



Lesson 1 of 8

Introduction to Careers in Power, Structural and Technical Systems

Created: 03/2025 by the National FFA Organization

Description of Lesson Series: *There are a wide range of careers available in the Power, Structural and Technical Systems pathway. Students might not even be aware of many of these careers. This lesson series will dive into the multitude of careers that are needed to take a precision agriculture product from idea to finished product and beyond. These lessons are designed to be used in order.*

Student Learning Objectives:

After completing these activities, students will ...

1. Identify careers of interest.
2. Compare careers of interest with careers offered in the Power, Structural and Technical Systems focus area.

Suggested Grade Level:

Grades 9 and 10 (This lesson is written so instructors can scale up or down based on class needs.)

Suggested Time: 60 minutes (*Time requirements may vary based upon student understanding and class schedule.)

Resources/References:

- i. Quiz: AgExplorer MyCareer Quiz, AgExplorer.FFA.org/ag-explorer-quiz/
- ii. Video: "John Deere's Autonomous equipment," <https://www.youtube.com/watch?v=82agzakth-Q>
- iii. Website: AgExplorer, AgExplorer.FFA.org/
- iv. Website: AgExplorer – Power, Structural and Technical Systems Career Focus Area, AgExplorer.FFA.org/focus/power-structural-technical-systems/
- v. Website: John Deere, <https://about.deere.com/en-us/careers/>

Related Resources:

1. AgExplorer Implementation Guide, <https://FFA.box.com/s/w3o6ep5l2509qtwlfsgrkc7l8o3d143m>
2. We Are John Deere Series, <https://FFA.box.com/s/3fjke9572nl1zt298rx5oo0k65m8horv>

Equipment and Supplies Needed:

1. A copy of the "There's a Career for That" worksheet for each student
2. Internet access
3. [Career Sort Cards](#): cut out ahead of time, one set per group
4. [Grouping Cards](#): cut out ahead of time, three of each card (based on class size)
5. [Unit-Long Project Assignment Sheet](#)

Vocabulary:

1. Autonomous

Name: _____

2. Power, Structural and Technical Systems
3. Quality control
4. Skilled trades

Cross-Curricular Connections:

English/Language Arts	Technology
Research careers and complete a career profile.	Explore the different roles within Power, Structural and Technical Systems.

SAE and FFA Connections

1. Agricultural Technology and Mechanical Systems CDE, [FFA.org/participate/cdes/agricultural-technology/](https://ffa.org/participate/cdes/agricultural-technology/)

Student Activity Sheets:

Direct access to student activity sheets without lesson plan or answer key for easy upload to a learning management system or printing for classwork.

<https://ffa.box.com/s/hkemtnmcr15sinie0g6w62k6edau78n7> (Word)

<https://ffa.box.com/s/0xlg8mq9ddwv19xrl0em1z4ccld5we7> (PDF)

https://docs.google.com/document/d/1_a3sePMgEtEpXO68C3Nyaa6AeSuOgh9kcnzuWOJk9GU/copy (Google)

These Activities Are Aligned to the Following Standards:

FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PL-C.Vision: Visualize the future and how to get there.
- FFA.PL-E.Awareness: Understand personal vision, mission and goals.
- FFA.PL-F.Continuous Improvement: Accept responsibility for learning and personal growth.
- FFA.PG-I.Professional Growth: Assume responsibility for attaining and improving upon the skills needed for career success.
- FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking and coping.
- FFA.CS-M.Communication: Effectively interact with others in personal and professional settings.
- FFA.CS-N.Decision Making: Analyze a situation and execute an appropriate course of action.

AFNR Cluster Skills

- CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.

Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
- CCSS.ELA-Literacy.SL.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

Common Core – Science & Technical Subjects

- AG5 Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.

AFNR Career Ready Practices

- CRP.04. Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.07. Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
- CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.
- CRP.10. Plan education and career path aligned to personal goals. Career-ready individuals take personal ownership of their own educational and career goals, and they regularly act on a plan to attain these goals.

Partnership for 21st Century Skills

Name: _____

- Communication
- Critical Thinking and Problem Solving
- Initiative and Self-direction
- Leadership and Responsibility

Lesson Plan:

1. **Bell Ringer:** What types of roles/jobs are needed to develop new agriculture technology like self-driving tractors?
2. **Introduction:** *The world of agriculture is evolving rapidly, with technology playing a crucial role in addressing modern farming challenges. Today, you will explore the diverse career opportunities within Power, Structural and Technical (PST) Systems. From designing autonomous tractors to maintaining advanced irrigation systems, PST careers are essential in developing innovative solutions for agriculture.*
3. **Activity:** Each student needs a copy of the worksheet “There’s a Career for That.”
 - a. **Part 1:** Students will take the [AgExplorer](#) “MyCareer Quiz” to determine their career interests. Have students select “MyCareer Quiz” to get started with their assessment. Once they get their results, they will use them to fill out their student activity sheets.
 - b. **Part 2:** Separate students into groups of three or four. Each student group will require a set of the “Career Card Sort” activity. Be sure to have these printed and cut out ahead of time.
 1. Students will match the careers with the category card. They will categorize each career in the PST focus area into one of the following categories: product planning, product design, production, quality and reliability, product marketing and quality control.
 2. Have students review their group’s set of career cards and category cards.
 3. When students are done, check their answers for accuracy.
 4. When students have finished, they should answer the discussion questions.
 - c. **Part 3:** Students will spend time researching careers available in each of the card sort categories on the John Deere website and fill out their student activity sheets as they research.
 1. Have students visit <https://about.deere.com/en-us/careers/>.
 2. On that page, they should click on the tab “Professional Careers,” “Production and Skilled Trades” or “Students and Recent Graduates.” In each category, have students search for open jobs to research the different careers offered at John Deere and complete the career profiles for two of the careers they are most interested in.
 - d. **Part 4:** Students will each be given a grouping card with a different piece of equipment in PST. They will have to find the two other people who have the same card; this will be their group for the unit-long project.
 1. Students should watch the video on John Deere’s autonomous equipment (<https://www.youtube.com/watch?v=82agzakth-Q>) and answer the questions as they watch.
 2. Place students in their groups by utilizing the grouping cards. Give three or four students the same card, and they will find who has their matching card to determine their groups. Have students fill in the bottom of their student activity sheets after finding their groups.
 3. Introduce the [unit-long group project](#) to students.
 - a. Note: This project will require community/alumni members to participate in the trade show. Plan for this early by asking individuals now to attend the future trade show.
4. **Follow-up:** Have a class discussion about what precision agriculture topics students currently know about. Examples include drones, autonomous equipment and GPS.
5. **Optional – Extended Learning Opportunities (Not factored into time requirement):**

Name: _____

- a. Take students on a field trip to a local implement dealership to see some agriculture technology in action.
6. **Exit Ticket:** What career in PST are you most interested in and why?

Name: _____

There's a Career for That

Part 1

Directions:

Follow the instructions to be matched with careers suited to your interests.

- 1. Access [AgExplorer](#) to complete the MyCareer Quiz Assessment.
- 2. Select "MyCareer Quiz" to get started with the assessment.
- 3. Once you have completed all questions, select "See Results."
- 4. You will receive your career results. Use them to answer the following questions.
- 5. Choose your favorite careers from your results and fill in the table below.

Career Name:	Career Name:	Career Name:	Career Name:
In your own words, briefly describe this career.	In your own words, briefly describe this career.	In your own words, briefly describe this career.	In your own words, briefly describe this career.

- 6. Click on "Learn More" to view the profile for each career. Review each profile carefully and complete the table below.

Career Name:			Career Name:			Career Name:			Career Name:		
Does this career sound interesting?			Does this career sound interesting?			Does this career sound interesting?			Does this career sound interesting?		
Yes	No	Unsure	Yes	No	Unsure	Yes	No	Unsure	Yes	No	Unsure
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Why or why not?			Why or why not?			Why or why not?			Why or why not?		

Name: _____

7. Click on "Career Focus Areas" at the top of the page and then click on Power, Structural and Technical Systems (PST). Watch the video, review the careers that fall into this category and answer the questions below.
 - A. In your own words, summarize the video in two or three sentences.
 - B. What careers from your "MyCareer Quiz" results are found in the Power, Structural and Technical Systems (PST) focus area?
 - C. If none, how could your careers potentially support other careers in the PST industry?
 - D. Were you surprised that your careers did or did not fit into the Power, Structural and Technical Systems (PST) focus area? Why or why not?
 - E. Have any of the careers you are seeing impacted you? Why or why not?

Name: _____

Part 2

Directions:

1. Gather into your group, as assigned by your teacher.
2. Review your set of career cards and category cards given to you by your teacher.
3. Read each card and place it into one of the six categories that best matches the career's primary role.
4. Have your teacher check your answers for accuracy.
5. When completed, answer the discussion questions below.

Tip: Focus on the main responsibilities of each career when categorizing. If unsure, review the career description on AgExplorer.FFA.org/focus/power-structural-technical-systems/.

Discussion Questions:

1. What criteria did you use to determine which careers belonged in each category?
2. Were there careers that you felt could fit into more than one category? How did you decide where to place them?
3. Did the group agree on all decisions, or were there disagreements? How did you resolve them?
4. In which category did you see the widest variety of careers? Why do you think that is?
5. Were there any careers that you initially found challenging to categorize? How did you ultimately decide?
6. If you had to create a new category, what would it be, and what careers would fit there?
7. What did this activity teach you about the interconnectedness of careers in PST systems?

Name: _____

Part 3

Directions:

1. Visit <https://about.deere.com/en-us/careers/>.
2. On that page, click on Professional Careers, Production and Skilled Trades, or Dealership Careers. In each category, search for open jobs to research the different careers offered at John Deere and complete the career profiles below for two of the careers you are most interested in.

Name of Career:

Career Category:

Sketch a Photo of the Career

Job Description

Education Needed

Main Responsibilities



Skills Needed



Name: _____

Name of Career:

Career Category:

Sketch a Photo of the Career

Job Description

Education Needed

Main Responsibilities

★

★

★

Skills Needed

★

★

★

1. What about these two careers interested you and why?

Name: _____

Part 4

Directions:

Watch the video on John Deere's autonomous equipment (<https://www.youtube.com/watch?v=82agzakth-Q>) and answer the questions as you watch.

1. What three pieces of autonomous equipment did the video feature?

-
-
-

2. What are three benefits of autonomous equipment?

-
-
-

3. What are two downsides to using autonomous equipment?

-
-

In the groups assigned by your teacher, fill out the following information:

1. Team name:

2. Group members' names:

3. Group symbol:

Name: _____

KEY: There’s a Career for That

Part 1

Directions:

Follow the instructions to be matched with careers suited to your interests.

- 1. Access [AgExplorer](#) to complete the MyCareer Quiz Assessment.
- 2. Select “MyCareer Quiz” to get started with the assessment.
- 3. Once you have completed all questions, select “See Results.”
- 4. You will receive your career results. Use them to answer the following questions.
- 5. Choose your favorite careers from your results and fill in the table below.

Career Name: Answers will vary.	Career Name: Answers will vary.	Career Name: Answers will vary.	Career Name: Answers will vary.
In your own words, briefly describe this career. Answers will vary.	In your own words, briefly describe this career. Answers will vary.	In your own words, briefly describe this career. Answers will vary.	In your own words, briefly describe this career. Answers will vary.

- 6. Click on “Learn More” to view the profile for each career. Review each profile carefully and complete the table below.

Career Name: Answers will vary.			Career Name: Answers will vary.			Career Name: Answers will vary.			Career Name: Answers will vary.		
Is this a career that sounds interesting?			Is this a career that sounds interesting?			Is this a career that sounds interesting?			Is this a career that sounds interesting?		
Yes _____	No _____	Unsure _____	Yes _____	No _____	Unsure _____	Yes _____	No _____	Unsure _____	Yes _____	No _____	Unsure _____
Why or why not? Answers will vary.			Why or why not? Answers will vary.			Why or why not? Answers will vary.			Why or why not? Answers will vary.		

Name: _____

7. Click on “Career Focus Areas” at the top of the page and then click on Power, Structural and Technical Systems. Watch the video, review the careers that fall into this category and answer the questions below.

- A. In your own words, summarize the video in two or three sentences.

Answers will vary.

- B. What careers from your “MyCareer Quiz” results are found in the Power, Structural and Technical Systems focus area?

Answers will vary.

- C. If none, how could your careers potentially support other careers in the PST industry?

Answers will vary.

- D. Were you surprised that your careers fit into the Power, Structural and Technical Systems focus area? Why or why not?

Answers will vary.

- E. Have any of the careers you are seeing impacted you? Why or why not?

Answers will vary.

Name: _____

Part 2

Directions:

1. Gather into your group, as assigned by your teacher.
2. Review your set of career cards and category cards given to you by your teacher.
3. Read each card and place it into one of the six categories that best matches the career's primary role.
4. Have your teacher check your answers for accuracy.
5. When completed, answer the discussion questions below.

Tip: Focus on the main responsibilities of each career when categorizing. If unsure, review the career description on AgExplorer.FFA.org/focus/power-structural-technical-systems/.

Discussion Questions:

1. What criteria did you use to determine which careers belonged in each category?

Answers will vary.

2. Were there careers that you felt could fit into more than one category? How did you decide where to place them?

Answers will vary.

3. Did the group agree on all decisions, or were there disagreements? How did you resolve them?

Answers will vary.

4. In which category did you see the widest variety of careers? Why do you think that is?

Answers will vary.

5. Were there any careers that you initially found challenging to categorize? How did you ultimately decide?

Answers will vary.

6. If you had to create a new category, what would it be, and what careers would fit there?

Answers will vary.

7. What did this activity teach you about the interconnectedness of careers in PST systems?

Answers will vary.

Name: _____

Part 3

Directions:

- 1. Visit <https://about.deere.com/en-us/careers/>.
- 2. On that page, click on Professional Careers, Production and Skilled Trades, or Dealership Careers. In each category, search for open jobs to research the different careers offered at John Deere and complete the career profiles below for two of the careers you are most interested in.

Name of Career: Answers will vary.

Career Category: Answers will vary.

Sketch a Photo of the Career

Answers will vary.

Job Description

Answers will vary.

Education Needed

Answers will vary.

Main Responsibilities

- ★ Answers will vary.
- ★ Answers will vary.
- ★ Answers will vary.

Skills Needed

- ★ Answers will vary.
- ★ Answers will vary.
- ★ Answers will vary.

Name: _____

Name of Career: *Answers will vary.*

Career Category: *Answers will vary.*

Sketch a Photo of the Career:
Answers will vary.

Job Description
Answers will vary.

Education Needed
Answers will vary.

Main Responsibilities

- ★ *Answers will vary.*
- ★ *Answers will vary.*
- ★ *Answers will vary.*

Skills Needed

- ★ *Answers will vary.*
- ★ *Answers will vary.*
- ★ *Answers will vary.*

1. What about these two careers interested you and why?
Answers will vary.

Name: _____

Part 4

Directions:

Watch the video on John Deere's autonomous equipment (<https://www.youtube.com/watch?v=82agzakth-Q>) and answer the questions as you watch.

1. What three pieces of autonomous equipment did the video feature?
 - Tractor
 - Sprayer
 - Lawn mower
2. What are three benefits of autonomous equipment?
 - It saves time.
 - It saves on labor.
 - It can run 24 hours a day.
3. What are two downsides to using autonomous equipment?
 - It is expensive.
 - There may be a learning curve to operating it.

In your groups assigned by your teacher, fill out the following information:

1. Team name: Answers will vary.
2. Group members' names: Answers will vary.
3. Group symbol: Answers will vary.