

# Anatomy of Plants

**Media Type:** Microsoft® PowerPoint® Presentation  
**Duration:** 73 slides

**Goal:** To recognize the different types of plant parts and to understand their functions within the plant.

**Description:** This Microsoft® PowerPoint® presentation details the anatomy of plants by providing information on plant cell biology and structure. The different cell types and detailed characteristics of a plant cell will be provided. The structure of plants will also be detailed including: roots, stems, flowers, leaves, fruits and seeds.

**Objectives:**

1. To identify plant structures and functions.
2. To describe the structure of plant cells.
3. To explain the process of reproduction in plants.



Agriculture, Food & Natural Resources Career Cluster (AG)

Cluster	Standard
	Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster™.
	Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster™ and the role of agriculture, food and natural resources (AFNR) in society and the economy.
	Examine and summarize the importance of health, safety and environmental management systems in AFNR businesses.
	Demonstrate stewardship of natural resources in AFNR activities.
	Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.
	Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.
Plant Systems Career Pathway (AG-PL)	Develop and implement a crop management plan for a given production goal that accounts for environmental factors.
	Apply the principles of classification, plant anatomy and plant physiology to plant production and management.
	Propagate, culture and harvest plants and plant products based on current industry standards.
	Apply principles of design in plant systems to enhance an environment (e.g., floral, forest, landscape and farm).

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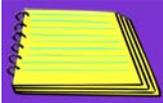


College & Career Readiness Anchor Standards for Speaking and Listening

## Speaking & Listening Standards

Comprehension & Collaboration	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	
	Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.	
	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.	
	9-10.1	Initiate and participate effectively in a range of collaborative discussions with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
	9-10.2	Integrate multiple sources of information presented in diverse media or formats evaluating the credibility and accuracy of each source.
	9-10.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
	11-12.1	Initiate and participate effectively in a range of collaborative discussions with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
Presentation of Knowledge & Ideas	11-12.2 Integrate multiple sources of information presented in diverse formats and media in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	
	11-12.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	
	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.	
	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.	
	Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.	
	9-10.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
	9-10.5	Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
9-10.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.	
11-12.4	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.	
11-12.5	Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.	
11-12.6	Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.	

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## Lesson Plan

Student and Teacher Notes are available to print in outline format. You can access these documents under the “Printable Resources” section. If student licenses have been purchased, an interactive version of the Student Notes is available in the “Interactive Activities” section. If printing the full PowerPoint® is desired, you may download the file and print the handouts as needed.

**Class 1:** Distribute the *Anatomy of Plants Vocabulary Handout*. Show the *Anatomy of Plants - Plant Cell Biology* segment. Students should complete the corresponding *Assessment*. Distribute the *Plant Cell Structure Activity* and allow the remainder of the class for students to complete. If student licenses have been purchased, an interactive version of this Activity is available in the “Interactive Activities” section. Hand out the *3-D Diagram Project* and instruct students this assignment will be displayed during Class 5.



Slides  
1-21

**Class 2:** Remind students to use the *Vocabulary Handout*. Show slides 22 to 40 of the *Anatomy of Plants - Plant Structures* segment. Distribute the *Plant Part Presentation Project* and allow the remainder of the class to work on the *Project*.



Slides  
22-40

**Class 3:** Remind students to use the *Vocabulary Handout*. Show slides 41 to 62 of the *Anatomy of Plants - Plant Structures* segment. Hand out the *Flower Part Identification Activity* for students to complete during class. An interactive version of this Activity is available in the “Interactive Activities” section. Distribute the *Leaf Structure Project* for students to complete outside of class.



Slides  
41-62

**Class 4:** Remind students to use the *Vocabulary Handout*. Show slides 63 to 73 of the *Anatomy of Plants - Plant Structures* segment. Have students complete the *Assessment* then hand out the *Fruit Types* and *Venn Diagram Activities* and allow the remainder of the class for students to participate in the activities. An interactive version of the *Fruit Types* Activity is available in the “Interactive



Slides  
63-73

Activities” section. Distribute the *Enzyme Investigation Project* for students to begin as homework.

**Class 5:** Distribute the *Plant Reproduction & Propagation Activity*. Allow the entire class period for students to work on their *Activities* and *Projects*.

**Class 6:** Students will display the *3-D Diagram Project* to the class and turn in the *Leaf Structure Project*. Distribute the *Anatomy of Plants Final Assessment* for students to complete. Students should then present the *Plant Part Presentation* to the class. Continue presentations into Class 7 if necessary.

**Class 7:** Students should turn in remaining *Activities* and *Projects*.



## Lesson Links

### Estrella Mountain Community College

- <http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookPLANTANATII.html>

### Texas A&M Agrilife Extension

- <http://dallas.tamu.edu/weeds/anat.html>



## Career & Technical Student Organizations

### National FFA

- Agronomy



## Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.

- iCEV50034, George Hardberger, M.B.A., Farmer, West Texas
- iCEV50047, Glen Keppy, Associate Administrator, USDA
- iCEV50023, Don DeHaven, Ph.D., Administrator, Animal & Plant Health Inspection Service (APHIS), USDA

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## Plant Cell Structure

### Directions:

Distribute the *Plant Cell Structure Activity* to the class. Allow students time to complete then, as a class, go over the activity and answer questions. Do not allow students to use their notes. If student licenses have been purchased, an interactive version of this Activity is available in the “Interactive Activities” section.

## Flower Part Identification

### Directions:

Distribute the *Flower Part Identification Activity* to the class. Allow students time to complete then, as a class, go over the activity and answer questions. Do not allow students to use their notes. If student licenses have been purchased, an interactive version of this Activity is available in the “Interactive Activities” section.

## Fruit Types

### Directions:

Prior to class, gather at least one of each of the three fruit types (simple, aggregate and multiple). Provide time for students to discuss each and determine which type each fruit is by the characteristics of the fruit and their knowledge of the plant. Distribute the *Fruit Types Activity* and allow students time to complete using their knowledge from the presentation and discussion or the Internet. As a class, go over the correct answers and allow students to ask questions and discuss the answers. If student licenses have been purchased, an interactive version of this Activity is available in the “Interactive Activities” section.

## Venn Diagram

### Directions:

Students will use the Venn diagram to compare and contrast the differences in male and female plants. Once completed, students will share their comparisons in a class discussion.

## Plant Reproduction & Propagation

### Directions:

Students must research and describe the structure and function of different seed components and summarize their roles in plant reproduction and propagation. After completing their research, students must write a brief paragraph on the information they found and cite all sources used.



## 3-D Diagram

### Directions:

Hand out the *3-D Diagram Project*. Each student will create a 3-D diagram of a plant cell using only household items. Students must also label all organelles within the cell. Have students display their diagrams to the class.

## Plant Part Presentation

### Directions:

Distribute the *Plant Part Presentation Project*. Divide the class into groups of four or five, and have them choose a plant part. Make sure no two groups select the same part. Students will research the plant part and prepare a two to three minute speech. Each group must include at least two visual aids and be able to defend the chosen plant part against another group, explaining why it is the most important plant part. Students will turn in a paragraph summarizing the speech, citing all sources and provide each group members research notes.

## Leaf Structure

### Directions:

Hand out the *Leaf Structure Project*. Students will gather five different types of leaves. Depending on when this lesson is taught students can use photographs of leaves if no leaves are available. Students will attach each leaf specimen to a sturdy sheet of paper then, using the information from the presentation or the Internet, label each specimen. Each leaf specimen should have the following clearly labeled: leaf parts, leaf type, leaf vein pattern and leaf arrangement. Students should write a summary paragraph detailing their findings and citing all sources to turn in with specimens.

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## Projects

### Enzyme Investigation

#### *Directions:*

Using all available resource, students will research and investigate the effect of enzymes on plants cells. Students should include at least five enzymes, their importance and effect on plant cells as well as specific problems which might be caused by absences or suppression of the enzyme. After completing all research, students should write a two page paper on the information they have found. Remind students to attach a citation sheet listing all sources used.