



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

North Dakota's Polytechnic Institution

# **Building workforce to drive the economy**

North Dakota's Polytechnic Institution

HOUSE APPROPRIATIONS COMMITTEE

MARCH 10, 2021

Dr. Doug Jensen, President



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

**BUILDING  
SUSTAINABLE  
COMMUNITIES**



**COMMUNITY  
DEVELOPMENT**



**ECONOMIC  
DEVELOPMENT**

**WORKFORCE  
DEVELOPMENT**

# 7:2:1 RATIO

of the 21st Century Workplace

7



Associate Degree or Industry-Recognized Certification Holders

2



Bachelor Degree Holders

1



Graduate Degree Holder



# polytechnic.

Hands-on learning. **WORKFORCE READY.**

At North Dakota's Polytechnic Institution, learning is hands-on and grounded in the principles of STEAM (science, technology, engineering, the arts and mathematics). The program is designed in collaboration with business and industry partners focusing on high-priority occupations. Students learn during internships, through cooperative projects and in state-of-the-art classrooms. Whether studying arts and sciences or pursuing highly technical programming, North Dakota's Polytechnic prepares students to be workforce ready and succeed wherever their educational journey takes them.



## STUDENT

You choose. You learn.  
You gain practical skills for the workplace and life.



## EMPLOYER

You consult. You support.  
You design curriculum, enhance community, and help shape lives.



## THE POLYTECHNIC ADVANTAGE

Hands-on practical and purposeful learning.

Flexible career pathways that fit your life.

Professional connections to enrich your career.

**FLEXIBLE.  
AFFORDABLE.  
TRANSFERABLE.**

Maximize your potential at:  
[bismarckstate.edu/polytechnic](https://bismarckstate.edu/polytechnic)



**BISMARCK**  
STATE COLLEGE

**North Dakota's  
Polytechnic Institution**

# INTERNET of THINGS INDUSTRY 4.0



## COMMUNICATIONS

- Global access
- Reduce costs and energy



## INDUSTRIAL

- Smart Connected Products
- Quality Control



## UTILITIES

- Demand management
- Response Applications



## AUTOMOTIVE

- Streamline manufacturing
- Analyze vehicle behavioral data



## RETAIL

- Personalized advertisements
- Automated checkouts



## MEDICAL

- Maintaining uptime of devices
- Remote monitoring



## AGRICULTURE

- Soil quality
- Weather conditions



## ENVIRONMENTAL

- Weather Analysis
- Reduce traffic congestion



## MILITARY/DEFENSE

- Recognize/Identify targets
- Defense intelligence



## HOME

- Smart Temperature Control
- Optimized energy use





**BISMARCK**  
STATE COLLEGE

**North Dakota's  
Polytechnic Institution**



**ADDITIVE  
MANUFACTURING**



**INTERNET OF  
THINGS**



**MES/MOM ADVANCED  
PROCESS CONTROL**



**AUGMENTED  
REALITY**



**CLOUD**



**INDUSTRY  
4.0**



**BISMARCK  
STATE COLLEGE**

**North Dakota's  
Polytechnic Institution**

**CYBERSECURITY**



**SYSTEM  
INTEGRATION**



**DATA SCIENCE  
BUSINESS INTELLIGENCE**



**DIGITAL TWIN/ SIMULATION/  
OPTIMIZATION**



**ROBOTS**





**BISMARCK**  
STATE COLLEGE

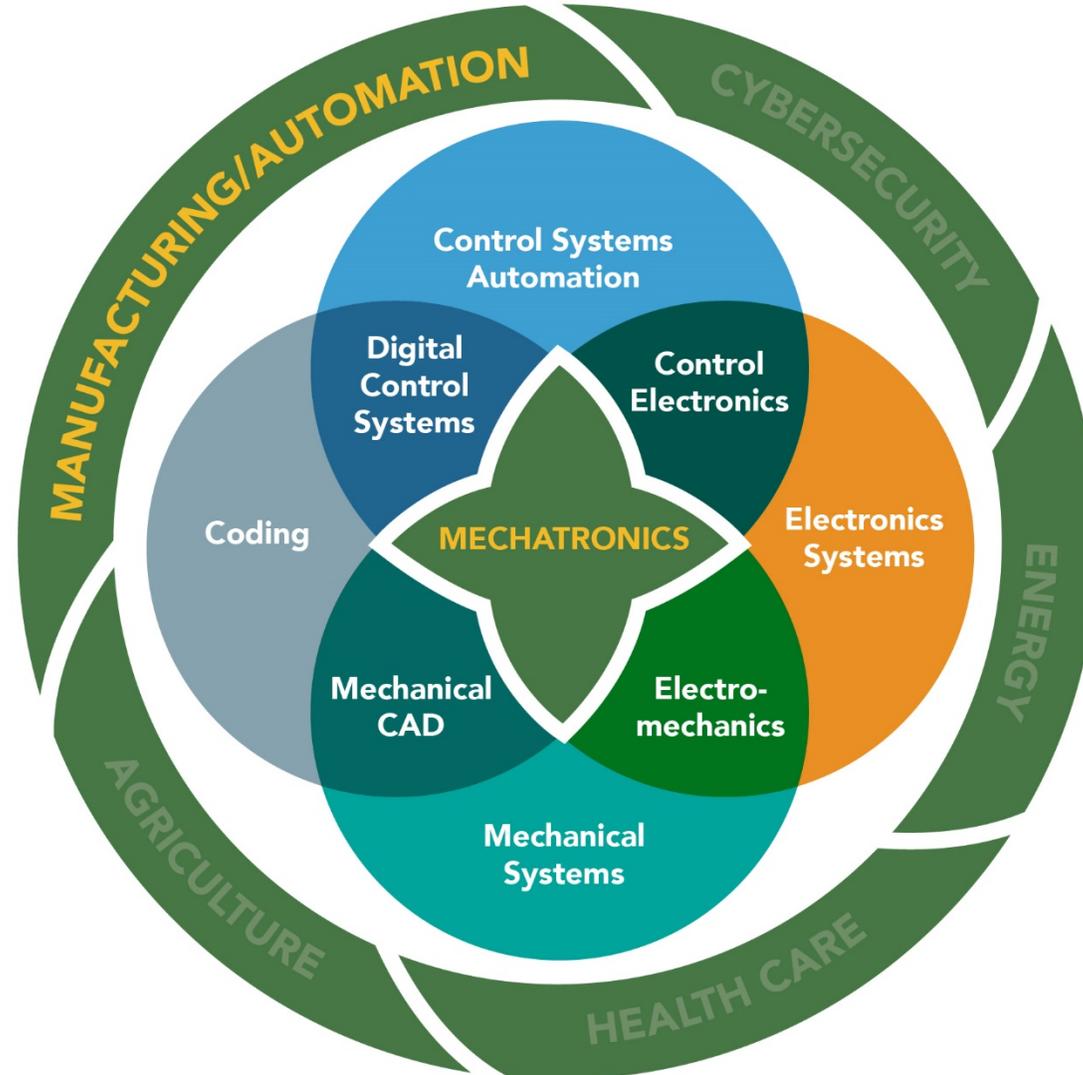
North Dakota's  
Polytechnic Institution





**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution





**BISMARCK**  
STATE COLLEGE

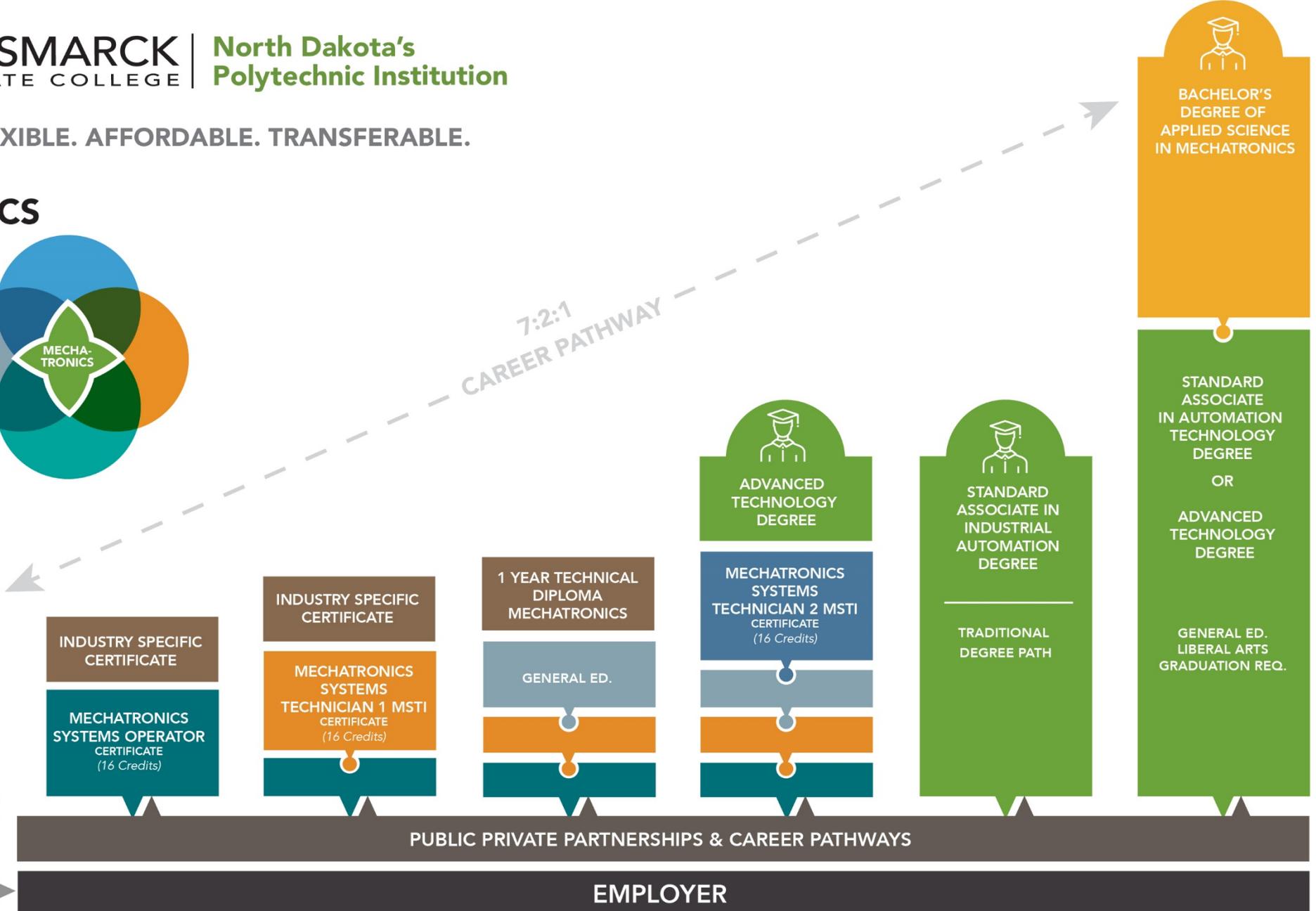
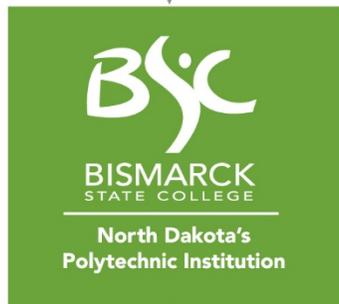
North Dakota's  
Polytechnic Institution

FLEXIBLE. AFFORDABLE. TRANSFERABLE.

## MECHATRONICS PATHWAY



INDUSTRY  
4.0





**BISMARCK**  
STATE COLLEGE

**North Dakota's  
Polytechnic Institution**



**BISMARCK**  
STATE COLLEGE

**North Dakota's  
Polytechnic Institution**

# Current biennium accomplishments (2019-21)

- Launched BSC as North Dakota's Polytechnic Institution
- Drove additional workforce in High Priority Occupations
  - Instrumentation & Control
  - Cybersecurity
  - CDL program established
  - Phlebotomy program
  - Emergency CNA program for NDDoH
- BSC Health Sciences - \$8.9M
  - Increased program capacity enrolling more students
  - Added new programs
    - Sonography
  - Expanded hands-on learning in simulated hospital environment
  - Enhanced P3s

**North Dakota's Polytechnic Institution**



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

# Challenges of COVID

- Higher ed was on the frontlines of COVID-19
- Stressed students and workforce
- To address challenges BSC used \$4.2M state CARES funding to:
  - Install technology in classrooms (\$1.9M)
  - Upgrade online learning environment for students (\$550,000)
  - Make HVAC upgrades (\$850,000)
  - Provide personal protective equipment (PPE) and sanitation (\$460,000)
  - Provide other student-related COVID costs (\$440,000)
    - Quarantine overflow costs - hotels
    - COVID case managers



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

# HEERF Funds cover losses through FY20

- Higher Education Emergency Relief Fund (HEERF I) – Spent in FY20
  - Student Allocation \$457,033
  - Institutional Allocation \$503,339
    - Housing and Board Refunds \$361,372
    - Auxiliary COVID Loss of Revenue/Expense \$138,927
    - COVID Expenses \$3,040
- Coronavirus Response and Relief Supplemental Appropriations Act (HEERF II) – for FY21 revenue losses
  - Student Allocation \$457,033
  - Institutional Allocation \$1,377,204
    - Loss of Auxiliary Revenue \$936,995
    - Loss of Tuition Revenue \$394,581
    - COVID Expenses \$45,625



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

## Next biennium goals – BSC Polytechnic

- Build highly-skilled talent for industry needs (stackable credentials)
- Expand public and private relationships in order to:
  - Implement emerging and advancing technologies
  - Establish more career pathways for students in K-12 and working adults
  - Design, develop and implement stackable certificates, two- and four-year degrees
    - Automation Management/Industrial Automation
    - Mechatronics Engineering
    - Supply Chain and Logistics Management
    - Process Control and Instrumentation
    - Other high priority degrees as defined by industry

**North Dakota's Polytechnic Institution**



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

## Current challenges to advance our Polytechnic Mission

- Responsiveness - ability to move at the speed of new technologies
  - Internet of Things (IoT) - changing all occupations (Industry 4.0)
  - Build the workforce to meet the needs of an expanding ND economy
- Address capital and polytechnic program operational needs
  - Align with industry sector demands - infrastructure investment
  - Four-year delay in funding for new polytechnic program credits - operational impact
- Current funding formula is a challenge
  - Insufficient funding for career and technical programs, and cybersecurity



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

## BSC request

1. Fund proposed changes to higher education funding formula for career and technical education and cybersecurity
2. Support polytechnic infrastructure and program investments to advance polytechnic programs in high demand areas
  - Manufacturing/Automation, Cybersecurity, Energy, Agriculture, Healthcare



# Polytechnic Infrastructure & Operations

- Non-traditional academic spaces/buildings
  - Public and private sector collaborate to advance economic growth and technology development
  - Flexible industrial labs (mega labs) - 20,000 SF open flex space
- Adaptive and configurable instructional spaces
  - Project-based, hands-on experiential learning
  - Support industry and instructional projects and applied practical research
- Production and fabrication flex-lab space
  - Applied hands-on experience in practical learning in an Industry Setting
- Integrated learning space
  - Multiple instructional activities occur simultaneously in the same space
  - Reduces costs and allows future planning as new technologies emerge





**Flexible space**  
**Movable walls**  
**Floor space to accommodate heavier loads**  
**Door sizes**  
**Loading docks**  
**Second floor access**  
**HVAC & power capacity**  
**Equipment ventilation**



# Questions/ Comments?





**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

# Addendum

North Dakota's Polytechnic Institution



Dear Dr. Jensen,

I want to extend my very sincere appreciation for your recent appearance before the Bismarck Mandan Chamber EDC's Board of Directors.

I say that because not only in this instance, but in several others where I've had the opportunity to hear you speak, you quantified a very exciting vision for Bismarck State College (BSC) as the State's first and only polytechnic institution.

- A polytechnic institution addresses economic development by engaging partners in business and industry, with high-priority occupations, to design the curriculum needed to train students in those areas.
- A polytechnic institution addresses workforce development by placing students in internships, cooperative projects and other experiential work opportunities that ultimately will help us fill some of the approximately 2,500 open jobs in Bismarck-Mandan.
- A polytechnic institution addresses community development because when communities have such a unique attribute to offer talent within the community and outside, they are more likely to choose Bismarck-Mandan as their home and enrich the community with their talents.

BSC's evolution into a polytechnic institution is especially critical now as our economy emerges from the COVID-19 pandemic, changed. Both businesses and employees have opportunities that they've never had before and can pursue them like they've been able to before. In order to capitalize, communities like ours will have position ourselves differently and a talent strategy that includes a polytechnic institution is how we'll do so.

To summarize, we and our 1,200 business members are fully supportive of BSC's polytechnic mission and look forward to working with you on its implementation.

Sincerely,

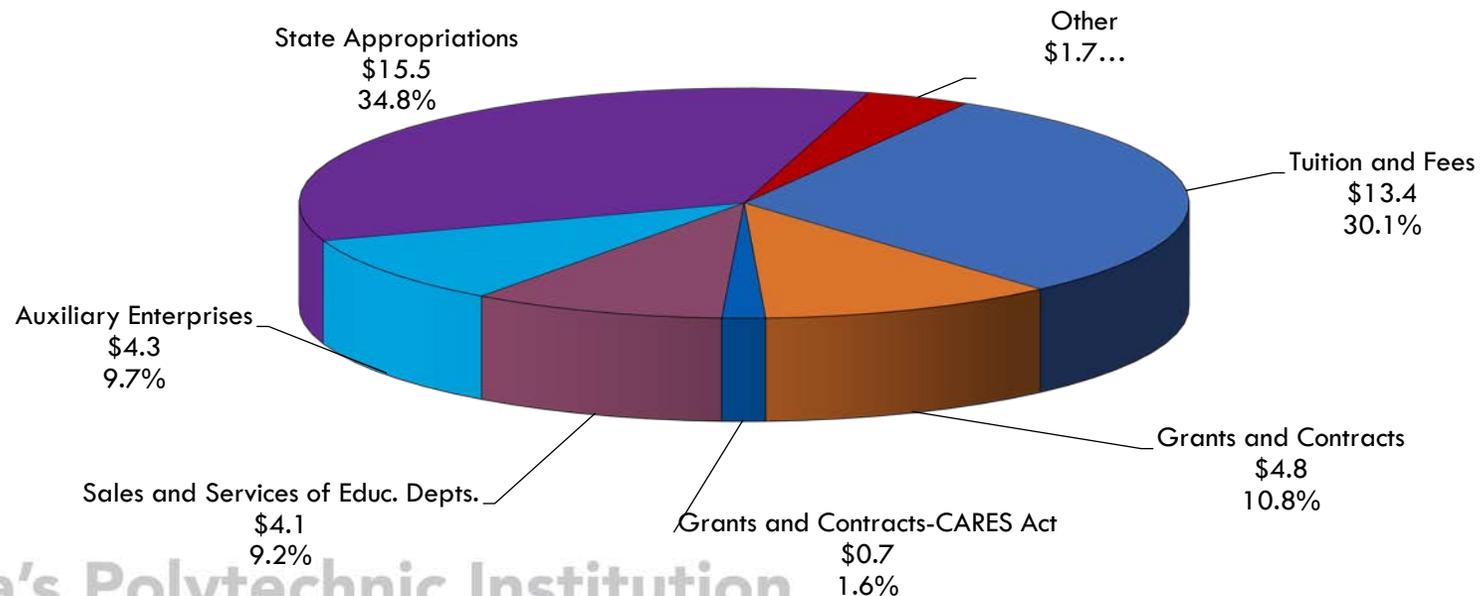
A handwritten signature in black ink, appearing to read "Brian Ritter".

Brian Ritter, President  
Bismarck Mandan Chamber EDC



# FY20 Total Revenue, Excluding Capital

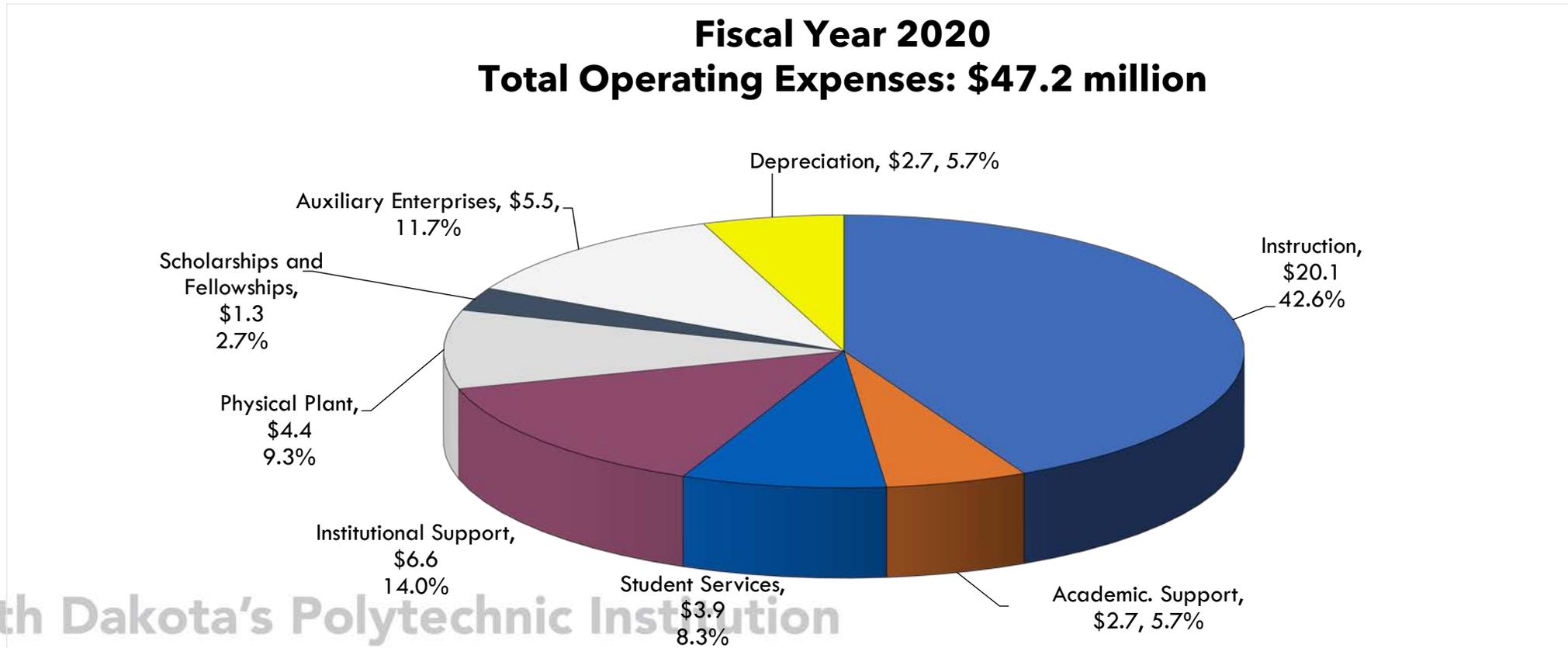
**Fiscal Year 2020**  
**Total Revenue \$44.5 million**





# FY20 Operating Expenses by Function

(excluding capital items and other nonoperating expenses)





### PROGRAMS

Liberal Arts	990	27%
Technical	1,583	43%
BAS	210	6%
Non-Degree		
Early Entry	657	18%
Other	276	7%



### MODE OF EDUCATION

Face-to-Face	1,282	34%	} 2,335 on campus
Blended (Face-to-Face + Online)	1,053	28%	
Distance/Online			
In North Dakota	828	22%	
Out-of-State	553	15%	



### FINANCIAL AID

Offered Aid	1,685
Any Federal Aid	1,266
Pell Grant	462
Supplemental Grant	195
Federal Loan	531
Work-Study	78
Indian Scholarship/Tribal Grant	19
Other ND Grant/Scholarship	819
BSC Scholarship/Waiver	350
Other Grant/Scholarship/Waiver	468
Other Loan	92

# Student profile – Fall 2020



# Destination of ND high school graduates

Fall 2020	Total first-time freshmen	Total first-time freshmen from ND*	% of first-time freshmen from ND with total first-time freshmen	Number of ND first-time freshmen HS Grad Past Year
<b>BSC</b>	<b>795</b>	<b>748</b>	<b>94.09%</b>	<b>620</b>
NDSU	2307	809	35.07%	750
UND	1614	674	41.76%	535
NDSCS	683	371	54.32%	301
MiSU	396	235	59.34%	208
WSC	283	197	69.61%	147
LRSC	181	145	80.11%	114
VCSU	195	134	68.72%	120
DSU	224	136	60.71%	104
DCB	122	74	60.66%	51
MaSU	142	77	54.23%	64

*\*Not reported:  
% of all ND HS  
graduates  
enrolling directly  
from high school*



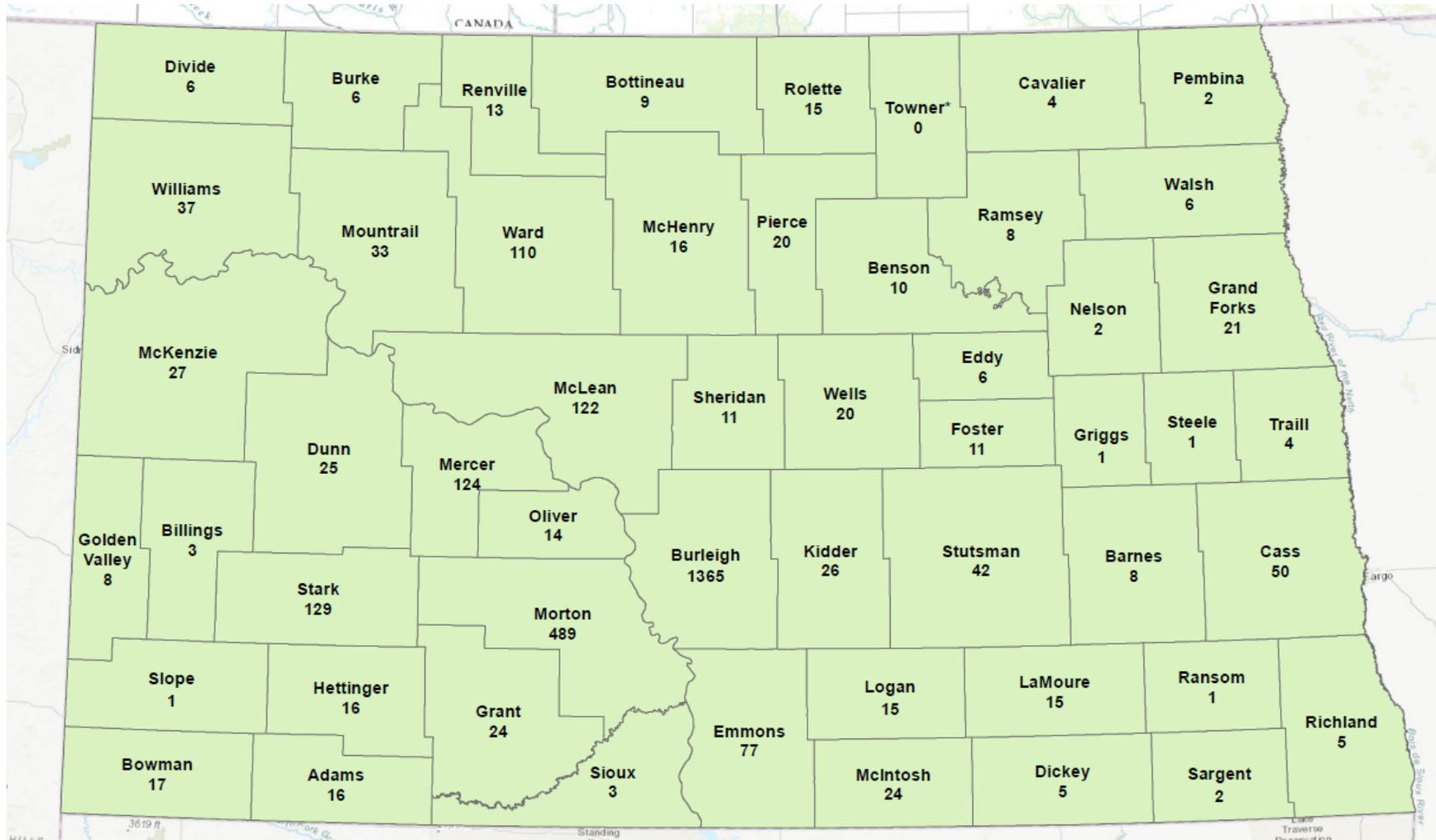
## 4<sup>th</sup> week enrollment Fall 2020

	Fall 2018	Fall 2019	Fall 2020	2019-20 Change	2019-20 % Change
Enrollment					
PT headcount	1738	1706	1761	+55	+3.2%
FT headcount	2040	2033	1955	-78	-4%
Total Headcount	3778	3779	3716	-63	-1.7%
FTE	2645	2598	2558	-40	-1.6%
Total Credit Hours	39,167	38,971	38,372	-599	-1.6%



**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

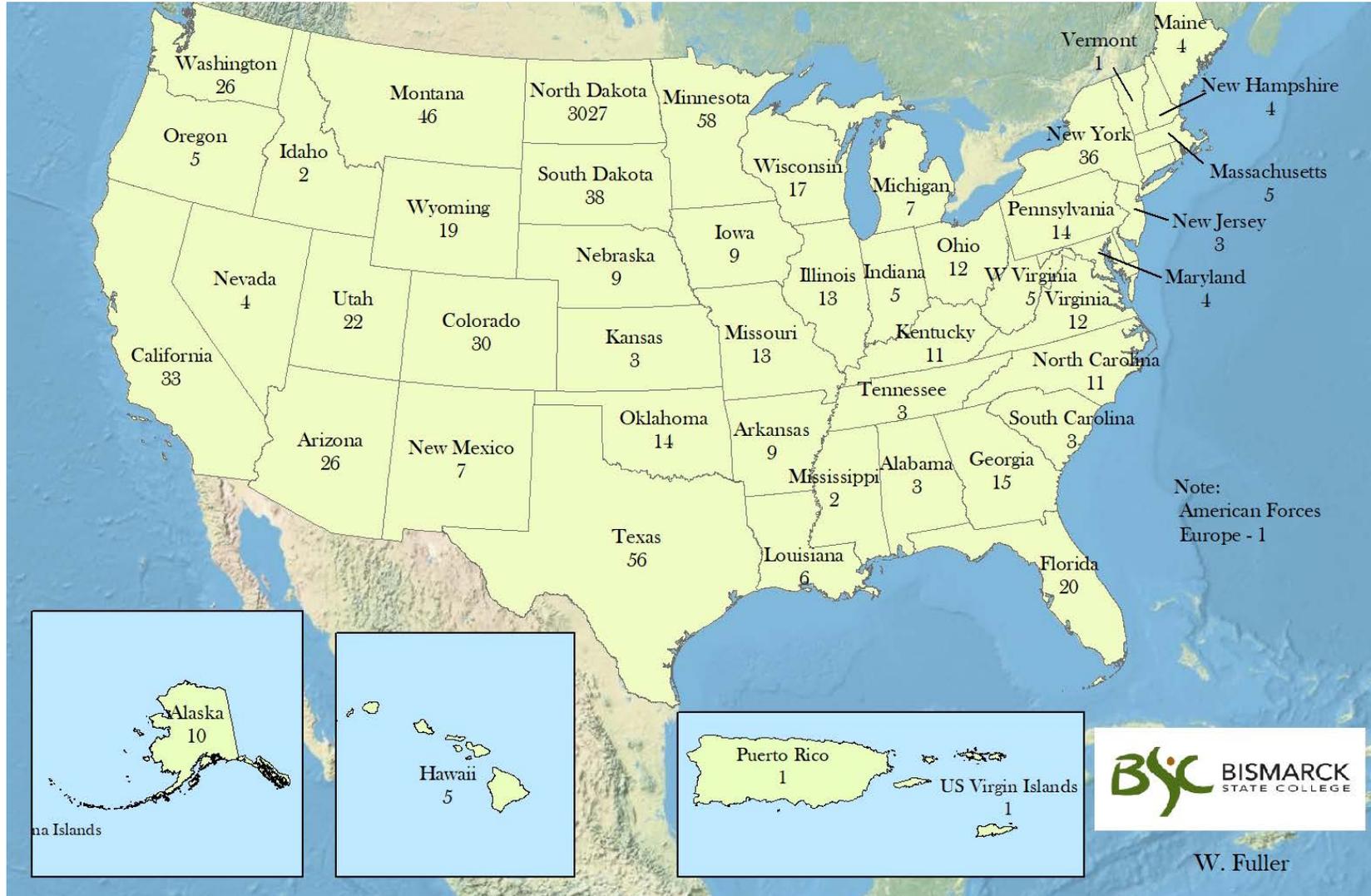


BSC 4<sup>th</sup> week  
Fall 2020  
enrollment -  
ND



**BISMARCK**  
STATE COLLEGE

**North Dakota's  
Polytechnic Institution**



**BSC student  
enrollment  
4<sup>th</sup> week  
Fall 2020 – U.S.**



W. Fuller