

B I S M A R C K   S T A T E   C O L L E G E

Bismarck State College  
*Building workforce to drive the economy*

SENATE APPROPRIATIONS COMMITTEE  
JANUARY 19, 2021  
Dr. Doug Jensen, President





**BISMARCK**  
STATE COLLEGE

North Dakota's  
Polytechnic Institution

**COMMUNITY  
DEVELOPMENT**



**BUILDING  
SUSTAINABLE  
COMMUNITIES**



**ECONOMIC  
DEVELOPMENT**

**WORKFORCE  
DEVELOPMENT**

# 7:2:1 RATIO

of the 21st Century Workplace

7



Associate Degree of Industry-Recognized Certification Holders

2



Bachelor Degree Holders

1



Graduate Degree Holder

# 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 - need stat on up/down students)
  - Added new programs
    - Sonography
  - Expanded hands-on learning in simulated hospital environment
  - Enhanced P3s







# Current challenges

- Ability to move at the speed of industry and advancements in technology
  - Internet of Things (IoT) - changing all occupations (Industry 4.0)
  - Build the workforce to meet needs for expanding ND economy
- Increasing and expanding pathways with K12
  - Mobile apps
  - Cybersecurity
- Current funding formula
  - Insufficient funding for career and technical programs
  - New polytechnic program start-up costs (state funding delayed for 4 years)
- Capital facility and equipment needs
  - Align with industry sector demands

# 2019-21 Base Budget compared to 2021-23 Needs-Based Budget (all funds and FTE)

	2019-21 Base Level	Requested Adjustments	2021-23 SBHE Needs-Based Budget	Executive Recommendation	Difference from 2019-21 Base Level	Difference from SBHE Needs-Based Budget
Campus Operations	\$ 98,743,682	\$ (1,280,982)	\$ 97,462,700	\$ 94,833,161	\$ (3,910,521)	\$ (2,629,539)
Capital Assets	\$ 1,922,561	\$ -	\$ 1,922,561	\$ 1,922,561	\$ -	\$ -
Plant Improvement Carryover						
Capital Projects - Non-State Funded						
Capital Projects - Non-State Carryover						
Operating Carryover						
Total Appropriation	\$ 100,666,243	\$ (1,280,982)	\$ 99,385,261	\$ 96,755,722	\$ (3,910,521)	\$ (2,629,539)
General Fund	\$ 31,068,227	\$ (2,405,428)	\$ 28,662,799	\$ 26,358,629	\$ (4,709,598)	\$ (2,304,170)
Special Funds	\$ 69,598,016	\$ 1,124,446	\$ 70,722,462	\$ 70,397,093	\$ 799,077	\$ (325,369)
Total Funding Sources	\$ 100,666,243	\$ (1,280,982)	\$ 99,385,261	\$ 96,755,722	\$ (3,910,521)	\$ (2,629,539)

# Impact of Executive Budget with no change to existing funding formula

- Potential \$4.7 million reduction for BSC creates dramatic changes
  - BSC position reductions
    - 65% of operating expenses are employee wages and benefits
  - High priority programs delayed or reduced (high operating cost/high demand)
    - Cybersecurity
    - Agriculture
    - Energy
    - Healthcare
    - Manufacturing/Automation
  - Lack of skilled talent creates negative economic impact to ND
    - Results in delayed economic growth due to fewer companies expanding or locating in ND
    - A loss in economic opportunity

# Challenges of COVID

- Most classes moved online
- Stressed workforce
  - Working from home, caring for family, online learning - all disrupted employees lives and their ability to serve our students
- 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

# Next biennium plans (2021-23)

- Advance North Dakota's Polytechnic Institution
- Invest in students – they stick, they stay
  - In 2017, 81.4% of ND high school graduates who earned an associate's degree from BSC stayed in the state for employment or re-enrolled in an NDUS school within one year of graduation.
- Investment will drive ND future digital economy
  - Design, develop and implement new cyber and digital 2- and 4-year degrees
  - Expand business and industry partnerships (P3s)
  - Advance ND's economic development
    - Amazon, Bobcat, Cloverdale

# Next biennium goals

- Build the highly-skilled talent for industry needs
- Expand P3s in order to:
  - Implement emerging and advancing technologies
  - Establish more career pathways for students in K-12
  - 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



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# 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





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**ADDITIVE  
MANUFACTURING**



**INTERNET OF  
THINGS**



**MES/MOM ADVANCED  
PROCESS CONTROL**



**AUGMENTED  
REALITY**



**CLOUD**



**INDUSTRY  
4.0**



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**CYBERSECURITY**



**SYSTEM  
INTEGRATION**



**DATA SCIENCE  
BUSINESS INTELLIGENCE**



**DIGITAL TWIN/ SIMULATION/  
OPTIMIZATION**



**ROBOTS**





# 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 curriculum 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)

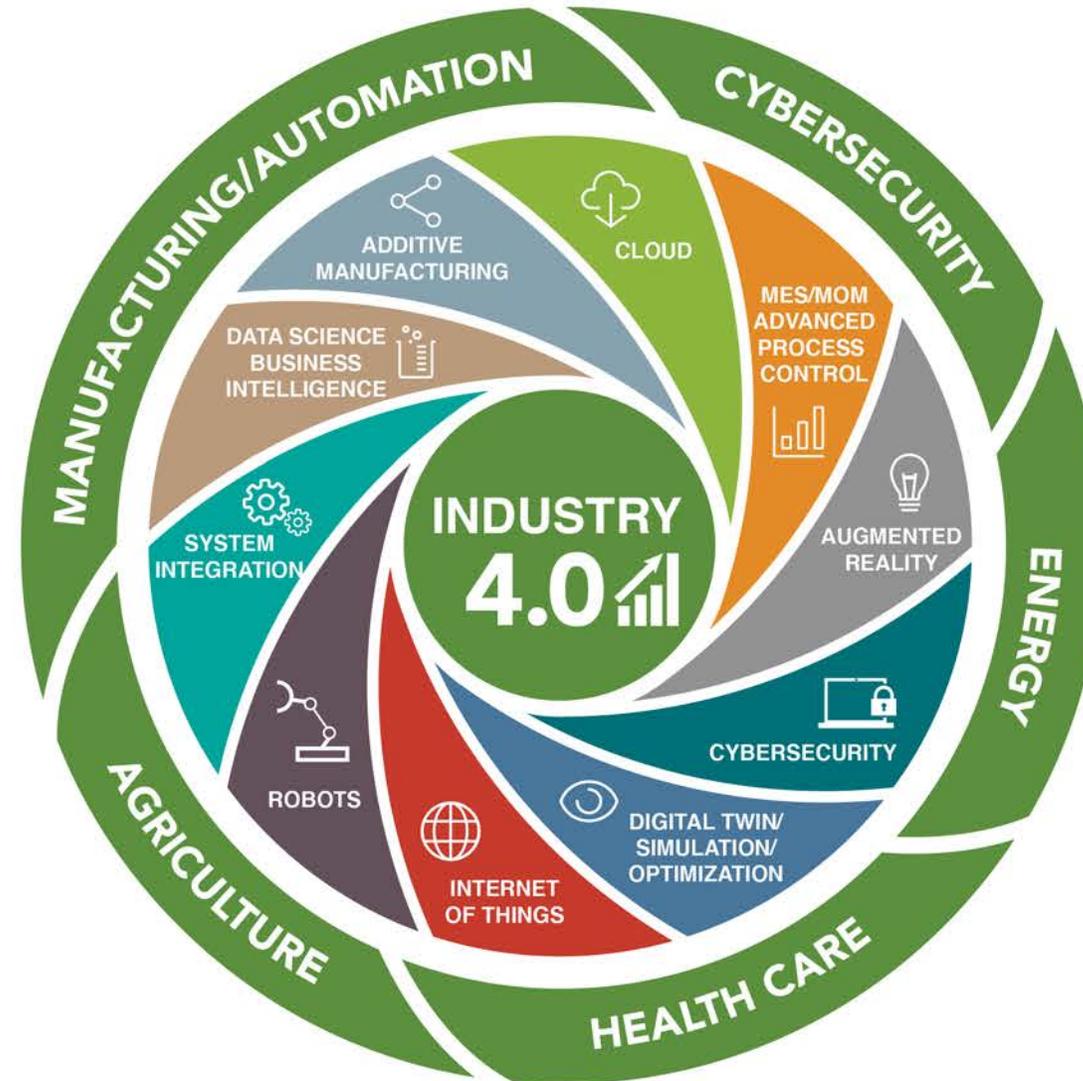
# Public Private Partnerships (P3s)

- Public private partnerships are economic force multipliers that advance innovation beyond what traditional partnership structures cannot achieve.
- Future economic development opportunities will require the public and private sector to operate outside of their silos.



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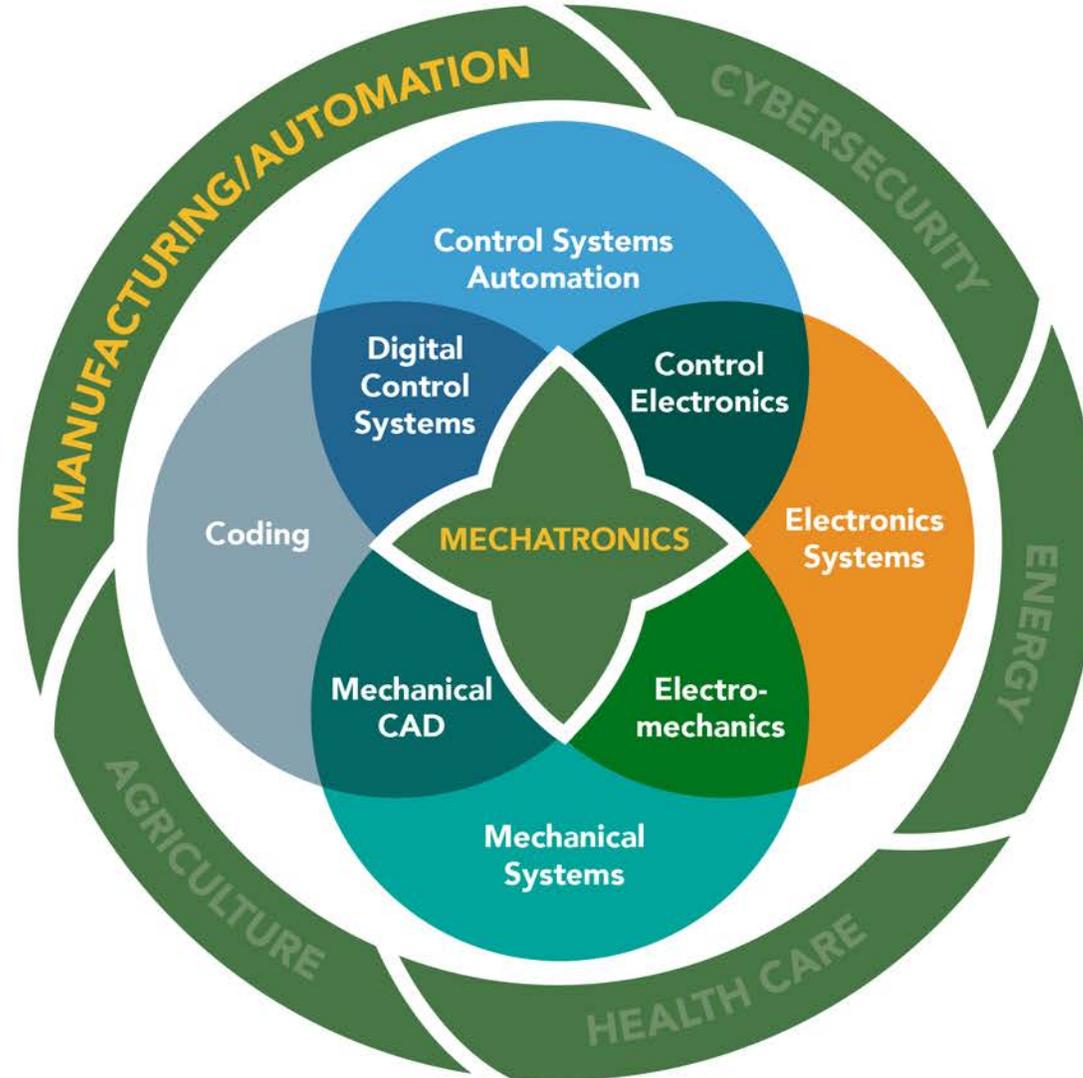
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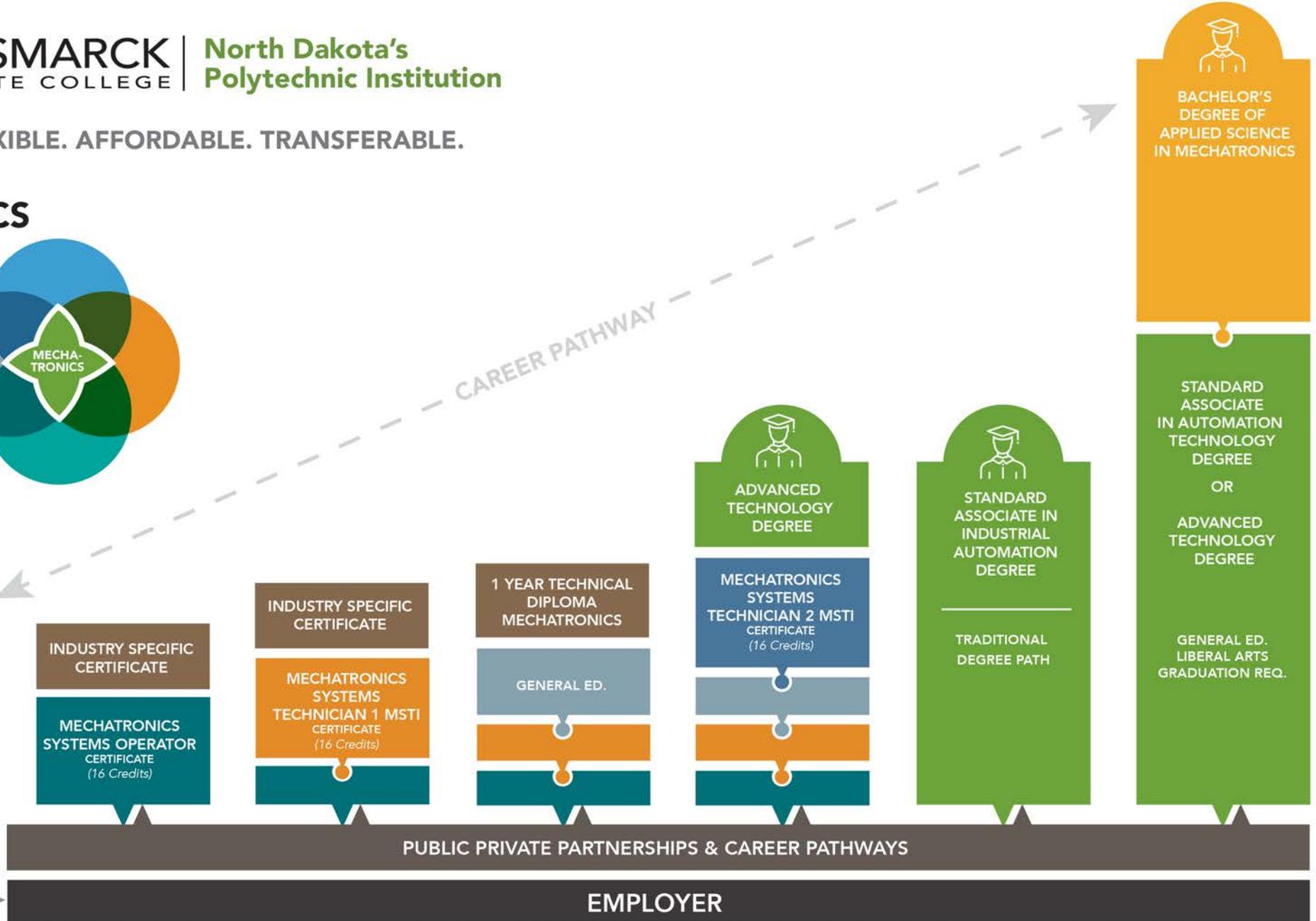
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FLEXIBLE. AFFORDABLE. TRANSFERABLE.

## MECHATRONICS PATHWAY



INDUSTRY  
**4.0**



# Our request

1. Fund proposed changes to higher education funding formula for career and technical education and cybersecurity
2. Provide \$5M for new polytechnic program startup investment to support 5-7 new BAS programs in high demand areas (Manufacturing/Automation, Cybersecurity, Energy, Agriculture, Healthcare)
3. Continue ND Challenge Grant program to secure matching funds for endowed scholarships
4. Support and fund BSC's capital project needs

# 1. Fund proposed changes to higher education funding formula

- Increases funding for career and technical education and cybersecurity programs
  - Weight for Cybersecurity/Computer Science changes from 1 for freshman/sophomore classes to 2.5; and from 2 for junior/senior classes to 5.
  - Weight for Career/Technical changes from 2 to 3 or 5 (depending on program).

**NOTE:** North Dakota needs highly-skilled, technical talent to respond to job growth demand. Without these investments the capacity to meet this demand will be severely delayed.

## 2. Provide \$5M for new polytechnic program startup investment

- Supports 5-7 new BAS programs in high demand areas
  - Advanced Manufacturing, Mechatronics Applied Engineering, Digital, etc.
- Each new polytechnic program requires ≈\$1M startup investment
  - Capital investment for equipment and program facility enhancements
  - Faculty with industry experience
  - Curriculum and content development
  - Instructional and lab supplies
  - Recruitment and partnership development

### 3. Continue ND Challenge Grant program

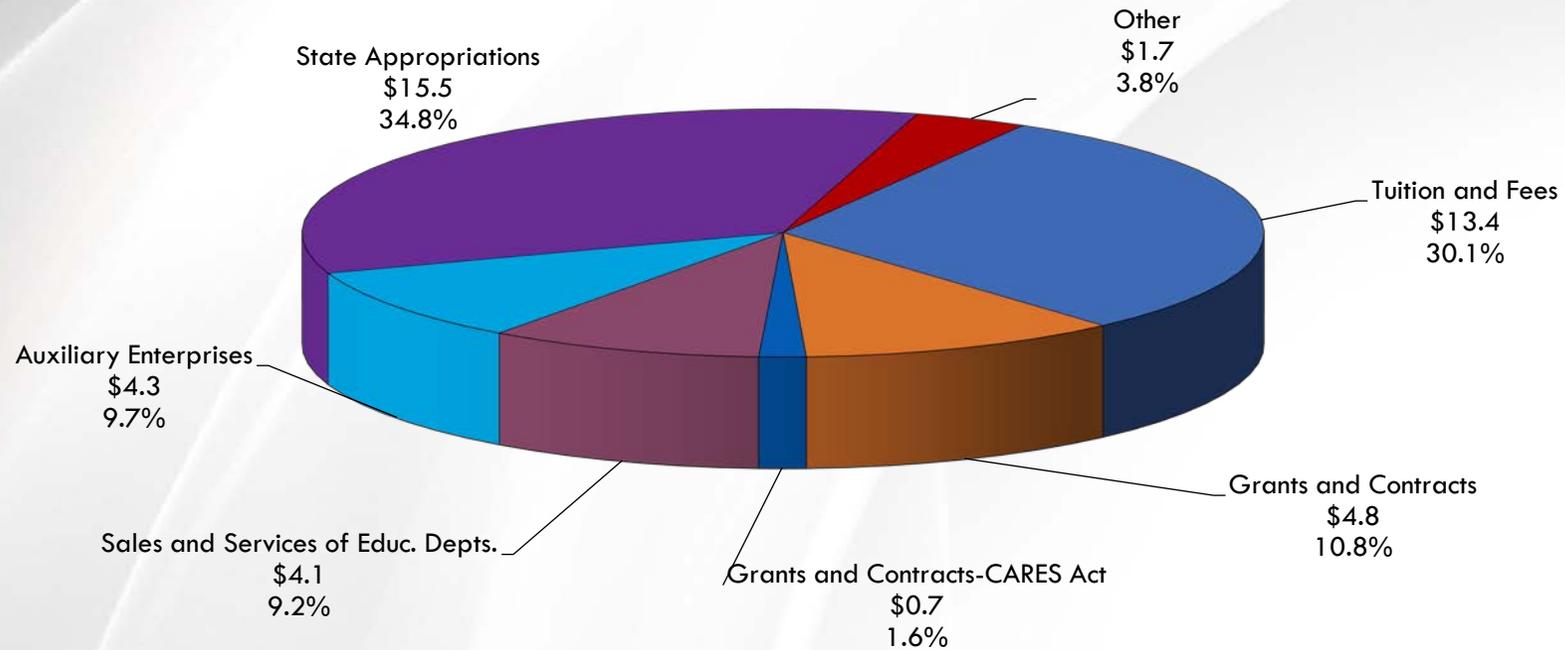
- Creates excellent public/private partnerships
- Leverages funding to support educational scholarships
- Incentivizes donors to support BSC students through matching funds
- BSC Foundation successfully obtained all eligible matches each biennium to invest in endowed scholarships
  - FY13-19: \$2.5M investment provided \$7.5M benefit to students
  - FY20-21: \$950K investment provided \$2.85M benefit to students

## 4. Support and fund BSC's polytechnic capital project needs

- Integrating the arts and humanities into STEM programming (STEAM)
- Megalabs
- More instructional/lab space for hands-on-collaborative learning, equipment, classroom and project space
- More K-12 collaboration
- Better meet coding, cybersecurity, and digital skill demand
- Enhance public/private partnerships (P3s), opportunities and collaboration
  - Cyber Range, Emerging Digital Academy, Hour of Code

# FY20 Total Revenue, Excluding Capital

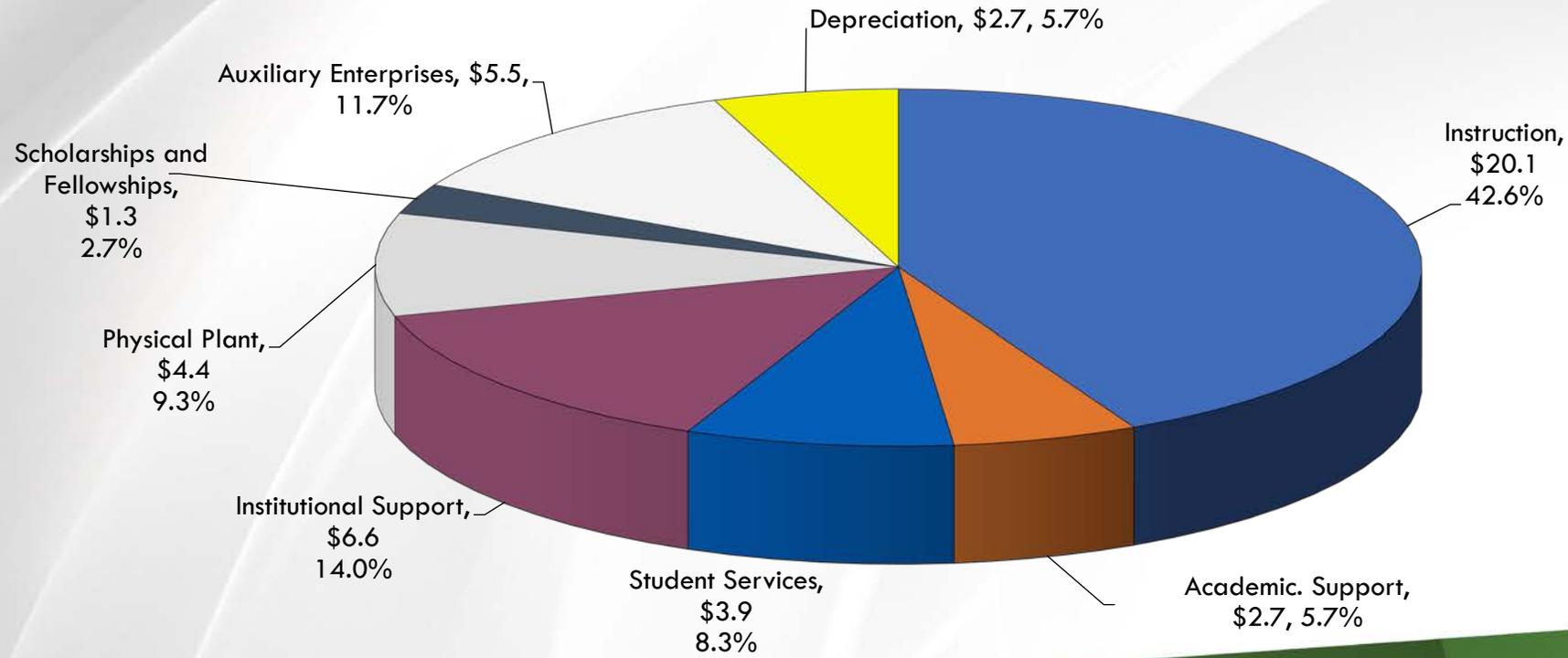
**Fiscal Year 2020**  
**Total Revenue \$44.5 million**



# FY20 Operating Expenses by Function

(excluding capital items and other nonoperating expenses)

**Fiscal Year 2020**  
**Total Operating Expenses: \$47.2 million**





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# Addendum

# Student profile – Fall 2020

## 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

# 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
BSC	795	748	94.09%	620
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

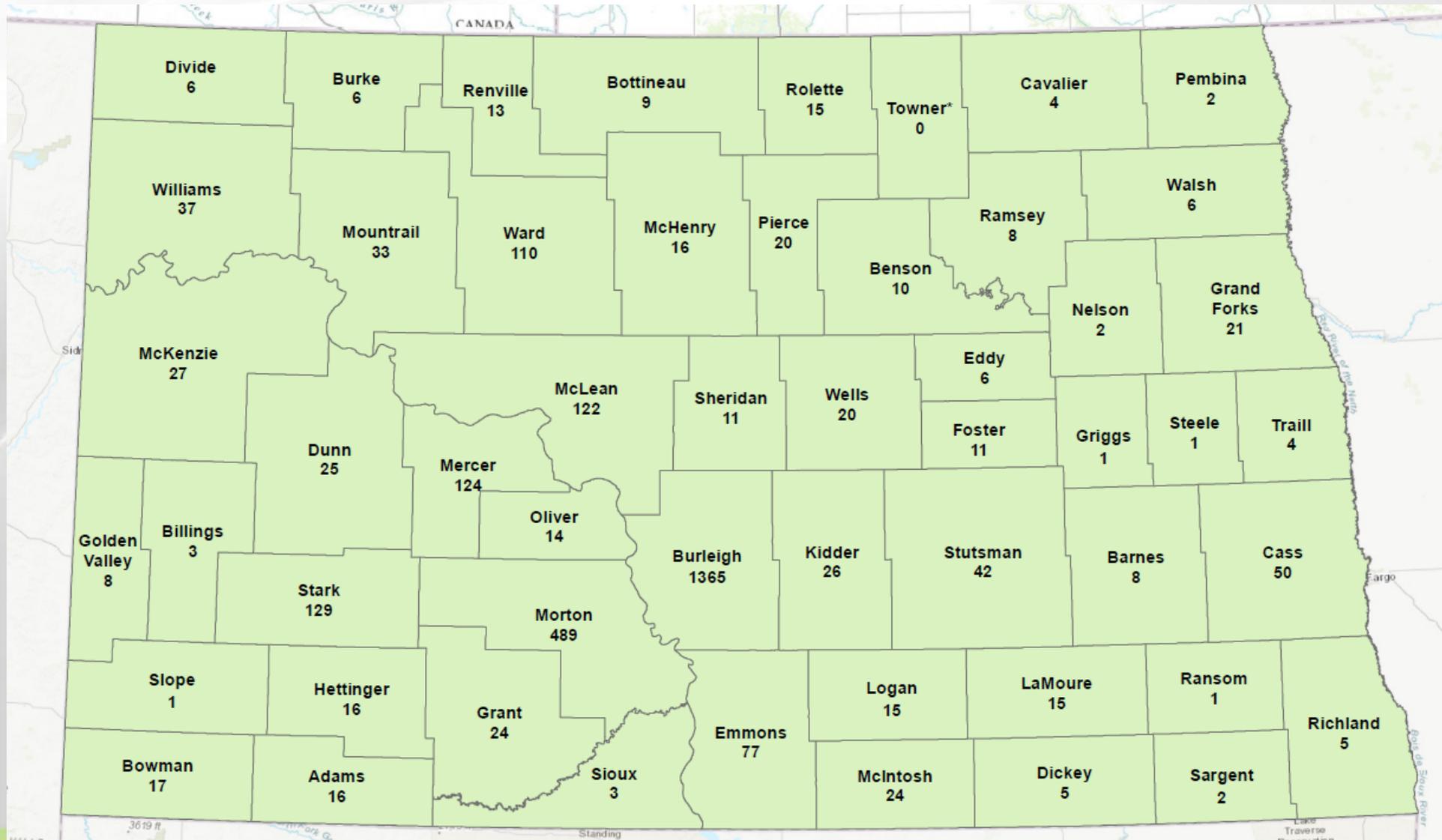
*\*Not reported: % of all ND high school graduates enrolling directly from high school*



# 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%

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



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

