

Technical Applications in Agriculture, Project Summary, Preview of Agricultural Robotics & Automation

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Project website: <https://agcentric.org/agcentric-case/>

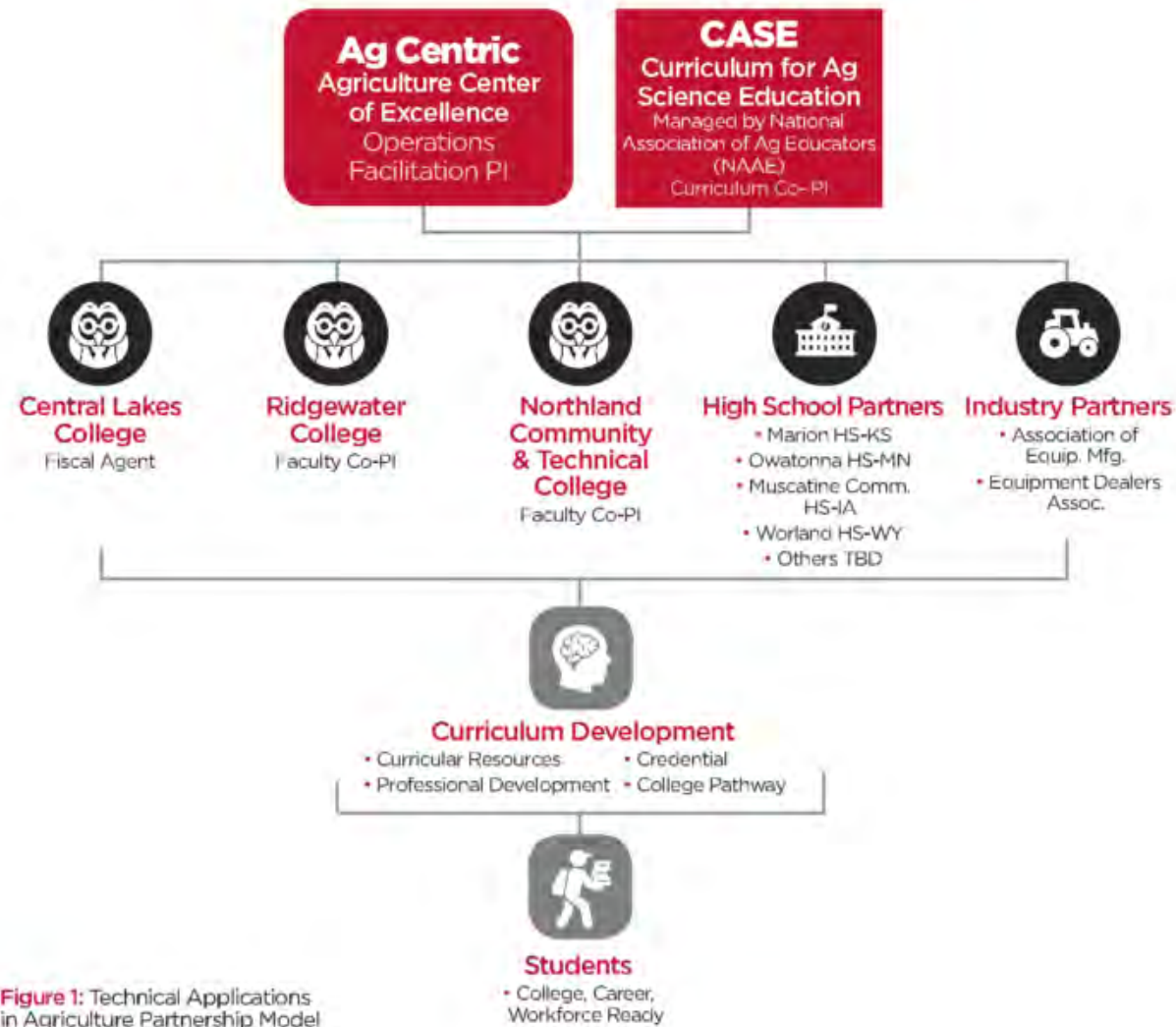
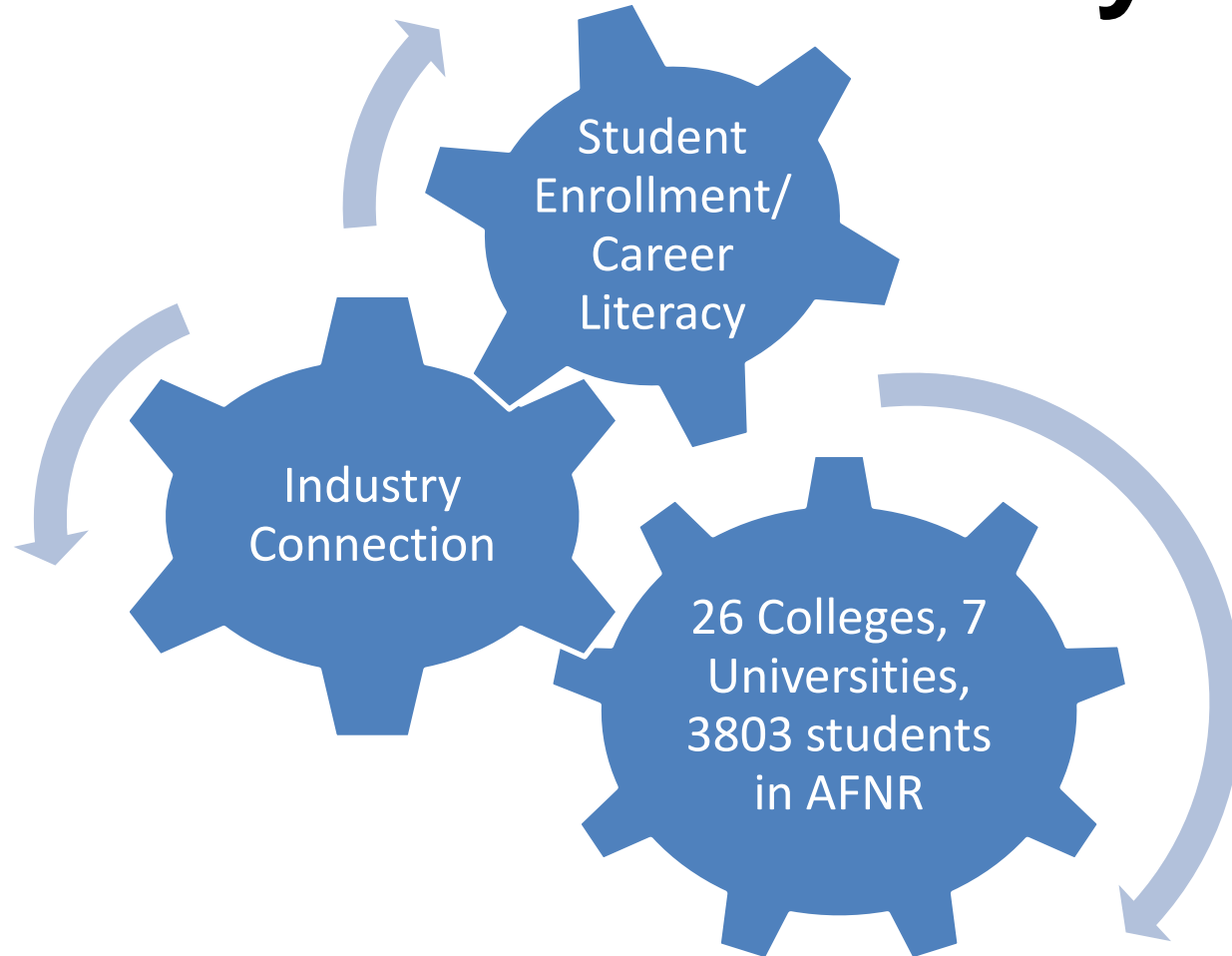


Figure 1: Technical Applications in Agriculture Partnership Model

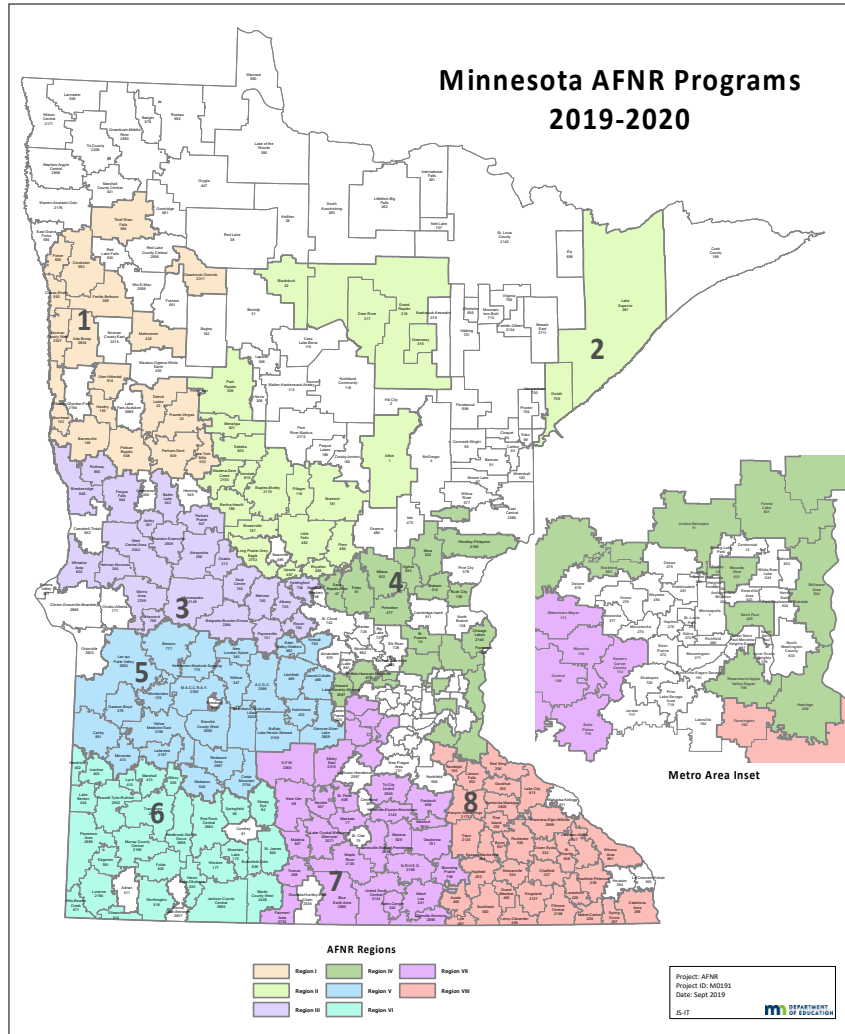
What do the Centers do for Post-Secondary AFNR?



Why Technical Applications in Ag?

MN Secondary Agriculture, Food, and Natural Resources

- 225 Programs
- 310 Teachers
- 35,000 Students



AFNR Pathway Enrollment

AFNR Pathway	Enrollment
Power Structure and Technical	8,502
Animal Systems	6,527
Agri-Business Systems	6,457
Natural Resources/Environmental	5,565
Plant Systems	4,189
Food Products & Processing	1,433

GROWING OPPORTUNITIES

Are you going in the right direction?
Explore a future career in Agriculture!

U.S. Agriculture
needs more qualified workers

57,900

new jobs each year for
ag graduates, but only

35,400

available graduates

= 39% deficit

Sourced by National Institute of Food and Agriculture and Purdue University

Tomorrow's Leaders will
need Additional Skills
QUALITIES OF A LEADER

TODAY

Communicator, Listener
Visionary, Passionate, Open-minded
Honest, Integrity
Hard-working, Motivated
Knowledgeable



TOMORROW

Networker
Diverse Background, Global Experience
Work-life Balance
Tech-savvy
Educated, Less Ag Experience

Sourced by CBE Owner Forum Attendees, 2019



AGRICULTURE
is the nation's
LARGEST EMPLOYER
with more than **23 MILLION JOBS**
[that's 17% of the civilian workforce]
involved in some facet of
AMERICAN AGRICULTURE.

Sourced by National FFA Organization

In 2050, there will be
9 BILLION
people to feed.



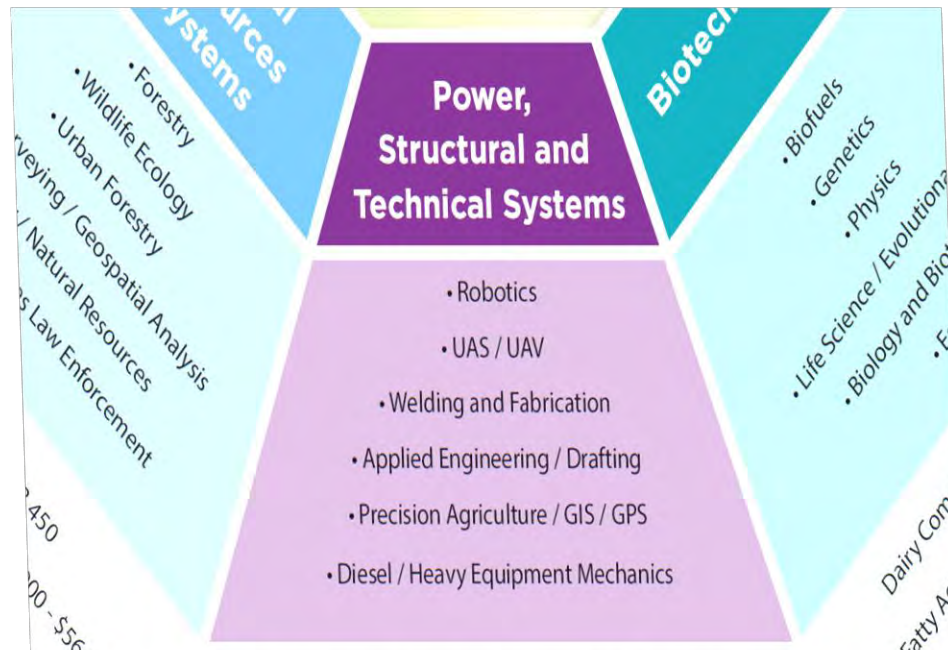
Agriculture, Food & Natural Resources Career Cluster - May 2020

Building a new field of dreams in agriculture.



MINNESOTA STATE
Agriculture Center of Excellence, North





- Industrial / Manufacturing Engineer - \$79,350 - \$125,950
- TIG Welder - \$38,650 - \$43,450
- Wind Turbine Technician - \$43,700 - \$63,150
- GIS Technician \$41,900 - \$48,100

The median advertised salary in Minnesota for power, structural, and technical system occupations is about \$67,350.

Pathway Description

Apply knowledge of engineering, hydraulics, pneumatics, electronics, power, structures and controls to agriculture. Innovate, design and build solutions.

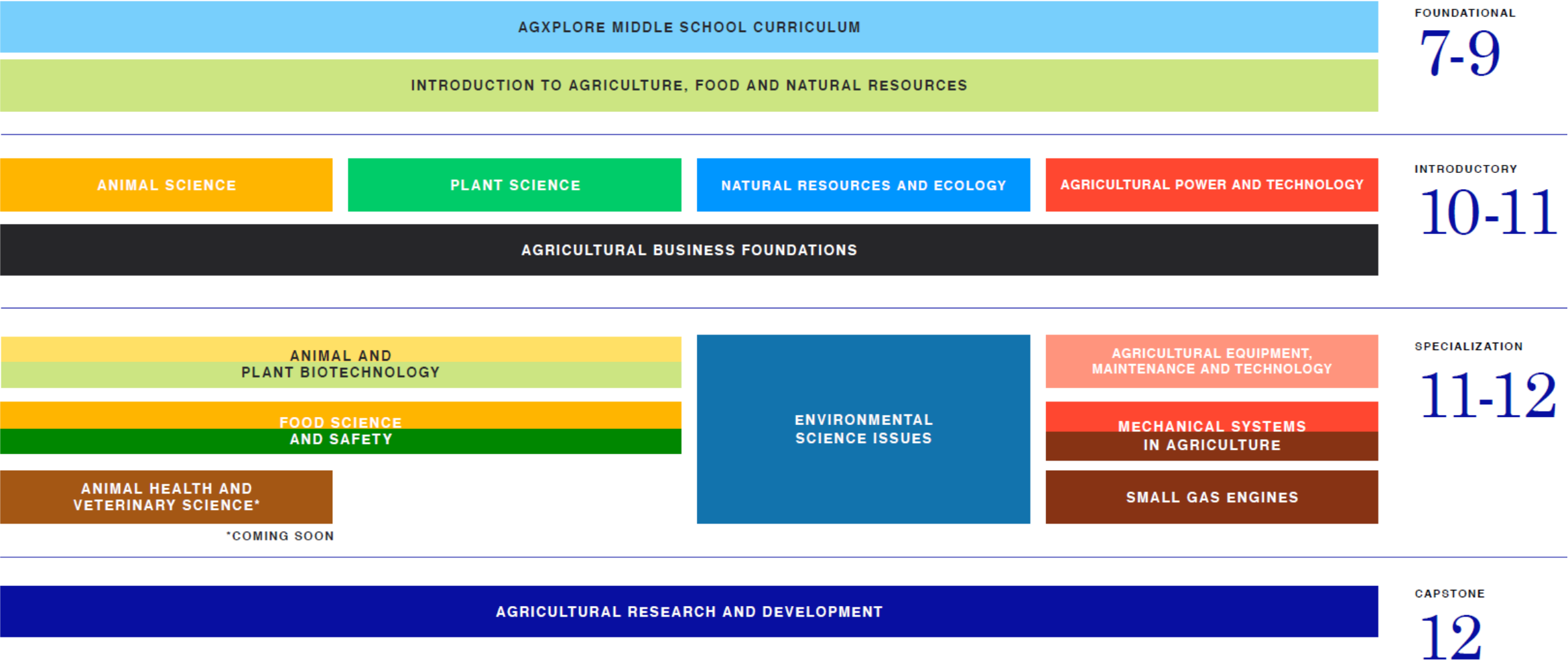
What is CASE 4 Learning

- Initiative of the *National Council for Agricultural Education*
- Design inquiry-based agricultural curriculum for middle and high school classrooms
- Offer lifetime certification, training, and support for teachers
 - Prepare students for college and career readiness

Core Values

- Purposeful Curriculum
 - 11 Year-long courses
 - 4 Modular courses
- Student Centered Learning
 - Inquiry-Based
 - Project/Problem Based
 - Spiral and Scaffolding
- Teacher Professional Development
 - CASE Institutes
 - BriefCASEs
- Fostering Connection and Growth
 - Lifetime curricular access
 - Educator network

Curricular Offerings



*COMING SOON



MINNESOTA STATE
Agriculture Center of Excellence, North



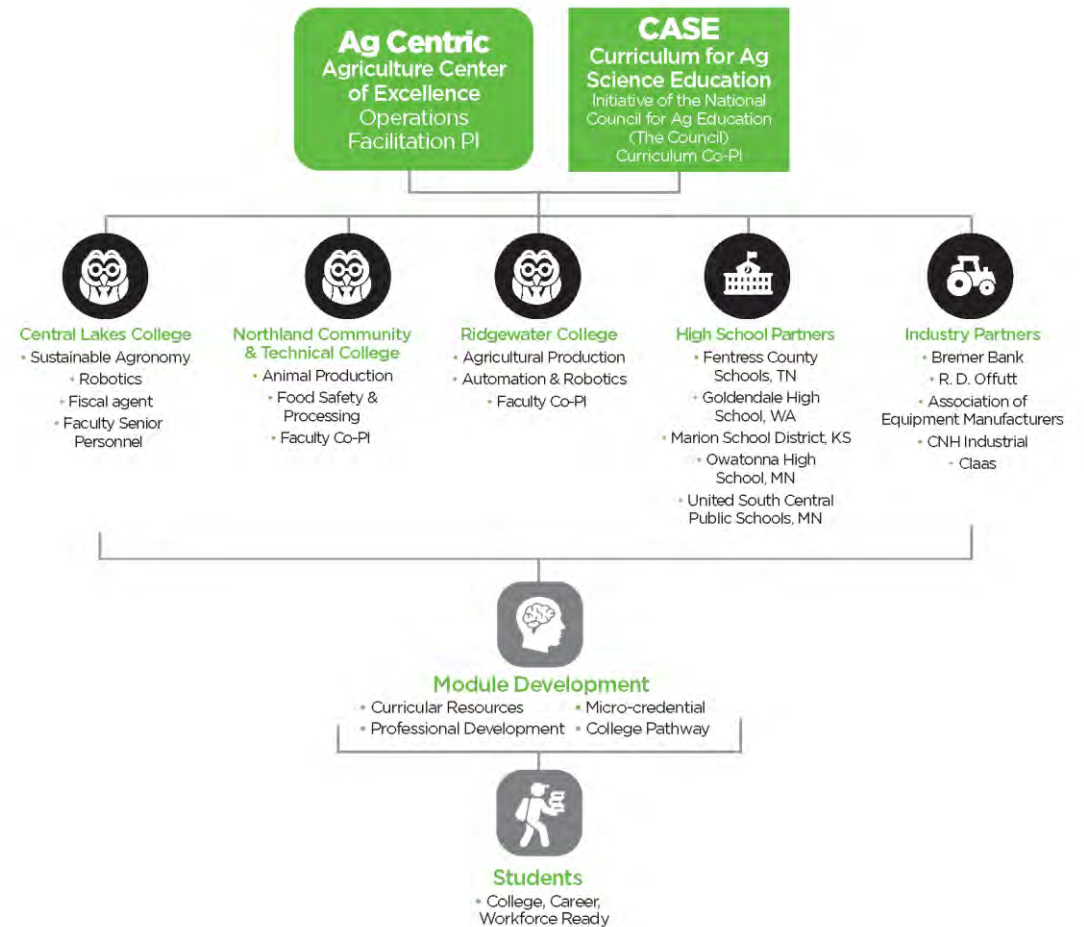
TAA Project Overview

- Equipment Maintenance and Technology course
- Prepare Agricultural Technicians
- Curriculum Development
- Professional Development
- Education and Industry Partnerships



Curriculum Development

- AgCentric
- Secondary Schools
- CASE
- Industry
 - Association of Equipment Manufactures
 - Equipment Dealers Association
 - Various Equipment Dealers



Partner Roles

- Industry
 - Identify the careers and technical skills
 - Standards
 - Certifications and Credentialing needs
 - Education support (financial and in-kind)
- Post-Secondary
 - Technical skill and application
 - Lesson Development
 - Prep for Industry
- Secondary
 - Base knowledge and technical skills
 - Lesson Development
 - Prep for post-secondary and/or industry
- Curricular and Professional Development
 - Develop a teacher prep program
 - Connect secondary, post-secondary, and industry
 - Pedagogy and Professional Development Planning

Technical Applications Curriculum Roadmap

3 Year Plan

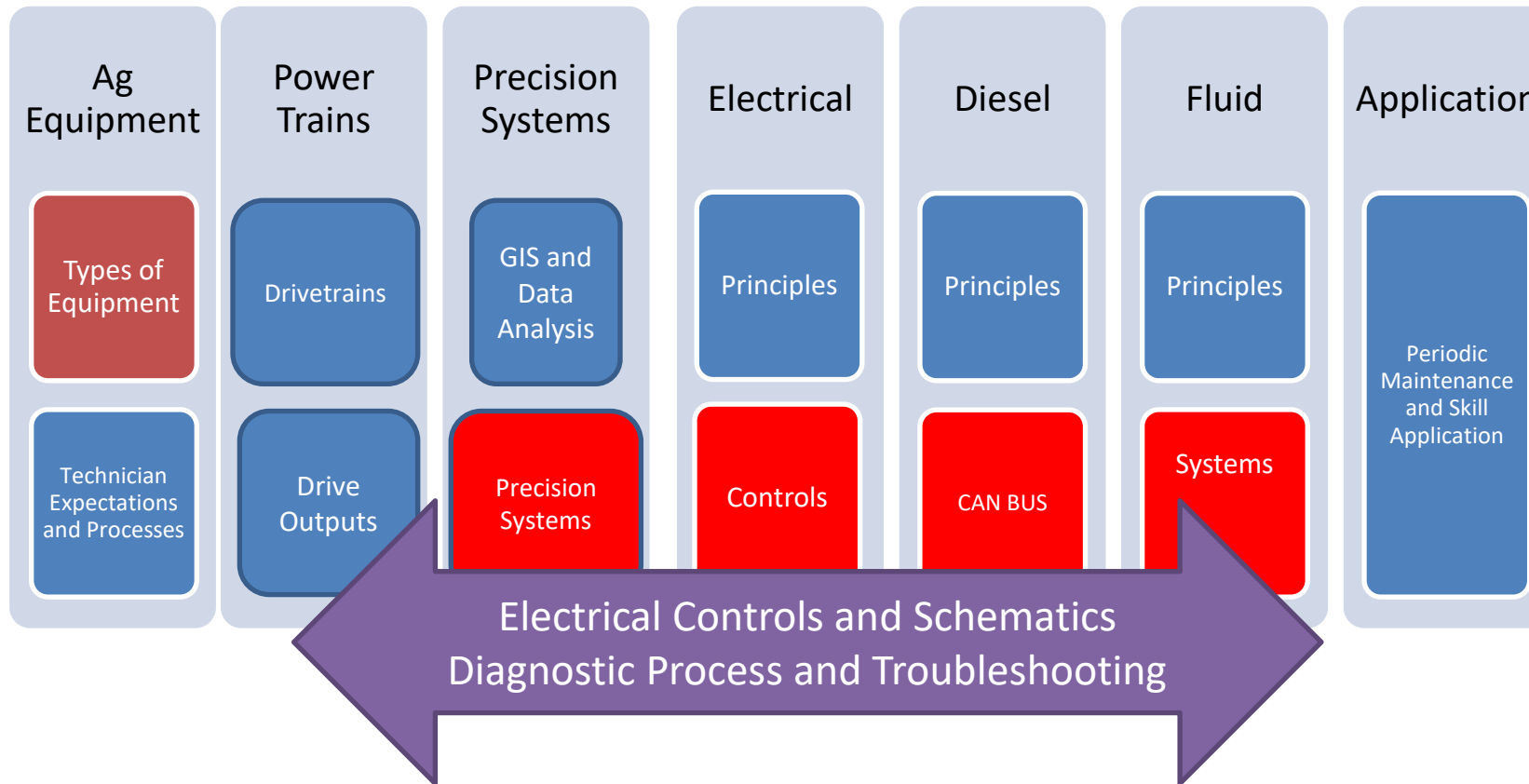


Agricultural Equipment Maintenance and Technology Curriculum

- National scope
- Year Long Course
- Aligned to Standards
- College Articulation
- Student Assessment
- Industry Credential/Certification



Scaffolded Content (Applying Knowledge)



Teacher Opportunities

Summer 2024 [Professional Development](#)

- 8 Day Training
 - 5 Days in Person
 - 3 Days Virtual
- SUNY Cobleskill
- Kansas State University
 - KanEquip



Future Goals

Technical Applications

- Prepare 40 teachers/year
- Expose 2000 students a year to technician careers
- Rotate Regional Sites
 - Midwest
 - Northeast
 - West
 - South

New Modular Courses

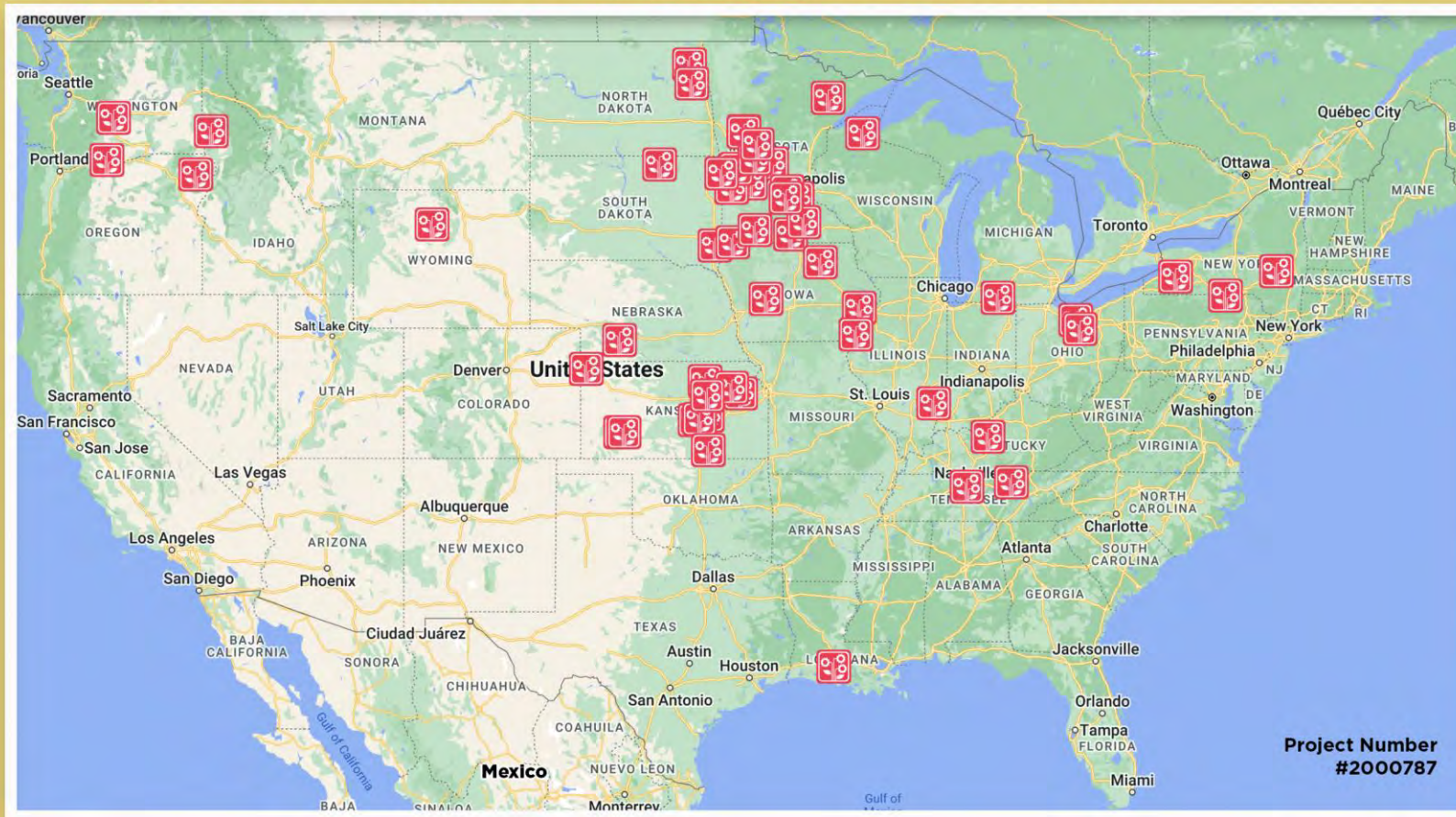
- **Safety (Released this Month)**
- **Small Gas Engines**
- Robotics and Automation
 - Starting this Fall

Industry Support

- Association of Equipment Manufacturers
 - \$1500 Scholarships for professional development attendance
 - Connections with industry experts for curriculum development
- Equipment Dealers Association
 - \$1500 Scholarships for professional development attendance
 - Connections with industry experts for curriculum development
 - Regional Iowa and Nebraska chapter funded teaching materials
- Associated Equipment Distributors Foundation
 - \$20,000 per site for professional development materials
 - Online exam aligned to our curriculum (in process)
 - High School Recognition program connecting industry with schools
- KanEquip
 - Hosted a professional development event

TECHNICAL APPLICATIONS IN AGRICULTURE (TAA)

This map shows where our TAA teachers (57) are located in 2022



Industry perspectives

- Richard Dugan, Kan Equip

What is next? (FY25-FY27)

- Building forward – Agricultural Robotics and Automation
 - Central Lakes College
 - Northland Community & Technical College
 - St. Cloud Community and Technical College
 - Curriculum for Agricultural Science Education (CASE)
 - Secondary Partners
 - Industry Partners



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