Career and Technical Education at MSUN

David Krueger, Dean College of Technical Sciences
Montana State University Northern
May 19, 2022
CTE Programs at MSUN

Certificates:
- DIESEL TECHNOLOGY
- WELDING TECHNOLOGY

Associates of Applied Science:
- AGRICULTURAL MECHANICS TECHNOLOGY
- AGRICULTURAL TECHNOLOGY
- AUTOMOTIVE TECHNOLOGY
- DESIGN DRAFTING TECHNOLOGY
- DIESEL TECHNOLOGY
- ELECTRICAL TECHNOLOGY
- CIVIL ENGINEERING TECHNOLOGY
- MANUFACTURING
- PIPEFITTING
- PLUMBING TECHNOLOGY

Associates of Science:
- NURSING
- PROGRAM OF STUDY IN BUSINESS TECHNOLOGY
Model for Success

- Active Industry Partnerships
- COOP/Internships
- Dual Enrollment
- TekNoXpo – Student pathway exploration
- Workforce Development
- Stackable Credentials
  - Major, Minor, Certificates
  - Precision Technology
  - Mechanics
  - Business
  - Welding
Agriculture Tech - Example

- Flexible with elective credits to pursue areas such as:
  - Production Ag
  - Ag Business
  - Ag Mechanics
  - Welding/Fabrication
  - Any student specialization
Workforce Development

• Accelerated Apprenticeship Education
  • 39 apprentices spring 21, 44 fall 21, 57 spring 22
  • Apprentices from over 35 plumbing/electrical companies
  • Over 90% course completion rate to date
  • 89% program satisfaction rate
  • Pre-apprenticeship pathway with high schools
    • Billings West

• Endorsement for High School Industrial Tech and Ag Teachers
  • 15 teachers with class 4/5 license taking 45 credits over a 3 year span online with 2 week summer lab sessions.
Future Directions for MSUN

- Short term academic needs
  - Precision Technology
    - Ag, Auto, Construction, Engineering
  - Equine
  - Meats
- Expand distance delivery of apprenticeship education
- Short term training opportunities with technicians and new technologies
- Development of a Center for Workforce Development
Questions?
Dual Enrollment and Career & Technical Education

Jacque Treaster
Director of Dual Enrollment and Career & Technical Education
Montana University System
What is Dual Enrollment?

**Dual Enrollment**
- High school students taking college courses

**Concurrent Enrollment**
- Taught by qualified high school teacher (or licensed college faculty)
- Delivered in HS classroom

**Early College**
- Taught by college faculty
- Delivered on college campus and/or online

**Dual Credit**
- Students earn credit in high school and college
- Requires licensed college faculty & school district approval

**College Credit Only**
How Much Dual Enrollment is CTE?

<table>
<thead>
<tr>
<th>Year</th>
<th>CTE %</th>
<th>CTE Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-17</td>
<td>25%</td>
<td>6,005</td>
</tr>
<tr>
<td>2017-18</td>
<td>26%</td>
<td>7,042</td>
</tr>
<tr>
<td>2018-19</td>
<td>27%</td>
<td>9,199</td>
</tr>
<tr>
<td>2019-20</td>
<td>29%</td>
<td>10,680</td>
</tr>
<tr>
<td>2020-21</td>
<td>28%</td>
<td>9,937</td>
</tr>
</tbody>
</table>

Of Dual Enrollment was **CTE** over the past three years (2018-19 to 2020-21).

+31% increase in DE CTE credits (2017-18 to 2018-19)
<table>
<thead>
<tr>
<th>Career Cluster</th>
<th>CTE Credits</th>
<th>% of CTE Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>7,629</td>
<td>26%</td>
</tr>
<tr>
<td>Arts, Audio/Video Technology &amp; Communications</td>
<td>4,501</td>
<td>15%</td>
</tr>
<tr>
<td>Business Management &amp; Administration</td>
<td>4,483</td>
<td>15%</td>
</tr>
<tr>
<td>Information Technology</td>
<td>4,287</td>
<td>14%</td>
</tr>
<tr>
<td>Health Science</td>
<td>3,118</td>
<td>10%</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>2,274</td>
<td>8%</td>
</tr>
<tr>
<td>Finance</td>
<td>1,631</td>
<td>5%</td>
</tr>
<tr>
<td>Law, Public Safety, Corrections &amp; Security</td>
<td>437</td>
<td>1%</td>
</tr>
<tr>
<td>STEM</td>
<td>419</td>
<td>1%</td>
</tr>
<tr>
<td>Architecture &amp; Construction</td>
<td>316</td>
<td>1%</td>
</tr>
<tr>
<td>Transportation, Distribution, &amp; Logistics</td>
<td>278</td>
<td>1%</td>
</tr>
<tr>
<td>Agriculture, Food, &amp; Natural Resources</td>
<td>265</td>
<td>1%</td>
</tr>
<tr>
<td>Human Services</td>
<td>94</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Marketing</td>
<td>42</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Hospitality &amp; Tourism</td>
<td>32</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Government</td>
<td>10</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

*The past three academic years, 2018-19 to 2020-21*
Montana Grow Your Own Educator Program

Angela McLean, Ed.D.
Director of American and Minority Achievement and K-12 Partnerships
Montana University System
Video:

https://youtu.be/bspZ743zBFw
Innovation in Montana

Joe Thiel
Director of Academic Policy & Research
Montana University System
MUS Research Activity

(SOURCE: National Science Foundation HERD survey; values in nominal $)

+69%
5-year change

$329 M

15M in State Funding

OCHE – Academic, Research, and Student Affairs
62 new companies have spun out of the MUS research enterprise since 2006.
BIOTECH

628+
Montana Bio Companies

3rd
In the nation for growth in academic bioscience R&D, 2014-2019

1st
Highest success rate for NIH SBIR/STTR grants
Source: NFC Capital

Total VC dollars invested in MT 1995 - 2015

$144M

Total VC dollars invested in MT 2015 - 2020

$506M
Montana is adding its best paying new jobs in innovation industries

- Between 2011 and 2021, Montana added 35,100 new jobs for those aged 25+.
- 53% of these new jobs went to Montanans with a postsecondary degree or certificate.
- On average, those with a degree or certificate earned $13k more per year.
- The share of jobs paying $50k+ going to college grads grew to 63%.

NOTES: OCHE analysis of US Census Bureau Quarterly Workforce Indicators (QWI) data. Analysis shows the difference in the number of stable jobs held by Montanans 25+ by industry sector from Q1 2011 to Q1 2021.
The Montana Innovation Alliance

A public-private partnership to fuel Montana’s growing innovation economy by seeding and supporting companies and collaborative networks around scientific discoveries.

1. Identify shared strategies to grow innovative business
2. Coordinate across sectors to help firms to start, relocate, or grow in Montana
3. Better leverage university resources (people, facilities, equipment) to support innovative business and develop collaborations between researchers and industry