICAL COLLEGES at COMMUNITY COLLEGES

2 TECHNICAL COLLEGES at FOUR-YEAR COLLEGES



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Boise, Idaho 83702
208-429-5500
cte.idaho.gov



Changes to Educator Services better serve Idaho's CTE educators



IDCTE's Educator Services bureau provides essential resources, training and support to ensure Idaho's educators deliver high-quality CTE programs. This workgroup includes the Educator Certification and Professional Development sections, which work collaboratively to support CTE educators across Idaho.

This year brought significant changes, with the promotion of Korey Mereness to chief educator officer and Lisa Costa to director of Professional Development. Additionally, the 2024 Idaho Legislature approved three new regional teacher educators to provide mentoring and support for new CTE teachers. These positions are set to be filled in fiscal year 2025, thus expanding the support network for industry specialists entering the education field.

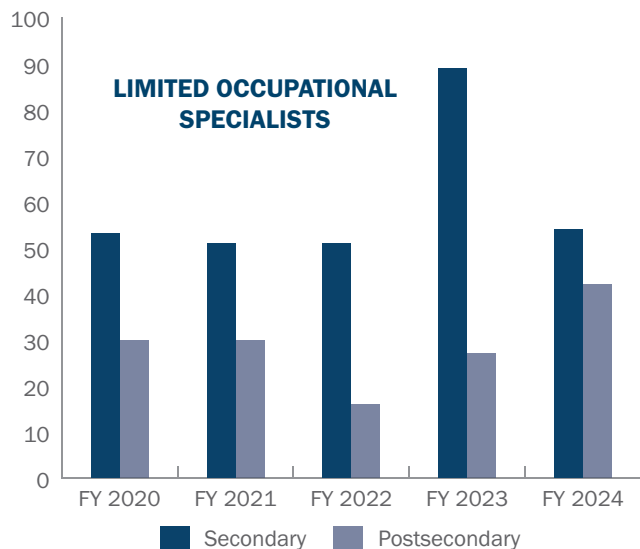
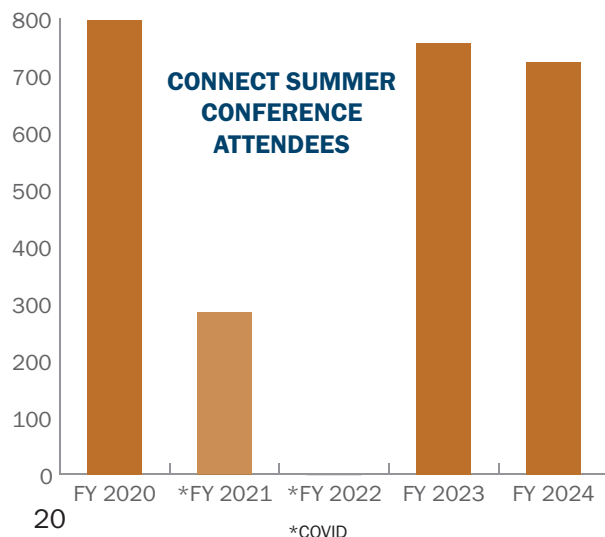
The Educator Certification team, led by Kristi Enger, assists educators by offering guidance on various routes for first-

time and returning educators. The team also helps those with industry experience transition into teaching roles by recognizing their professional backgrounds. In fiscal year 2024, the team processed 516 educator certification applications, reflecting a strong commitment to maintaining a well-qualified CTE workforce.

As new teachers work toward certification renewal, the Professional Development team organizes training sessions, workshops, webinars and conferences to help them enhance their skills and gain teaching strategies and resources. In fiscal year 2024, the team hosted eight statewide workshops, attracting over 150 attendees. The team also mentors new CTE teachers, offering essential guidance during their transition into the classroom. Additionally, the team develops materials and resources to ensure all educators are equipped to meet the diverse needs of their students.

A notable highlight of the year was the launch of the First Steps Standards Professional Development Course. This Idaho State Board of Education-approved program prepares teachers to effectively deliver the First Steps Standards in career exploration courses for students in grades seven and eight. To date, 419 educators have completed the program, demonstrating its positive impact on educational practices in Idaho.

Through these initiatives, the Educator Services team continues to ensure that all CTE educators are equipped to provide high-quality education and meet the evolving needs of their students.



Enhancements in Fire Service Training improve efficiency and firefighter readiness

In fiscal year 2024, the Idaho Fire Service Training (FST) Program made significant progress in enhancing its training capabilities. These achievements focus on improving firefighter preparedness across the state.

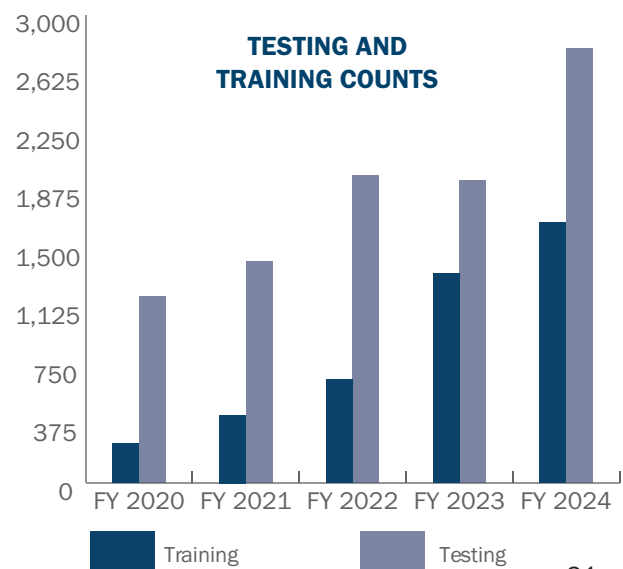
In April 2024, Brad Terry was appointed as the permanent program director of FST. He has focused on building relationships within the fire service community to enhance collaboration among all regions of the state and both career and volunteer departments. Over the past year, FST also hired its first regional support specialist, Travis Myklebust, a former chief of the Lewiston Fire Department and past president of the Idaho Fire Chiefs Association. Myklebust has strengthened the relationship between the fire service community and FST. With his assistance and that of several members of the FST Advisory Council, the requirements for testing equivalency were revised to improve efficiency in International Fire Service Accreditation Congress (IFSAC) testing.

In fiscal year 2024, FST implemented a training prop rotation schedule for its key assets. The three-story mobile training tower, SimTech Driver Simulator trailer and Draeger Live Fire Training trailer have been strategically relocated throughout

the state for two-month rotations. This approach allows fire departments to plan and use these resources more effectively in their training programs while reducing the need to transport each trailer across the state. To support this initiative, FST is recruiting more drivers to enhance coordination and efficiency.

In fiscal year 2025, FST will continue working on a comprehensive course catalog, which will enhance efficiency and firefighter preparedness by providing clear access to training options and requirements, allow targeted skill development and facilitate better scheduling and tracking of training progress. FST partners are assisting with updating the curriculum to support the course catalog. This structured approach encourages continuous learning and helps ensure that firefighters are equipped with the necessary skills to meet the demands of their roles.

In January 2025, IFSAC will conduct a site review to ensure FST continues to meet the criteria for accreditation. To support this, FST and industry partners are updating parts of the testing processes to help Idaho maintain its IFSAC firefighter certifications. These nationally recognized certifications provide a valuable service to the fire service and the citizens of Idaho.



21

Support from Center for New Directions fuels growth in autobody program



In the bustling Autobody and Paint Technology workshop of NIC's Parker Technical Education Center (PTEC), the sound of tools clanging and paint sprayers humming fills the air. Students work diligently at their stations, some meticulously prepping surfaces while others apply vibrant coats of paint. This dynamic environment reflects a growing trend: Among the 13 students enrolled, seven are female, marking the first time in the program's history that women make up more than half of the class.

Part of this increase in women enrolling in nontraditional occupations is related to outreach and support for NIC's Center for New Directions (CND), which offers essential support for single parents and displaced homemakers, as well as students going into fields traditionally held by the opposite gender.

For student Rylea Johnson, enrolling in the Autobody and Paint Technology Program was an easy next step after graduation from high school.

"I've always loved working with my hands," said Johnson. "My favorite part of the program so far is the metal bodywork aspect. It's cool to see the transformation of a vehicle from really messed up to almost perfect."

Andy Rogge, the program's lead instructor, thinks females becoming increasingly interested in the trades is a good thing.

22

"These students are great at listening to direction and also tend to be pickier on their quality of work, and that is exactly what I want to see with students as they are learning the basics of this industry," said Rogge.

To further encourage women to pursue careers in trades, the CND holds a monthly meeting called Women Wednesday, a gathering designed to create a supportive network for female students at PTEC.

"Our first Women Wednesday was so well-attended that we didn't have enough chairs," said Louisa Rogers, program coordinator for the CND. "It's amazing to see so many women come together to support each other."

Johnson acknowledges her experience is different than the other female students at PTEC.

"At Women Wednesday, they were talking about how some of them are the only female students in their program," said Johnson. "I think it's unusual for there to be so many girls in our program. But we all get along so well. And the guys in our program are really great and supportive. We all joke around and help each other out."

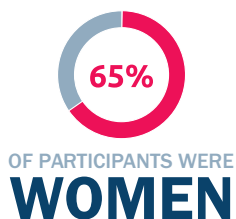
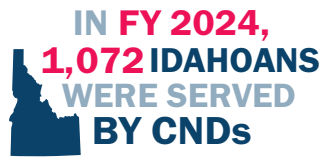
The program shares space with the Kootenai Technical Education Center (KTEC), allowing high school students to witness advanced work firsthand. Three of the seven female students were previously KTEC students. The growing female presence in the program reflects a broader movement towards inclusivity in the trades.

"We want to show women that they belong in these fields," said Rogers. "It's about breaking down barriers and building confidence."

"My favorite part of the program so far is the metal bodywork aspect. It's cool to see the transformation of a vehicle from really messed up to almost perfect."

—Rylea Johnson, student, NIC





WHAT ARE THE CENTERS FOR NEW DIRECTIONS?

CNDs play a crucial role in supporting students enrolled in Idaho's CTE programs. Located at Idaho's six technical colleges, CNDs are designed to assist individuals who may face barriers to educational and career success, such as single parents or displaced homemakers. CNDs provide a range of services aimed at helping students complete their CTE programs and prepare for rewarding careers.

CNDs were supported by dedicated funds totaling \$150,000 in fiscal year 2024. Each CND collaborates with the Department of Commerce, Department of Labor, Department of Health and Welfare, local job services offices, workforce investment boards, correctional facilities and technical colleges to avoid duplication of effort and ensure each participant has access to:

- **Personalized support:** CNDs offer tailored guidance and mentorship, helping students navigate challenges related to life, education and employment.
- **Financial assistance:** CNDs provide resources for scholarships, tuition waivers and materials, alleviating some of the financial burdens that can hinder program completion.
- **Skill development:** Through workshops and training sessions, students enhance essential skills such as resume writing, interview techniques and job readiness.
- **Networking opportunities:** CNDs connect students with industry professionals and potential employers, facilitating valuable networking that can lead to internships and job placements.

By addressing each student's unique needs, CNDs significantly increase the likelihood of successful program completion. Students gain technical skills, confidence and resources necessary to thrive in their chosen fields, strengthening Idaho's workforce and promoting economic growth across the state.



Adult Education Student of the Year earns GED, phlebotomy certificate

Maritza Carmona, 47, a mother of four and grandmother of 14, dropped out of school in 1993 in the ninth grade to raise her first son. Though she always intended to finish her education, she realized later that earning her GED was essential to move forward. It wasn't until her youngest child turned 21 last year that Carmona decided to focus on her own goals.

She enrolled in GED classes at the College of Southern Idaho (CSI) while simultaneously working as a DoorDash driver. Balancing work and study, Carmona turned her car into a mobile classroom.

"I did my homework between deliveries, with books on my lap, working on math or reading while waiting for the next order," said Carmona. "I worked long hours, sometimes from 7 a.m. until 10 or 11 p.m., but it was worth it to stay in class."

Throughout this process, Carmona's teachers and fellow students provided critical support.

"I had two great teachers who encouraged me to keep going,

she said. "They helped me believe in myself, even when I doubted my ability."

Carmona's path wasn't without challenges. She encountered difficulties with some of her classes, particularly math.

"I struggled with the way my teacher explained things. I just couldn't grasp her method," said Carmona.

But she wasn't the only one. Other students had the same issue, so they started helping each other out. Together with her classmates, Carmona advocated for a slower pace and clearer explanations.

"I spoke up for the group, and we were able to ask the teacher to slow down and go over things more thoroughly," said Carmona. "It helped everyone."

Despite feeling overwhelmed at times, Carmona kept pushing forward, motivated by the support of her family.

"My kids kept reminding me that my mom, who had passed away in 2021, was watching over me," said Carmona. "They told me she would be proud of me."



Getting your GED is not just a piece of paper. It's a key to everything. It opens doors for me and for anyone who is willing to put in the effort, and no one can take that key away from you."

—Maritza Carmona, 2024 Adult Education Student of the Year

After earning her GED, Carmona used funding from Idaho LAUNCH to pursue a phlebotomy certification, which opened more career opportunities. She now works as a Certified Nursing Assistant and phlebotomist at Family Health Services in Jerome, Idaho. Looking ahead, Carmona plans to advance further in the medical field, with aspirations to become a Certified Medical Assistant (CMA) or Licensed Practical Nurse. She credits her GED as the key that unlocked these opportunities. For her tenacity, perseverance, and advocacy for herself and other students, Carmona was named Idaho's 2024 Adult Education Student of the Year.

"On the day I found out, I was feeling down, doubting myself, wondering if I could keep up with everything," said Carmona. "When I got the message that I was Student of the Year, it brought me to tears. I realized—wow, people are noticing me, even when I didn't think anyone was paying attention."

In recognition of her achievement, Carmona was invited to attend Governor Little's Adult Education and Family Literacy Week proclamation signing on Sept. 20, 2024, in Boise.

Carmona's advice to others considering returning to school is simple: Don't let age or self-doubt hold you back.

"Age shouldn't be an excuse to not better yourself," said Carmona. "Getting your GED is not just a piece of paper. It's a key to everything. It opens doors for me and for anyone who is willing to put in the effort, and no one can take that key away from you."

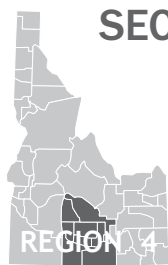


WHAT DOES ADULT EDUCATION INCLUDE?

When most people hear "Adult Education" (AE), they think of pursuing a GED certificate. But today's AE programs encompass a wide range of learners with distinct needs and goals, including:

- **College and career preparation:** College and career preparation programs provide specialized training and education tailored to specific industries or professions. Whether mastering new technologies or developing leadership skills, these programs empower adults to advance their careers, embark on new professional journeys and thrive in the rapidly evolving job market.
- **Basic literacy:** Adult basic literacy programs aim to empower individuals by providing fundamental skills in reading, writing and math, fostering confidence and employability. These programs also facilitate improved communication, enabling better integration into society and offering pathways for further education or vocational training.
- **English language acquisition:** AE programs focusing on English language acquisition help non-native speakers enhance their communication skills. From everyday conversation to professional correspondence, these initiatives facilitate integration into English-speaking communities and open doors to other educational and employment opportunities.
- **IET:** IET programs combine basic skills development with occupational training, ensuring that learners acquire essential academic skills and gain practical knowledge relevant to their chosen fields. This integrated approach maximizes learning efficiency, equipping adults with a well-rounded skill set for success.

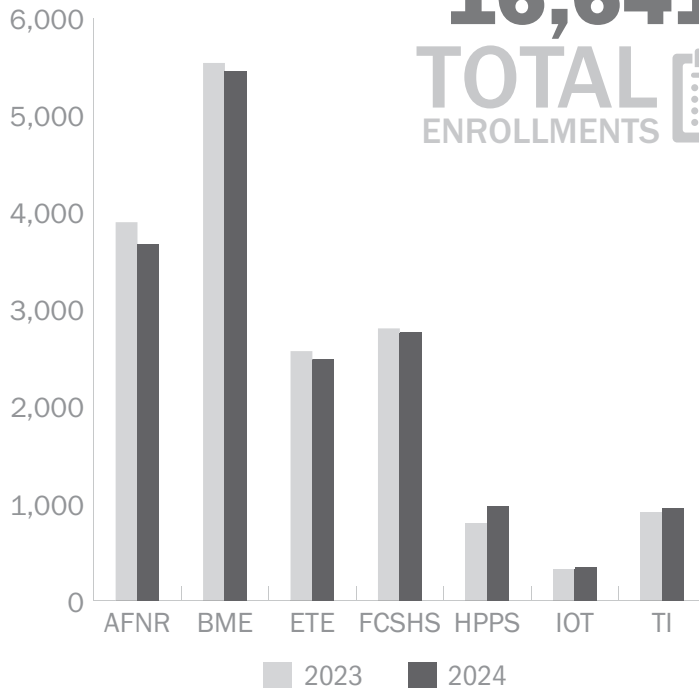
No matter where or when someone chooses to begin their journey, AE programs are designed to adapt to their diverse needs and aspirations, fostering a lifelong pursuit of knowledge and growth.



SECONDARY

883
CTE
CONCENTRATORS

171 TOTAL PROGRAMS 
13% INCREASE
OVER FY 2023



16,641
TOTAL ENROLLMENTS 

2,891

BADGES ISSUED

23
LEAs
91% WERE RURAL

86% OF SECONDARY STUDENTS TAKE CTE COURSES

TOTAL ENROLLMENTS IN CTE PROGRAMS

Agriculture, Food and Natural Resources (AFNR); Business and Marketing Education (BME); Engineering and Technology Education (ETE); Family and Consumer Sciences and Human Services (FCSHS); Health Professions and Public Safety (HPPS); Individualized Occupational Training (IOT); Trades and Industry (TI).



815
CTE DIPLOMAS
AWARDED
AS REPORTED BY LEAs

TECHNICAL COLLEGE—COLLEGE OF SOUTHERN IDAHO



44

Active programs



1,186

Students enrolled in CTE programs (headcount)



22,905

Year-end credits



321

Students awarded degrees/certificates

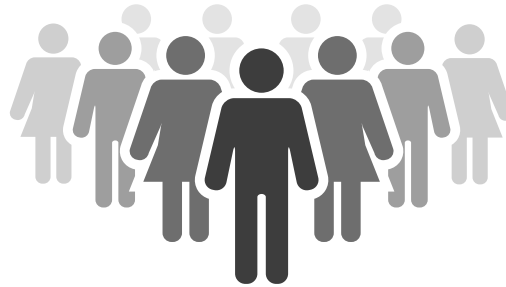


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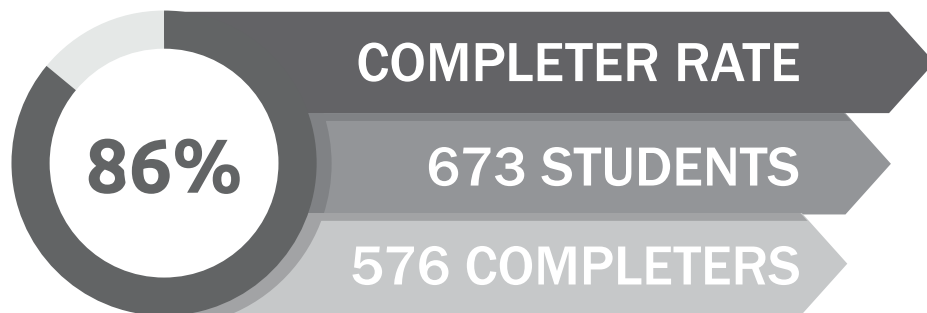
Technical college FTE enrollments

WORKFORCE TRAINING CENTER

7,414
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Amalgamated Sugar

Type of industry: Food processing

Number of employees: 1,700

Training need: Amalgamated Sugar worked with CSI's WTC to invest in its workforce through a Maintenance Technician Apprenticeship Program. The company faced a loss of tenure and experience as older tradesmen retired, creating a need to replenish its workforce with employees who have specialty knowledge.

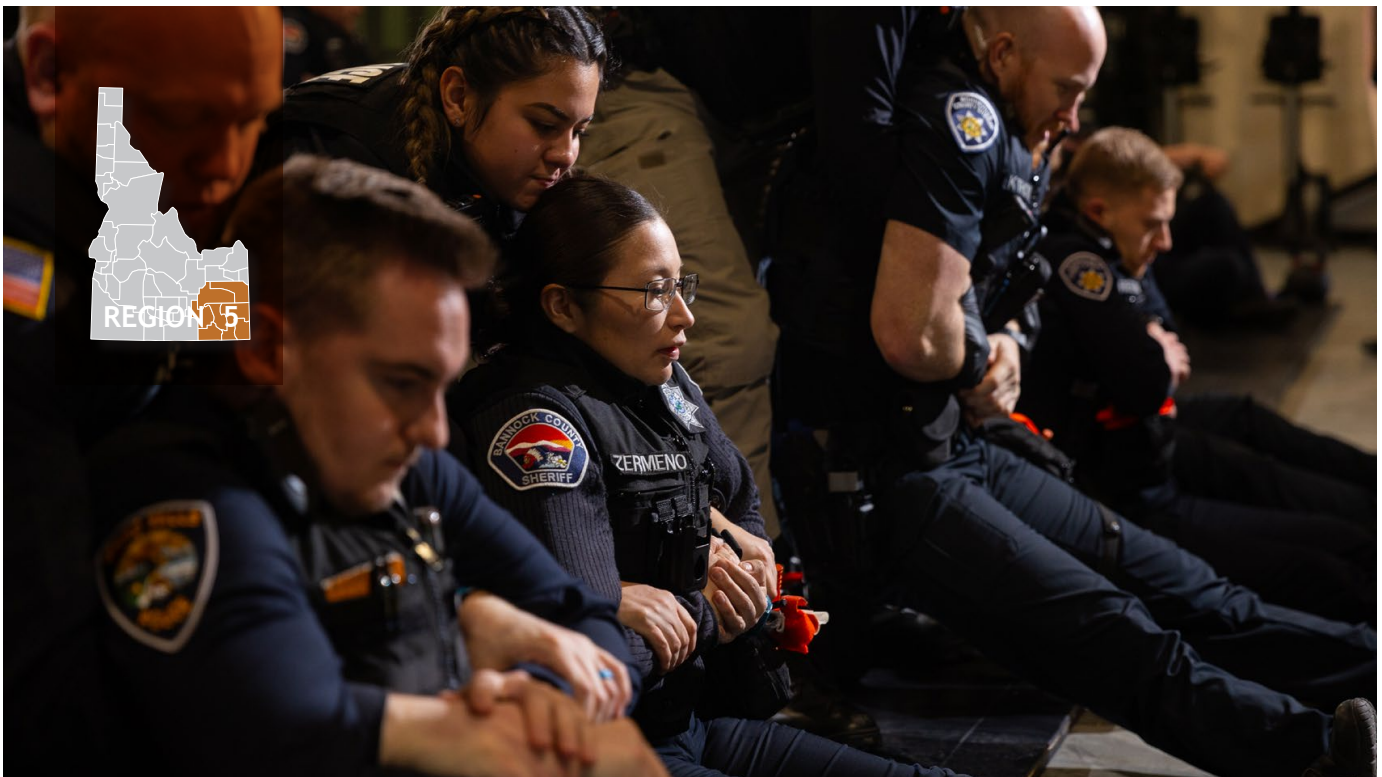
How the WTC delivered: The Maintenance Technician Apprenticeship Program allows Amalgamated Sugar to select current employees for advancement. It offers experience and skill development to employees interested in learning a trade, leading to certification for millwright roles. In January 2023, CSI launched the program at its Mini-Cassia campus, with five employees from Amalgamated Sugar participating. In May 2023, discussions began for a partnership in Twin Falls, where four apprentices are now working. Instructors report that students are asking more advanced questions on the job, and participants say they can apply their classroom learning at the factory.



Whatever they learn in class is where we're putting them. We're teaming up to match hands-on experience with their homework."

— Danielle Bingham, district human resource manager, Amalgamated Sugar





SkillStack® enhances law enforcement education at Idaho State University

Historically, the Idaho State University (ISU) Law Enforcement Program attracted only three to four students each semester who enrolled at ISU without prior connections to law enforcement agencies. Instead, most of the law enforcement participants had already been hired by a local law enforcement agency but needed to complete their Peace Officer Standards and Training (POST) to continue working, with their agencies covering the costs of their coursework through the WTC. Because of this enrollment process, these students weren't enrolled as degree seeking students, so they couldn't receive ISU credit toward a certificate for their efforts.

To earn a degree, which benefits career advancement, these students previously had to navigate an extensive prior learning assessment process. However, this approach saw little success, with very few applications submitted over the program's history. The program aimed to find a more effective way to recognize students' accomplishments while satisfying the requirements for a Basic Technical Certificate (BTC).

28

The IDCTE SkillStack® microcredentialing program offered a unique solution to this challenge.

ISU faculty contacted IDCTE to discuss converting existing coursework into a series of stacked badges. After the university provost, registrar and College of Technology dean granted provisional approval for the process to begin as a pilot, the IDCTE team aligned the badges with the law enforcement curriculum, demonstrating how the activities associated with the badges matched the courses' learning outcomes. A key challenge was ensuring that students could enroll without incurring extra costs. To address this, the ISU team created a zero-credit course, allowing students to pay an application fee to ISU. After completing the coursework, instructors log achievements in SkillStack® and send a memo of completion to the university registrar to award academic credit. This streamlined process integrated practical training with academic recognition, enabling students to apply for graduation.



I can use the college credits I earned while [I also] obtain my Idaho POST Certification.”

–Benjamin Avolio, ISU Law Enforcement student

“SkillStack® is a neat program. I can use the college credits I earned while [I also] obtain my Idaho POST Certification,” said Benjamin Avolio, a current ISU Law Enforcement student.

Since implementing SkillStack®, the number of BTC recipients in the law enforcement program increased dramatically, from 15 over five years to 38 in the first year. More importantly, law enforcement agencies have expressed strong support for the program, encouraging their officers to participate to enhance career prospects.

By sharing this successful model, ISU aims to improve law enforcement training across Idaho and foster cooperation among educational institutions, with the College of Western Idaho and CSI expressing interest in adopting SkillStack® for their programs. Overall, the SkillStack® microcredentialing program at ISU represents a significant shift in law enforcement education, enhancing the educational experience for students and contributing to more effective training in the state. This innovative approach sets a precedent for similar initiatives in other programs and institutions.



WHAT ARE MICROCREDENTIALS?

SkillStack® is a microcredential platform that allows Idaho’s educators to validate the skills their learners demonstrate proficiency in, leading to industry-relevant digital badges.

Microcredentials are recognized credentials awarded to learners for mastering skills or concepts defined by industry and educators. They’re developed through a collaborative process that engages industry, educators and other stakeholders to ensure they reflect the skills needed for success.

A digital badge serves as a visual representation of a microcredential, embedded with data to verify a learner’s skills and achievements. Each badge’s criteria are developed with industry input.

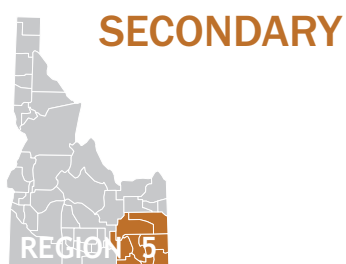
Digital badges have several key characteristics:

- **Verifiable:** Prospective employers or postsecondary institutions can identify who issued the badge, when and where it was earned and what criteria were used to earn it.
- **Stackable:** A set of organized microcredentials can be stacked to symbolize progressive levels of proficiency, complexity and achievement.
- **Portable:** Individuals can access their badges indefinitely and share them via social media or embed them in a resume for prospective or current employers or postsecondary institutions.

Program standards for each badge are established through a collaborative process involving industry, college and university faculty, secondary educators and other stakeholders. As students provide evidence of their competencies, educators evaluate these skills based on common assessments. Once all skills for a badge are validated, the information is entered into the SkillStack® platform and badges are issued.

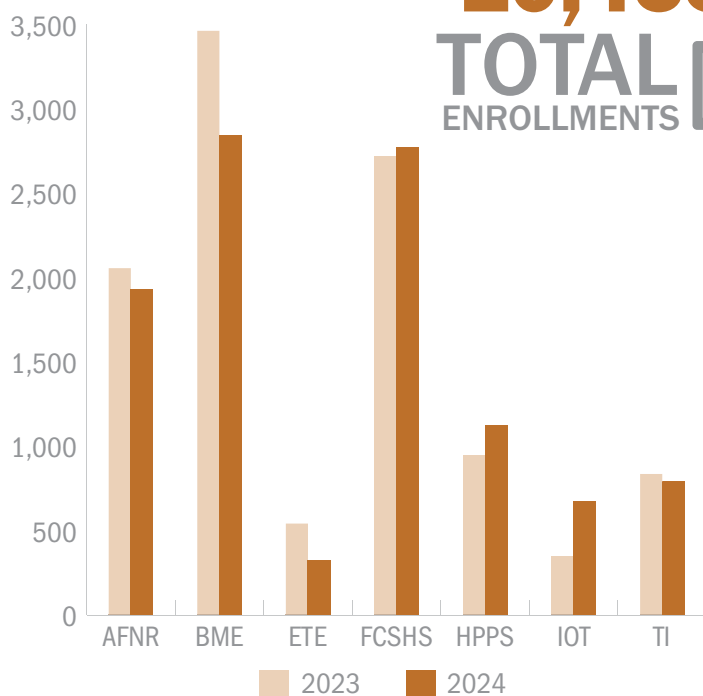
Unlike traditional degrees that cover broad fields of study, microcredentials focus on specific skill sets, making them appealing to employers seeking specialized knowledge. These certifications can be earned through online courses, workshops or other educational activities, providing a flexible pathway for individuals to demonstrate their expertise.

29



640
CTE
CONCENTRATORS

133 TOTAL PROGRAMS 
41% INCREASE
OVER FY 2023



10,455
TOTAL 
ENROLLMENTS

3,319
SKILL
STACK
BADGES ISSUED

14
LEAs
86% WERE RURAL

75% OF SECONDARY
STUDENTS
TAKE CTE COURSES

TOTAL ENROLLMENTS IN CTE PROGRAMS

Agriculture, Food and Natural Resources (AFNR); Business and Marketing Education (BME); Engineering and Technology Education (ETE); Family and Consumer Sciences and Human Services (FCSHS); Health Professions and Public Safety (HPPS); Individualized Occupational Training (IOT); Trades and Industry (TI).

203
CTE DIPLOMAS
AWARDED
AS REPORTED BY LEAs

TECHNICAL COLLEGE—IDAHO STATE UNIVERSITY

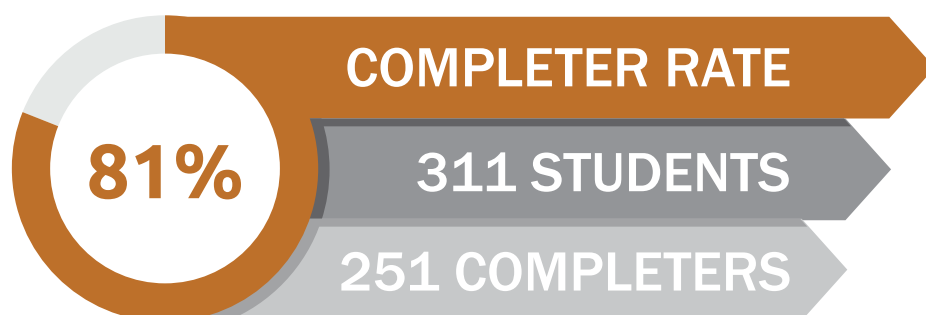


WORKFORCE TRAINING CENTER

13,305
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Platinum Plumbing

Type of industry: Plumbing

Number of employees: Six

Training need: As a growing plumbing company in Pocatello, Platinum Plumbing requires skilled, licensed professionals to address various residential and commercial plumbing needs. The company wanted structured training that encompasses technical knowledge, safety practices, regulatory codes and customer service.

How WTC delivered: Platinum Plumbing partners with the WTC to provide a four-year Plumbing Apprenticeship Program. This program aligns classroom instruction with state licensure requirements, equipping apprentices with essential skills. The company collaborates closely with the WTC to ensure the curriculum meets the evolving needs of the industry



Their commitment to providing hands-on training opportunities, in addition to didactic instruction, showcases their investment in the foundation, health and well-being of our community by administering quality education to our tradespeople.”

–Tana Christensen, co-owner,
Platinum Plumbing



**Idaho State
University**



Health professions programs bridge community and career

Kay Gardner spent three decades at the Pocatello Children's Clinic, taking on various roles in billing, collections and reception. Though she loved working in healthcare, she knew she didn't want to remain in clerical work until retirement. What she didn't know was that her husband, Mike, would be the key to helping her discover her calling.

"Mike was a paramedic who often taught night classes at local colleges, so he was gone all the time. I said, 'You know, I really don't like staying home alone, so I'm going to take an emergency medical technician (EMT) class so I can teach with you,'" Gardner recalled. "I took the class, and as part of it, you get to run on the ambulance, and it just stirred my soul.

After taking the EMT class, Gardner continued her work at the clinic and served in the reserves at the Blackfoot Fire Department. In 2019, an opportunity aligned her career with her newfound passion. When her husband retired, an acquaintance contacted him about taking over her EMT class at Idaho Falls School District No. 91's Career and Technical Education Center. Eager for a new direction, Gardner jumped at the chance.

32

"I suggested I take the position and haven't looked back," said Gardner.

Gardner used her experience and connections as an EMT to reimagine the year-long program, which includes dual credit through CSI. Classes run for two hours a day, four days a week. The extensive curriculum incorporates allied health, medical terminology and optional modules such as blood glucose monitoring and IV training. The CMA program is also a year-long program. Although students are technically supposed to receive an hour of CMA instruction each day, there's considerable overlap between the programs.

"EMTs and CMAs both need to know medical terminology and allied health. They all earn their Assist with Medications, CPR, OSHA and Stop the Bleed Certifications. I just figure the more they know the better prepared they are for the world," said Gardner. "In addition to clinical skills, CMAs also need to have clerical skills, so that's the main difference.

Gardner's connections have led to a strong technical advisory committee (TAC) that supports her programs by donating

“

I took the class, and as part of it, you get to run on the ambulance, and it just stirred my soul.”

–Kay Gardner, CMA and EMT instructor

equipment and providing guidance on skills and equipment students need. In addition to providing internships and hands-on experience, TAC members also volunteer in the classroom.

“I can’t do skills training with this many kids and have them be safe, so I have people who do this for a job come in to help teach and test,” Gardner explains. “Bonneville County Fire members were here practically as much as I was last year.”

This collaborative effort fosters a sense of community among the emergency medical services (EMS) in Southeast Idaho, with active participation from Central Fire Department in Rigby, Bonneville County Fire District in Idaho Falls, Idaho Falls Fire Department and Ammon Fire Department.

Upon completion of the program, students are prepared to take the National Registry of Emergency Medical Technicians exam.

“Some of my students go straight into industry as EMTs, and most of them go on to do fire services as well,” said Gardner. “I try to make sure that even if EMS isn’t their pathway, they learn something that will help them in their career.”



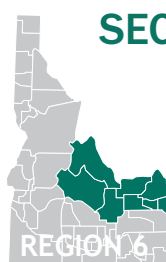
WHAT ARE TECHNICAL ADVISORY COMMITTEES?

TACs play a vital role in CTE programs by bridging the gap between education and industry. Comprised of professionals from relevant fields, TACs advise instructors on the skills and equipment students need to succeed in today’s job market. They help ensure that curricula remain current and aligned with industry standards, which is essential for preparing students for future employment.

In addition to offering guidance, TACs often provide valuable donations, including equipment and supplies that might otherwise be out of reach for educational entities. This support allows students to gain hands-on experience with the tools and technologies they will encounter in their careers. Many TACs also facilitate internships and job shadowing opportunities, giving students real-world exposure and practical skills.

For employers, partnering with TACs creates a pathway to build a skilled workforce. By investing in CTE programs, businesses can help shape the training of future employees, ensuring graduates are job-ready and familiar with the latest industry practices. This collaboration not only enhances the educational experience for students but also strengthens community ties and fosters a sense of shared purpose.

TACs play a crucial role in creating quality CTE programs. By advising instructors, providing resources and offering opportunities for hands-on learning, they help ensure that students receive the training they need to thrive in their chosen fields. In return, employers gain access to a pipeline of skilled workers prepared to meet the demands of the workforce.



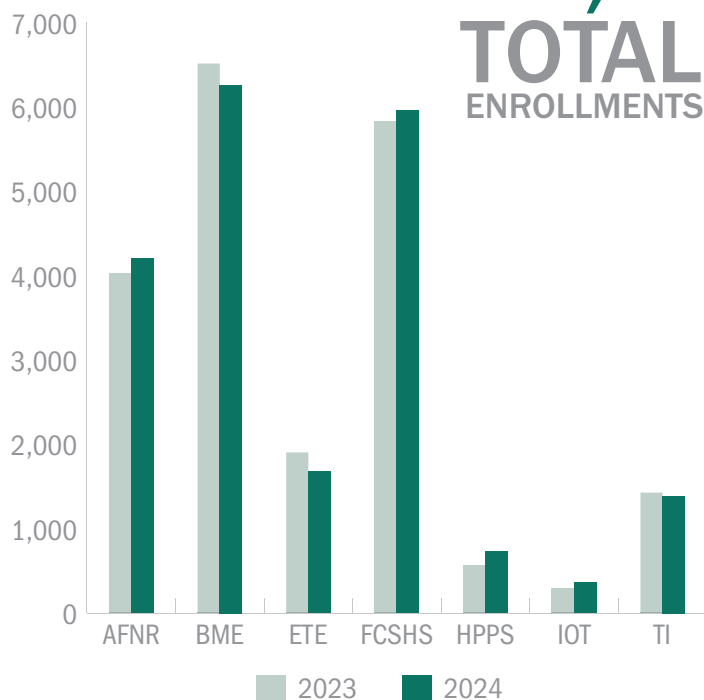
SECONDARY

1,477
CTE
CONCENTRATORS

180 TOTAL PROGRAMS



INCREASE
OVER FY 2023



TOTAL ENROLLMENTS IN CTE PROGRAMS

Agriculture, Food and Natural Resources (AFNR); Business and Marketing Education (BME); Engineering and Technology Education (ETE); Family and Consumer Sciences and Human Services (FCSHS); Health Professions and Public Safety (HPPS); Individualized Occupational Training (IOT); Trades and Industry (TI).

9,584
SKILL
STACK
BADGES ISSUED



22
LEAs



WERE RURAL



75%
OF SECONDARY
STUDENTS
TAKE CTE COURSES



429
CTE DIPLOMAS
AWARDED

AS REPORTED BY LEAs

TECHNICAL COLLEGE—COLLEGE OF EASTERN IDAHO



22

Active
programs



679

Students enrolled
in CTE programs
(headcount)



12,470

Year-end
credits



301

Students awarded
degrees/
certificates



415

Technical college
FTE enrollments

WORKFORCE TRAINING CENTER

13,784
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Idaho Steel

Type of industry: Fabrication and machining

Number of employees: 150

Description of training need: Idaho Steel manufactures equipment for the food processing industry and struggles to find qualified machine operators. The company expressed interest in enrolling several current employees in a short-term machine operator course, offering to fund their training.

How the WTC delivered: Previously, CEI had a machine operator course that was closed due to low enrollment. The WTC team revitalized the program by getting the machinery operational again and collaborating with Haas Automation, Inc., to create a new curriculum. Over two weeks, 10 employees received 40 hours of hands-on training, leading to a nationally recognized certification. All participants completed the training and passed the certification test, acquiring valuable skills to advance their careers.



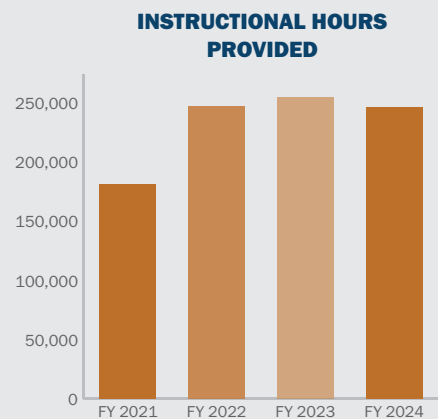
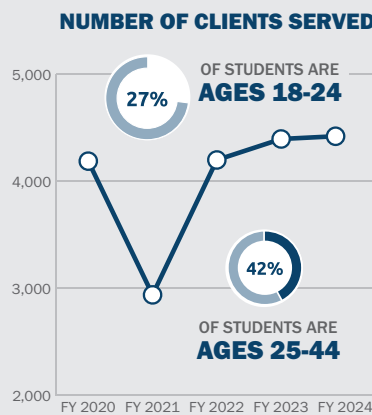
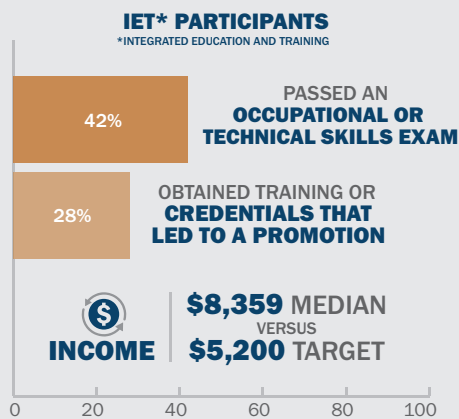
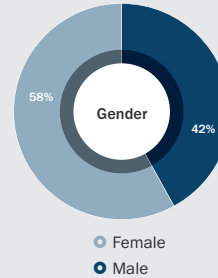
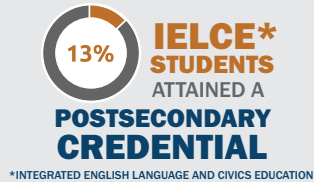
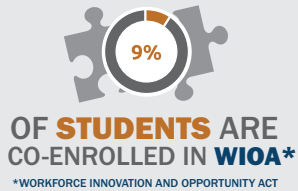
Idaho Steel is proud to continue investing in the students who have a passion for the trades.”

–Heidi Oyola, head of HR, Idaho Steel

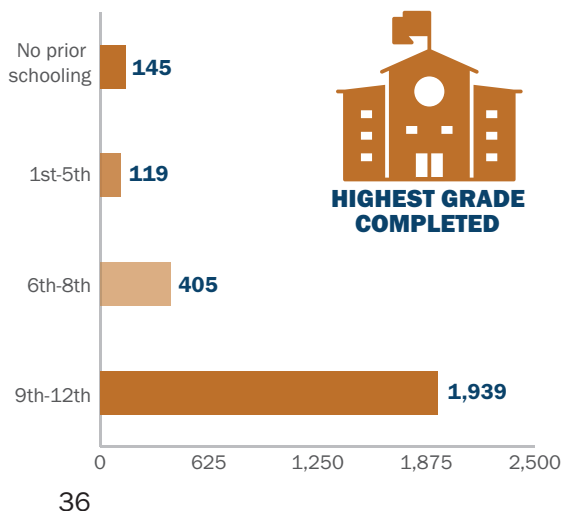


Adult Education

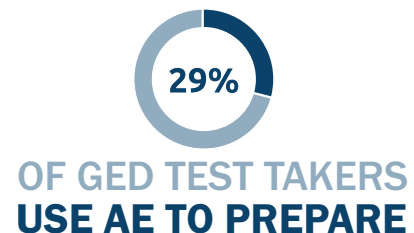
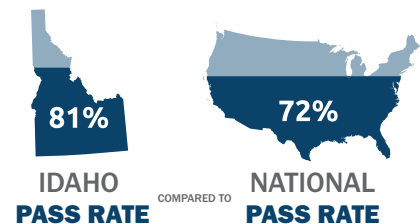
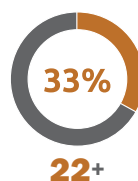
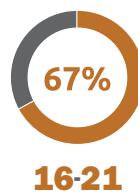
AE collaborates with employers, workforce training and CTE to prepare students for in-demand career pathways. AE provides several services to the six technical colleges and the Idaho Department of Correction.



GED



AGE GROUPS OF GED PASSERS

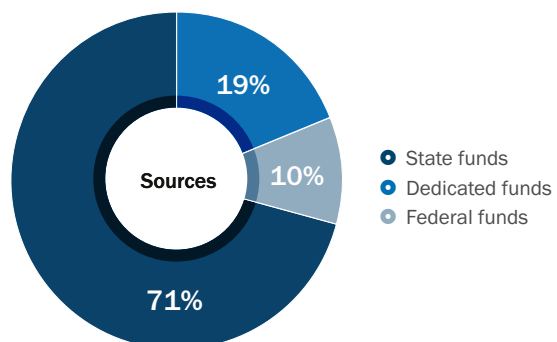
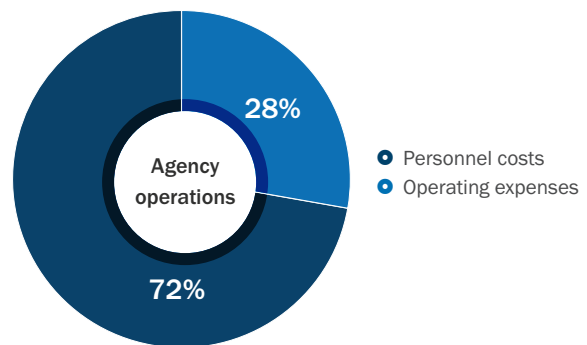
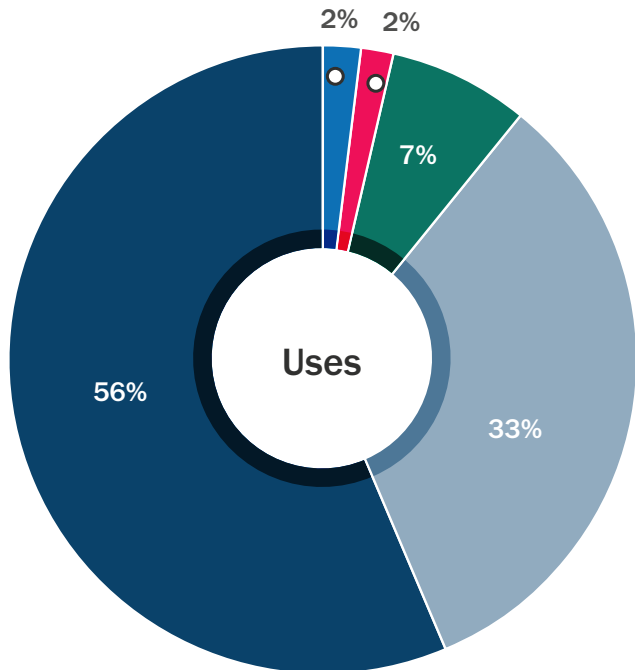


Financial overview



IDCTE RECEIVED \$108,296,800
IN APPROPRIATIONS AND HAD 45 EMPLOYEES
FOR FY 2024

Administrative services	\$2,355,000
Operating expenses	\$387,000
Personnel costs	\$1,936,600
Capital expenses	\$11,400
Secondary and general programs	\$35,511,700
Operating expenses	\$542,000
Personnel costs	\$1,951,300
Federal funds	\$4,021,700
Program distribution	\$33,018,400
Added-cost operating support	\$28,765,630
Agriculture and Natural Resources	\$442,500
Program Quality Initiative	\$634,870
Secondary Perkins grant programs	\$2,985,400
Workforce Readiness Incentives	\$190,000
Technical college system	\$60,847,900
Operating expenses	\$5,242,600
Personnel costs	\$47,919,800
Program distribution	\$60,847,900
Federal funds (distributed)	\$2,685,500
Related programs	\$7,771,400
Dedicated funds	\$252,800
Federal funds	\$4,507,500
Operating expenses	\$236,200
Personnel costs	\$1,073,200
Program distribution	\$6,012,200
Adult Education	\$4,565,400
Centers for New Directions	\$170,000
Fire Service Training	\$240,513
Workforce Training Centers	\$1,209,000
Educator services	\$1,810,800
Connect Summer Conference	\$275,000
Operating expenses	\$237,900
Personnel costs	\$595,400
Program distribution	\$702,500



Looking ahead

Reflecting on the past year, we've emphasized connecting more deeply with the field and strengthening relationships with our educators. Our commitment to innovation remains steadfast as we look ahead to the coming year. We're dedicated to leveraging new and emerging technologies to ensure our programming and learning opportunities are not outdated before our students arrive.

We're excited to reimagine our InSpIRE Ready! Program and leverage our new positions to support new educators in the field. We recognize the importance of reducing barriers to entering the teaching profession, particularly for CTE educators. Our efforts will focus on simplifying application processes and enhancing support for all educators—not just those new to the profession.

Advocating for additional technical college and secondary program resources will be top priorities. Rising operating costs, driven by increased enrollment and higher consumable expenses, pose significant challenges. To address this, we'll work strategically to engage with employers, ensuring that our education system aligns with workforce needs and keeps Idaho competitive.

Finally, we're committed to fostering stronger collaboration across the broader education ecosystem, working closely with higher education institutions and the Idaho Department of Education to ensure our efforts continue to drive student success and meet the needs of our communities. At the same time, we'll focus on building the necessary infrastructure that empowers both learners and employers, creating opportunities that align with the demands of our evolving economy. Together, we're paving the way for a brighter, more sustainable future for CTE in Idaho.



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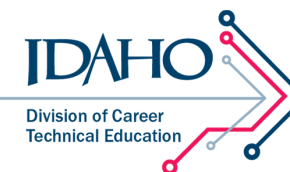
cte.idaho.gov

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 linkedin.com/company/idaho-career-and-technical-education

2024/1,000/AR24

We prepare Idaho's youth and adults for high-skill, in-demand careers.



Idaho Division of Career Technical Education

Operational Framework FY 2024 – FY 2028

GOAL	TARGET DATES	GOAL MANAGER	STRATEGY
I. Enhance and guarantee operational effectiveness and collaboration			
A. Design and develop a comprehensive program data management system	FY 2023 – Release RFP FY 2024 – Begin FY 2025 – Implementation	Special Projects Coordinator	1. Identify key components. 2. Produce and prepare for release of formal request for proposal. 3. Identify vendor and build system. 4. Identifying initial project team and future staffing needs for ongoing support, maintenance, and enhancements. 5. Enhance data elements and leverage results for improvement - o Articulate and validate definitions for reporting - o Enhance data reporting connectivity - o Develop data visualizations - o Leverage ISEE staff to create reports related to CTE data - o Provide professional development for staff on data-driven performance improvement.
B. Identify, improve, and produce documents for agency processes	FY 2024	Assistant Director of Federal and Related Programs on behalf of Leadership Team	1. Offer quarterly surveys for staff to identify needs 2. Leadership identify unit specific areas of improvement 3. File structure and application uses
C. Build intentional connections and collaboration between departments and units	FY 2024	Chief of Staff on behalf of Management Team	1. Develop road-maps, project management scopes, and functional steps. 2. Host annual and ongoing process update meetings 3. Develop OneNote Notebook for processes 4. Include CTE Staff on GreenRope communications 5. Ensure supervisors report-back on DMT and DLT meetings.
D. Complete migration, transfer, processes for Fire Service Training assets	FY 2024	Fire Service Training Acting Director	1. Confirm asset list 2. Process ownership transfers 3. Relocate equipment 4. Repair/Replace/Re-logo equipment 5. Establish equipment rotation calendar and use documentation
E. Enhance framework for educator resource catalog	FY 2024	Director of Communications	1. Develop handbook and/or guide including naming conventions, tags, branding, responsibilities 2. Framework on annual timeline including audits and leveraging operational survey results for improvements 3. Launch of agency-wide calendar feature

Originally Published: October 31, 2023 | Updated: February 26, 2024

GOAL	TARGET DATES	GOAL MANAGER	STRATEGY
F. Develop framework for policy makers and stakeholder engagement and learning.	FY 2025	Administrator	1. Enhance understanding and knowledge of career technical education 2. Legislative tours and roadshow. 3. Host regional listening sessions. 4. Host annual legislative recap and impact meeting for staff. 5. Enhance communication for FST Council and stakeholders. 6. Enhance partnerships and communication to districts (rural and urban)
G. Ensure intentional partnerships and collaborations with external organizations and agencies.	FY 2024 – Begin FY 2025 – Implementation	Administrator on behalf of Leadership Team	1. Produce internal document identifying staff assignments and responsibilities on committees, boards, councils, or organizations. 2. Targeting two-way communication 3. Identify strategies to build and enhance relationships 4. Explore and lead comprehensive learner record concept
H. Grow use and recognition of microcredentials	FY 2025	Chief Performance and Accountability Officer	1. Operationalize the new definition of microcredential and use for the state of Idaho. 2. Identify appropriate teachers as eligible badge providers. 3. Ensure SkillStack® training occurs during First Camp 4. Take appropriate steps necessary to remove Technical Competency Credit throughout system 5. Launch campaign for SkillStack® Recruit
I. Enhance relationships with Idaho's educational system	FY 2024 – Begin FY 2028 – Ongoing	Administrator	1. Identifying regional technical support and assistance 2. Proactively identify opportunities for local districts including building-level training networking 3. Enhance CTE knowledge and understanding 4. Explore working relationships with local boards of trustees 5. Enhance working relationships with relevant state agencies 6. Engage in new superintendent training
J. Develop comprehensive communication/marketing plan	FY 2026	Director of Communications	1. Incorporate field work into social media 2. Create social media plan 3. Develop timeline for annual report submission 4. Monitor annual operational survey results for improvement 5. Produce documents to visualize overlap in services and programming
K. Complete 2030 staffing plan	FY 2025	Chief of Staff	1. Initial review, prioritize, and finalize 2030 staffing needs 2. Annual review of 2030 staffing goals 3. Complete a workload analysis
II. Foster and lead quality programs			
A. Complete program prioritization and standards revision.	FY 2023 – Begin FY 2027 – Implementation	Assistant Director of Program Quality	1. Establish program prioritization metrics to ensure programs have alignment to regional and state labor need 2. Finalize quarterly plan for programs 3. Phasing out TCC

GOAL	TARGET DATES	GOAL MANAGER	STRATEGY
B. Ensure alignment with workplace readiness, student leadership, and academic content standards	FY 2026	Chief Program Officer	1. Finalize standards for student leadership 2. Create badges as applicable 3. Create resources for districts to align applied learning to academic standards
C. Explore, identify, and articulate standard interconnectivities.	FY 2025 – Begin FY 2026 – Implementation	Chief Program Officer	1. Identify appropriate stakeholders 2. Learn about possible solutions 3. Create roadmap to visualize
D. Review, revise, and publish new technical advisory committee framework	FY 2025 – Begin FY 2026 - Implementation	Assistant Director of Program Quality	1. Gather input on best practices 2. Ensure alignment with other state initiatives on workforce engagement 3. Include necessary items for Perkins input groups 4. Publish, communicate, and train field on updated framework 5. Explore collecting TAC members and contact information
E. Ensure program reviews are used to improve program quality and identifying ways to make enhancements	FY 2025 – Begin FY 2026 - Implementation	Chief Program Officer	1. Leverage program data including Perkins measures 2. Implement feedback survey 3. Explore technical assistance grants requirements
F. Implement student leadership standards	FY 2026	Assistant Director of Student Leadership	1. Design and develop training resources for educators 2. Develop educator badges for advisors
G. Update, enhance, and improve Perkins 4-year plan	FY 2024 & FY 2028	Perkins Program Director	1. Timeline for CLNA 2. Identifying appropriate staff for engagement 3. Prepare updated 4-year plan for approval by Board
H. Review, revise, and enhance Fire Service Training programming and services.	FY 2025	Fire Service Training Acting Program Director	1. Update testing system and software and explore online testing platform 2. Enhanced initial and ongoing operational training for field instructors/evaluators 3. Produce course catalog 4. Explore options and identify next steps for updated records management system
I. Partner with relevant agencies to explore a single state-wide credential of value inventory	FY 2027	Assistant Director of Program Quality	1. Identify agencies as contributors to the process and implement the final works
J. Ensure success launch of middle school programming.	FY 2025	Middle School Program Quality Manager	1. Define programming 2. Funding 3. Professional development
K. Coordination and ensuring sustainability for state program funding	FY 2026	Chief Administrative Officer	1. Reporting and accountability - o Postsecondary - o Secondary (program added-cost; career technical center added-cost, etc.) aligned to program prioritization work.

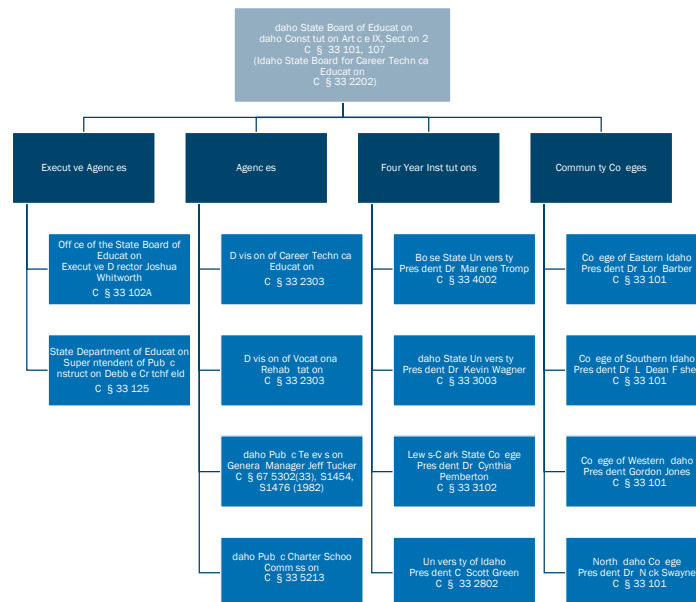
GOAL	TARGET DATES	GOAL MANAGER	STRATEGY
III. Provide dynamic educator services			
A. Develop and launch an educator certification platform	FY 2025 – Begin FY 2026 – Implementation	Director of Educator Certification	1. Develop framework and key components needed 2. Identify vendor or existing platform 3. Ensure functionality with ISEE and other relevant systems
B. Create microcredentials to be awarded in SkillStack®	FY 2024 – Begin FY 2026 – Implementation	Director of Professional Development	1. Recognizing professional development activities 2. Ongoing educator training 3. Report functionality for renewal of certification
C. Update course and ISEE manual	FY 2024 – Begin FY 2025 – Implementation	Director of Educator Certification	1. Finalize user-friendly resource 2. Implement new ISEE course code numbering and “sequence” documents 3. Identify enhancements to ISEE relevant to educator certification
D. Deploy annual survey for classroom teachers	FY 2025 – Implementation	Chief Educator Officer	1. Identify and engage appropriate stakeholders to develop survey 2. Identify potential partners for distribution of survey
E. Develop local CTSO advisor professional development	FY 2026	Assistant Director of Student Leadership	1. Identify best practices for local CTSO advisor training 2. Develop IDCTE Local CTSO (Student Leadership) Advisor training
F. Continue support and enhancement of InSpIRE Ready!	FY 2025	Chief Educator Officer	1. Expanding capacity for additional support o Transition InSpIRE Ready! courses to in-house 2. Adding additional First Camp mid-school year 3. Hosting optional regional new teacher training (including non-InSpIRE route) 4. Ensuring appropriate levels of mentors for new teachers
G. Leadership Institute	FY 2026	Director of Professional Development	1. Develop modules for leadership institute areas 2. Increase capacity and access to leadership institute materials
H. Foster on-going educator professional development	FY 2025	Director of Professional Development	1. Foster regional technical skill development courses 2. Grow and enhance Connect Conferences

Idaho Division of Career Technical Education 2025 Annual Update

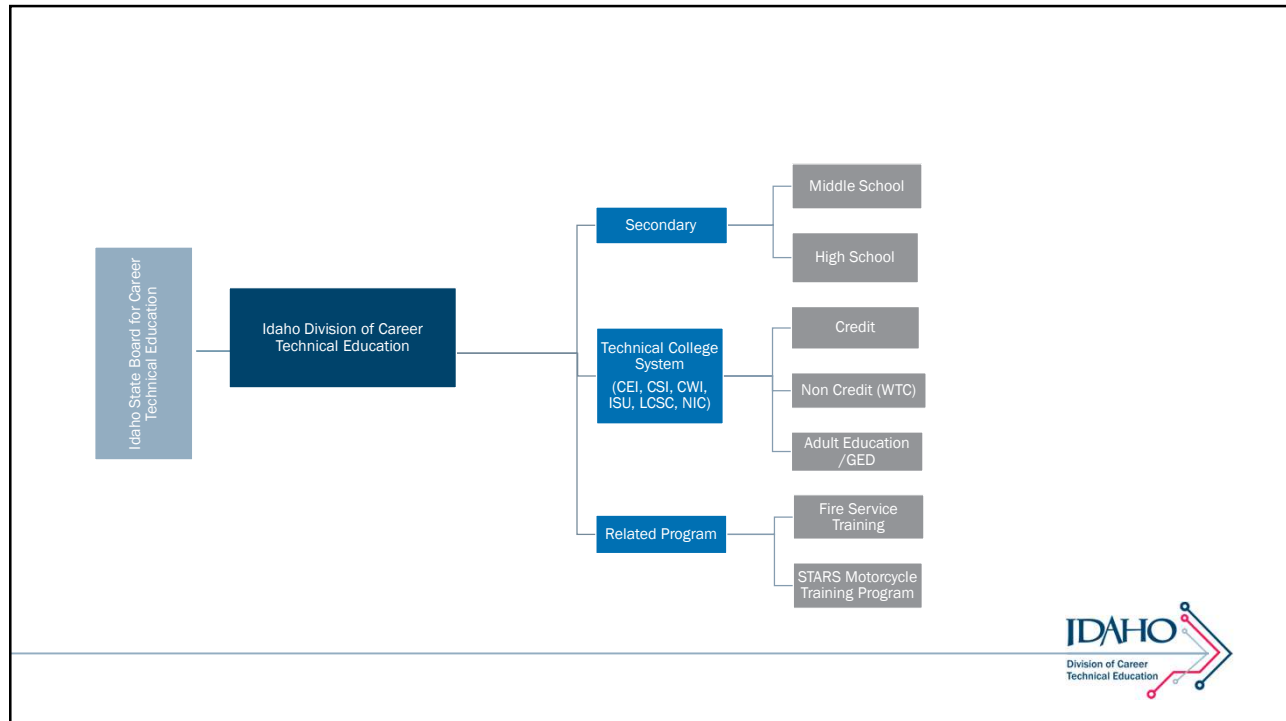
Executive Director Joshua Whitworth



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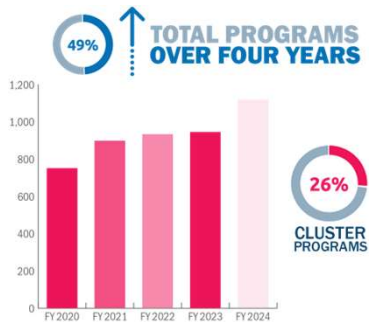
Our mission:

To prepare Idaho's youth and adults for high-skill, in-demand careers.

IDAHO
Division of Career Technical Education

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Secondary Snapshot

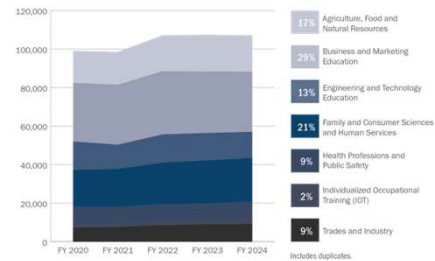


NEARLY 72K
STUDENTS ENROLLED IN CTE PROGRAMS



3,341 CTE DIPLOMAS AWARDED
AS REPORTED BY LEAs

18% INCREASE IN THREE YEARS



Source: IDCTE 2024 Annual Report



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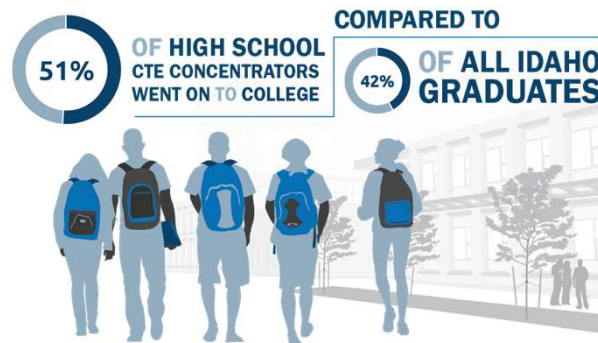
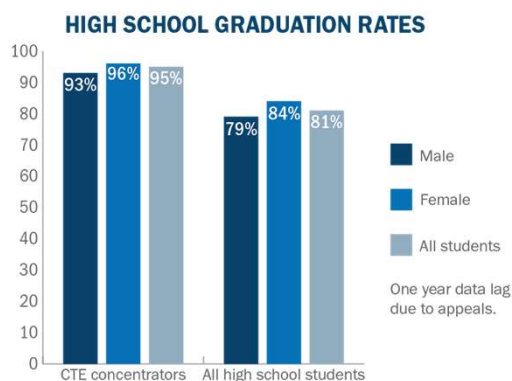
Secondary program applications

Program area	FY 2022	FY 2023	FY 2024	FY 2025
Agriculture, Food and Natural Resources	14	13	25	36
Business and Marketing	10	9	30	20
Engineering Technology Education	18	13	24	21
Family Consumer Sciences and Human Services	10	17	32	11
Trades and Industry	2	6	11	15
	59	73	151	117



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Secondary Snapshot

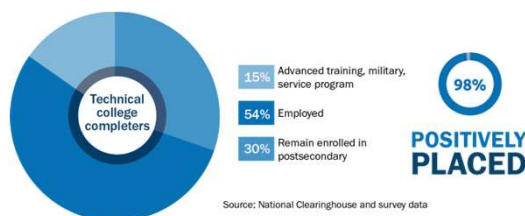
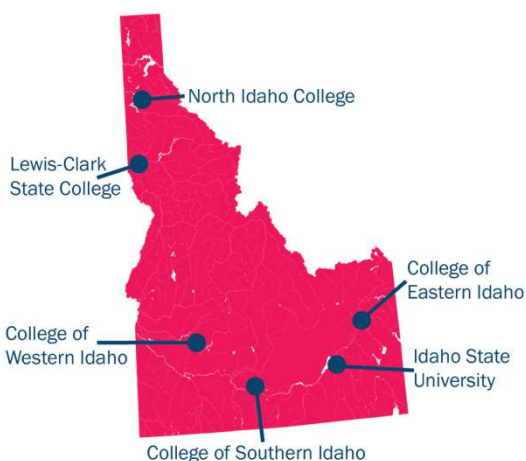


Source: IDCTE 2024 Annual Report



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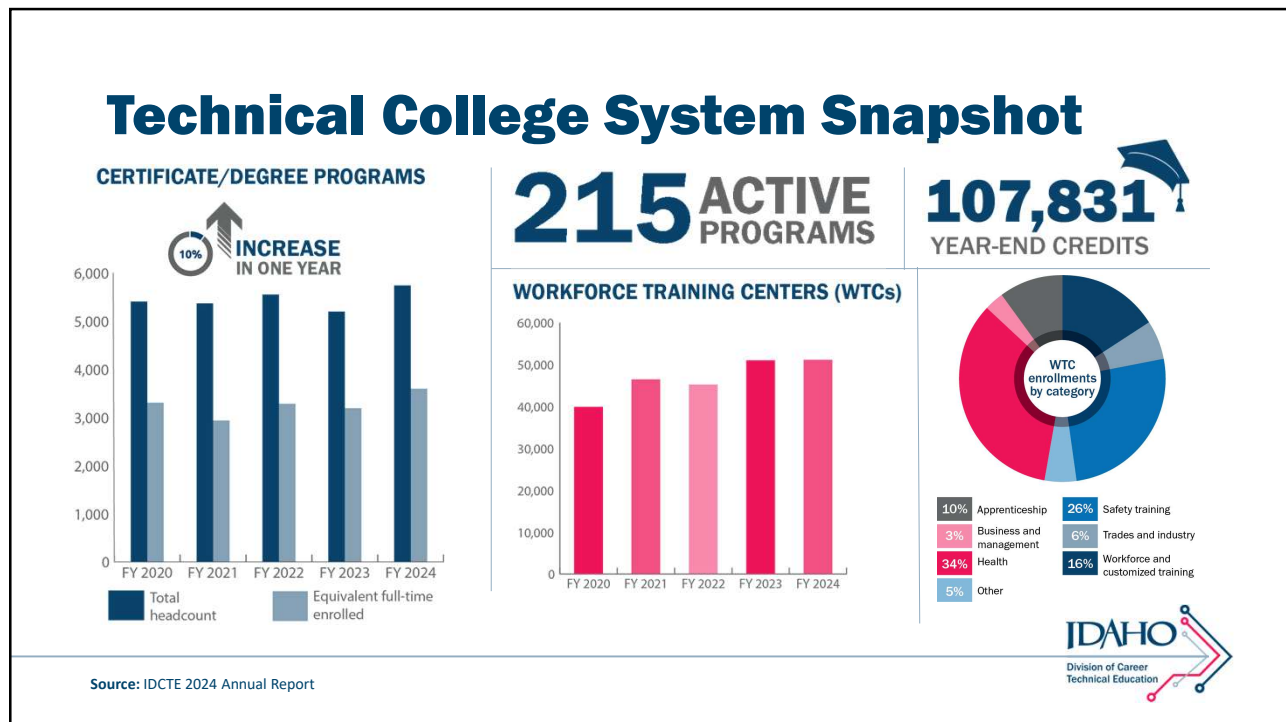
Technical College System



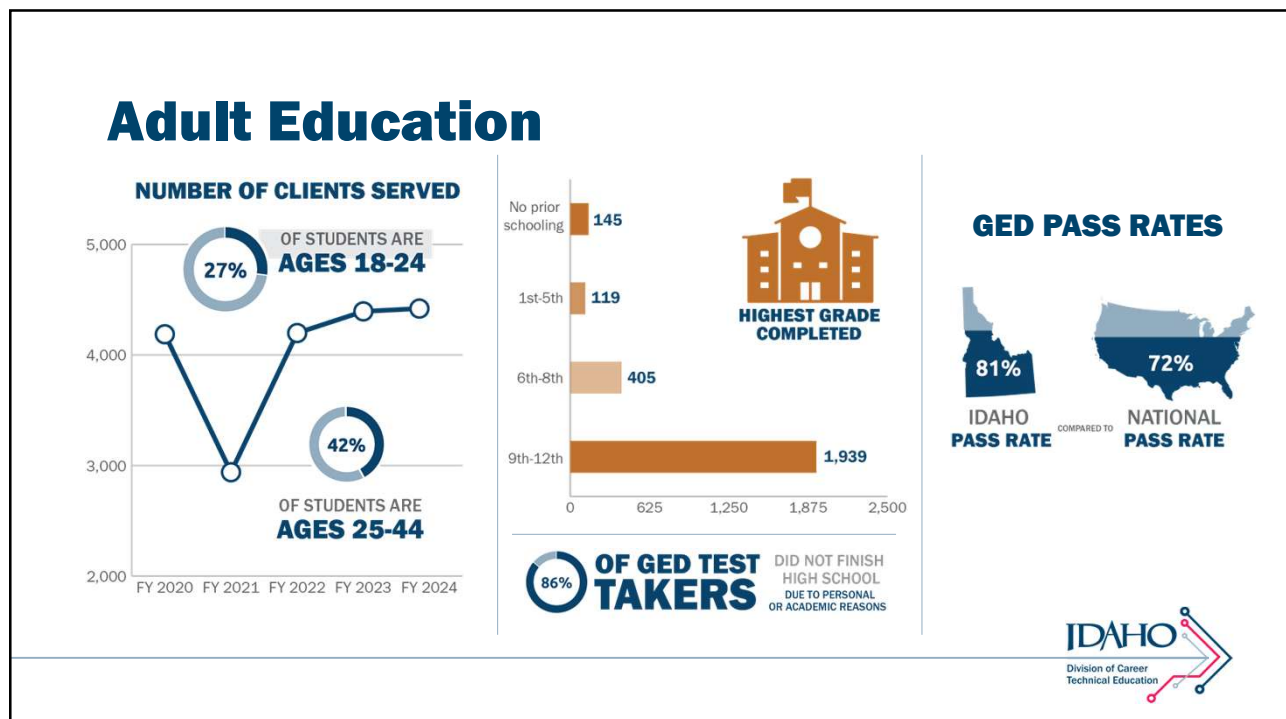
Source: IDCTE 2024 Annual Report



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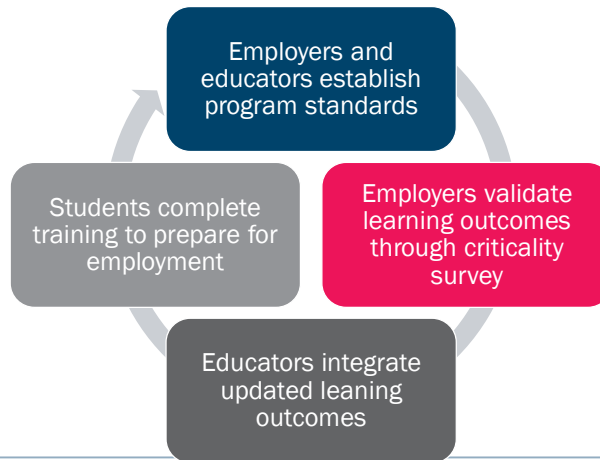


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Program Alignment



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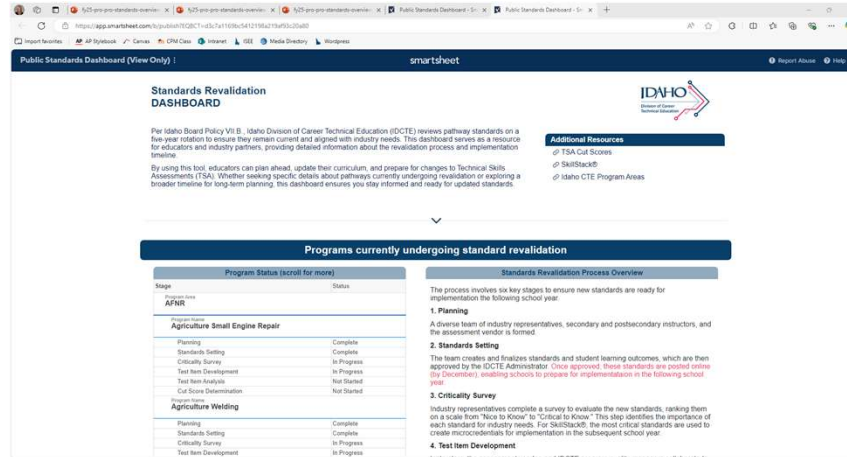
FY 2025 standards revalidation

- Agriculture Maintenance
- Agriculture Small Engine Repair
- Agriculture Welding
- Business Management
- Computer Support
- Cosmetology
- Electronics Technology
- Network Support
- Nursing Assistant
- Plant and Soil
- Programming and Software Development
- Welding



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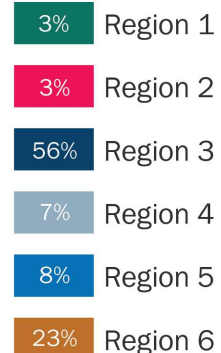
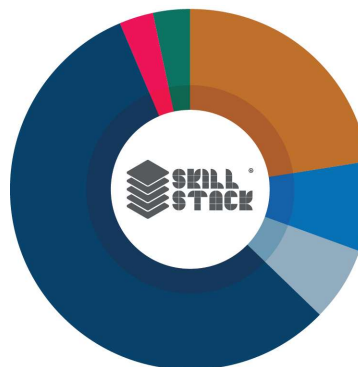
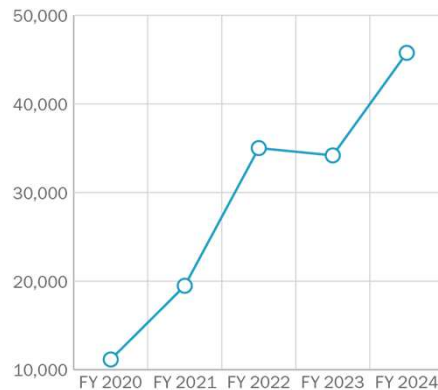
FY 2025 Standards Revalidation



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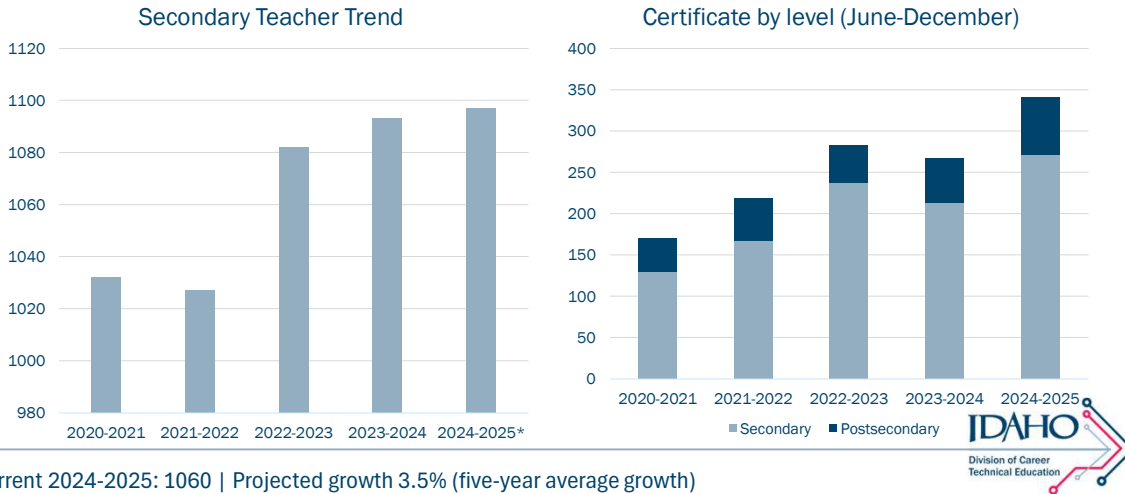
SkillStack®

>40,000 UNIQUE STUDENTS
>145,000 EARNING MICROCREDENTIALS



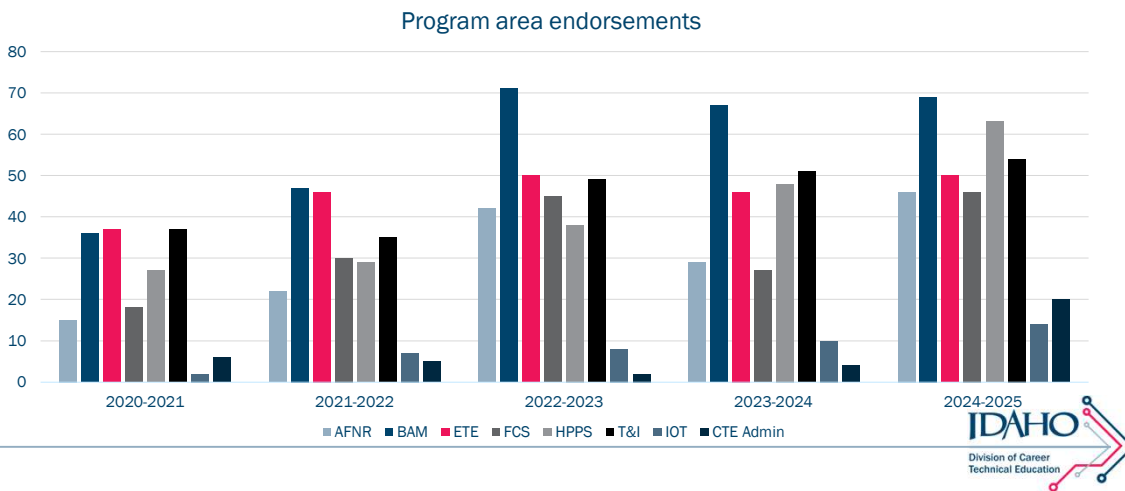
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CTE Certification Trends

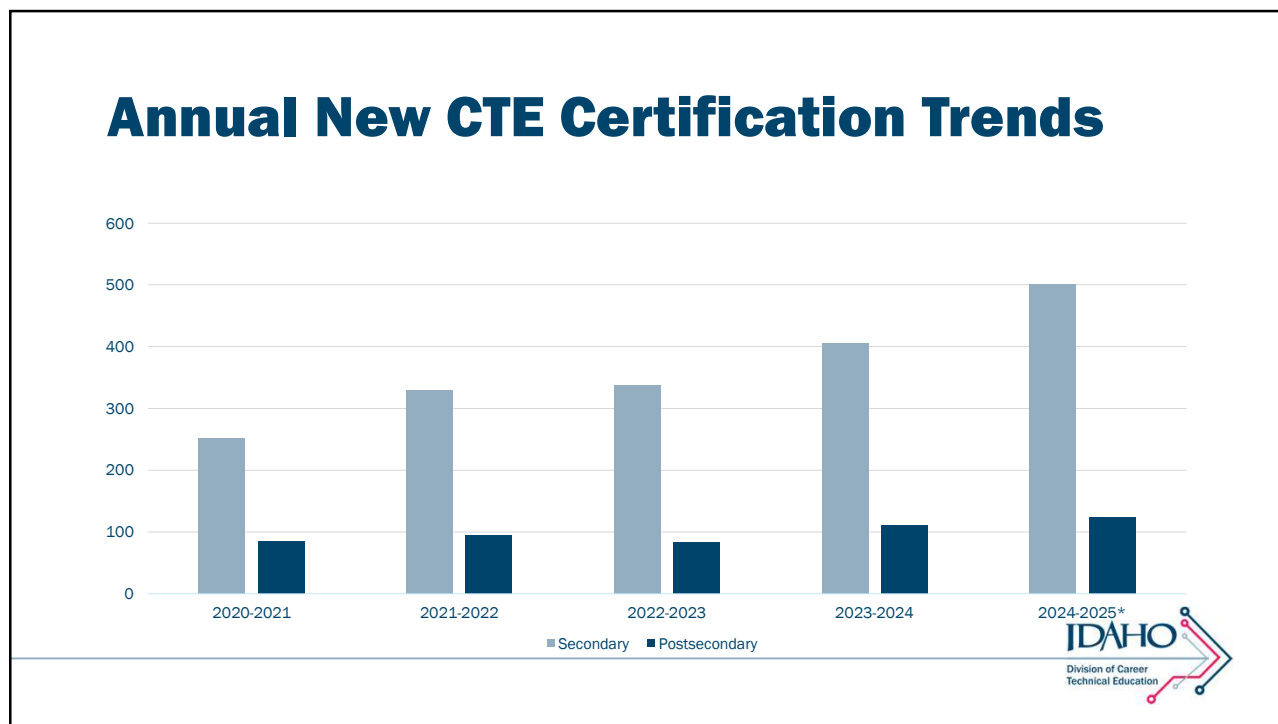


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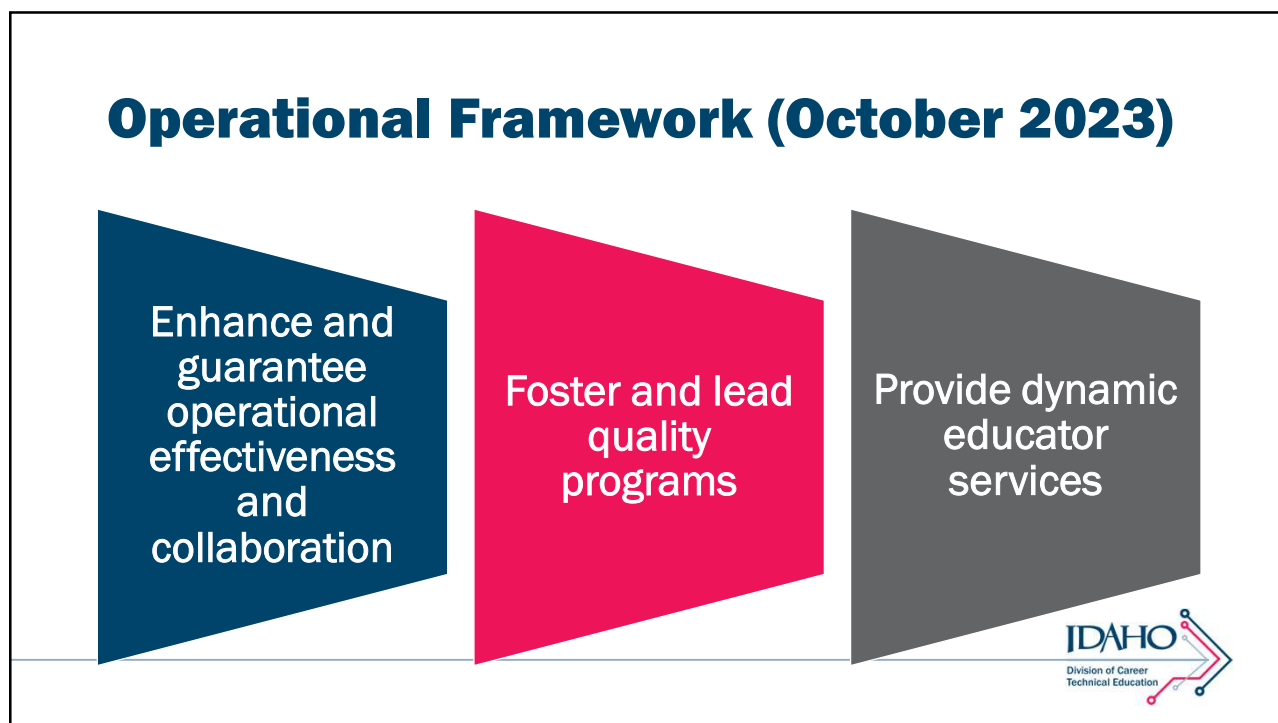
CTE Endorsement Trends



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Operational framework (December 2024)

- 16 unique goal project managers
- 14 completed staff feedback sessions
- 14 goal action plans in development
- Revised goals published

GOAL	TARGET DATES	GOAL MANAGER	Step 1	Step 2	Step 3	Step 4	Step 5
I. Enhance and guarantee operational effectiveness and collaboration							
A. Design and develop a comprehensive program data management system	FY 2024 - Begin FY 2026 - Implementation	Data System Administrator	✓	SFS* 5/24/24	In progress		
B. Identify, improve, and produce documents for agency processes	FY 2024 - Begin FY 2026 - Ongoing	Director of Federal and Related Programs on behalf of Leadership Team	✓	SFS* 5/3/24	In progress		
C. Build intentional connections and collaboration between departments and units	FY 2024 - Begin FY 2026 - Ongoing	Chief of Staff on behalf of Management Team	✓	SFS* 5/24/24	In progress		
D. Complete migration, transfer, processes for Fire Service Training assets	FY 2024	Fire Service Training Director	✓	Est. Fall 2024			
E. Enhance framework for educator resource catalog	FY 2024	Director of Communications	✓	SFS* 5/3/24	In progress		
F. Develop framework for policy makers and stakeholder engagement and learning	FY 2025	Administrator	✓	Est. Fall 2024			
G. Ensure intentional partnerships and collaborations with external organizations and agencies	FY 2024 - Begin FY 2025 - Implementation	Administrator on behalf of Leadership Team	✓	SFS* 7/6/24	In progress		
H. Grow use and recognition of microcredentials	FY 2025	Chief Performance and Accountability Officer	✓	SFS* 10/20/24	In progress		
I. Enhance relationships with Idaho's educational system	FY 2024 - Begin FY 2026 - Ongoing	Administrator	✓	SFS* 7/9/24	In progress		
J. Develop comprehensive communication/marketing plan	FY 2026	Director of Communications	✓	SFS* 5/3/24	In progress		
K. Complete 2030 staffing plan	FY 2025	Chief of Staff	✓	SFS* 5/24/24	In progress		

* Staff Feedback Session - SFS



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FY 2026 Budget Governor Recommendation

Decision Unit	Amount
12.01 - Technical College Operations	\$640,000
12.02 - Adult Education and Perkins V Program Spending Authority	\$2,273,700
12.03 - Business/Industry Engagement Manager	\$128,400
12.04 - Adult Education and Literacy	\$50,000



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Questions?

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IDAHO BUREAU OF EDUCATIONAL SERVICES FOR THE DEAF AND THE BLIND

SUBJECT

Idaho Bureau of Educational Services for the Deaf and the Blind (IBESDB) Annual Report

REFERENCE

February 2019	IESDB provided the Board with a report updating the Board with current progress of the Bureau.
February 2021	IESDB provided the Board with a report updating the Board with current progress of the Bureau.
February 2024	IESDB provided the Board with a report updating the Board with current progress of the Bureau.

APPLICABLE STATUTE, RULE, OR POLICY

Sections 33-3405(4) and 33-3411, Idaho Code

BACKGROUND/DISCUSSION

Pursuant to Idaho Code § 33-3405(4) the administrator of IBESDB shall make an annual report of the Bureau's activities to the State Board of Education at a time and in a format designated by the Board. While IBESDB was moved out from the Board's direct governance in 2009, the Board retains rulemaking authority for education services for students who are deaf or hard of hearing and/or blind or visually impaired, as well as property rights for the School for the Deaf and Blind.

The Idaho Bureau of Educational Services for the Deaf and Blind, originally the Idaho School for the Deaf and Blind, has been providing services to Idaho's children since 1906. Its programs consist of statewide outreach programs and the Idaho School for the Deaf Blind, located in Gooding Idaho. IBESDB provides supplemental education services, early intervention and education, consultation, and transition support to families and local school districts throughout Idaho. The property in Gooding that houses the School for the Deaf and Blind is held by the State Board of Education and leased back to IBESDB for its use.

IBESDB presented this report at the Planning, Policy and Government Affairs committee meeting on February 3, 2025. The written report is included in these materials for the Board's review.

IMPACT

This annual update will provide the Board with an update on the scope of IBESDB's efforts to serve Idaho's children.

ATTACHMENTS

Attachment 1 – IBESDB Annual Report

BOARD ACTION

This item is for informational purposes only.

Idaho Bureau of Educational Services for the Deaf and
the Blind

OSBE REPORT 2025



****Idaho Educational Services for the Deaf and the Blind: Paving the Way for a Brighter Future ****

Established in 1906 to address Article X of the State Constitution, the Idaho Bureau of Educational Services for the Deaf and the Blind (IBESDB) has evolved into a unique institution. Rooted in the commitment to support individuals with sensory impairments, IBESDB serves as one of the 12 dual schools in the United States.

****Historical Journey and Organizational Structure:****

- Initially a State Agency, The IBESDB transitioned in 2009 to operate under its own Board of Directors, chaired by the State Superintendent of Public Instruction.
- Governed by State Statute 33-3400, the bureau aims to ensure accessibility, quality, and equity for students with sensory impairments, tailoring services based on individual educational needs rather than the level of hearing or vision loss.

****Continuum of Services:****

- IBESDB caters to 2,600 students across its continuum, a significant increase from the 1,100 students served in 2009, when it was first established.
- Two distinct departments, "Outreach" and "Campus," along with support services, facilitate a comprehensive approach to education.

****Outreach Department:****

- Seven regional Education Centers, serving students from Birth to age 21. Serving 1740 D/HH students (134 babies) and 857 B/LV (71 babies)
- 34 Certified teachers, driving 13,000 miles on average, provide services, materials, and technology to their respective regions including families, public and charter school personnel.
- Early intervention programs have witnessed substantial growth, exemplified by increased enrollment in Deaf/Hard of Hearing and Blind/Low Vision categories. Giving all of our kids a good head start, stressing the foundations to early literacy.
- Summer offerings for students on work development skills and experiential learning. Collaboration with ICBVI and IDVR for work readiness gets students the summer work experience needed to get ready to go from school to career.

Presented by:
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Idaho Bureau of Educational Services for the Deaf and the Blind

OSBE REPORT 2025

****Campus Department:****

- Established in 1906, the campus of the Idaho School for the Deaf and the Blind (ISDB) spans 40 acres in Gooding, featuring a 140,000 sq. ft. primary building and six cottages hosting 65 residential students.
- Serving 130 students from preschool to age 21, Campus collaborates with local schools, statewide, ensuring no student commutes for more than 3.5 hours in order to attend the campus program.

****Educational Approach and Accomplishments:****

- 95% of all ISDB students are on individualized education plans (IEPs), acknowledging the diverse needs of students and the complexity of approaches needed in the classroom.
- Each classroom embraces flexibility in teaching strategies, adapting standardized curriculum and making education extend beyond academics to include residential life and extracurricular activities.
- Integration of mental health programs through our second year of “CARES” department (Communication, Advocacy, Resiliency, Empathy and Services). Since implementation (second year) 76% decrease in need for safety plans 0 mental health Hospitalizations. Created an inhouse “helpline”. Added one new counselor for academics. Additionally schoolwide use of our Positive Behavior Intervention Supports (PBIS) through the “CLAW” (Compassion, Leadership, Advocacy and Willingness to work) program, underlines a holistic approach to student development.
- “Bridge” which is the 18-21 program and focusses on development of independent living skills and focusses on building employment ready adults. This year 13 students held jobs in the community and continue to run a working food truck (The Ravenous Raptor) in the community. Building an equal program in the Blind department.
- Provides an educational environment where students can engage with peers and educational staff directly, providing a least restrictive environment while building foundations for adulthood.

****Facilities and Recent Projects:****

- The 116-year-old campus undergoes continuous improvements, with recent projects completed: bathroom renovations, fire alarm overhauls, a fully accessible playground, and track renovations.
- New projects just started include One, (possibly two) new cottages, ADA accessibility sidewalk enhancements, and parking lot improvements, including addition of a new parking lot and a bus barn.
- Collaborative efforts with the Permanent Building Fund Advisory Committee and the Department of Public Works ensure the preservation and enhancement of the campus. Deferred maintenance enhancements have included new roofing on main campus and old gym, locker room refurbishment, new heating and cooling system

****Community Engagement:****

- ISDB is the second largest employer in the County of Gooding.
- Leasing of unused space, which is approved by OSBE, to various stakeholder groups, brings local community members to campus and to engage with our students and staff.
- Hosting car shows, meeting site for local governing boards, and collaborative efforts with local public and charter schools helps engage the community to realize that the School is not an island.

In summary, the Idaho Bureau of Educational Services for the Deaf and the Blind Continues to stand as a beacon of inclusive education, continuously adapting to the evolving needs of its diverse student population. Through its rich history, commitment to excellence, and collaborative spirit, IBESDB remains dedicated to developing compassionate leaders who advocate for themselves and others, embodying the institution's mission and vision for “independence for life”.