

AP Biology Human Systems Project

- A. Purpose of the project is to understand in detail how the human body systems
1. Work to maintain homeostasis (understand feedback control mechanisms involved in each body system)
 2. Work from the molecular level to tissues to organs and organism level
 3. Evolved from more primitive systems (very, very, very brief)
 4. Include structures that relate to functions
 5. Organize your information into a **thoughtful** and **creative lesson plan** for the class.
- B. Lesson Plan Requirements:
1. **Presentation** in Google Presentations
 - a. **Content:** Provide an organized, visually interesting and efficient explanation of the questions below.
 1. Describe the evolutionary importance and a brief description of the development of this system.
 - How structures and functions evolved from simpler animals to more complex animals
 - With a quick overview of lower vertebrates with a major focus on humans.
 2. Why is this body system necessary for maintaining homeostasis?
 3. Describe and elaborate the structures and functions of the system focusing on humans.
 4. Provide labeled diagrams of the major structures of the system.
 5. Explain the interdependence of this system with other body systems.
 6. **Include major concepts for this system as elaborated in your text and topics attached.**
 7. Describe at least 3 diseases or disorders of the system.
 8. Works cited at end of presentation in correct MLA format
 - b. **Appearance:** Your presentation needs to include;
 1. Diagrams (make sure you cite the source of all "borrowed" pictures and animations within the presentation and have a Bibliography at the end using MLA format).
 2. Simple backgrounds with contrasting text (not visually confusing), avoid flashy transitions which can be visually distracting as well as confusing.
 3. NO more than 5 bulleted points, with no more than 5 words per bullet/ per slide
 4. NO reading verbatim from the slide show, practice and be prepared to just use the bulleted points as prompts for your presentation (note cards are permitted.... but again reading is unprofessional and you risk boring your audience who will also be providing part of your grade).

2. Provide an **Outline Summary** with a works cited page of your presentation for you fellow students, and **post the summary and your presentation in your period's Google Drive shared folder in order for the class to have access.**

- a. This detailed outline of your body system should include:
 1. Major tissues/organs and their structure and function
 2. How all of the parts contribute to the holistic functioning of your particular system.
 3. Discussion on the consequences of hormone imbalances, diseases and disorders related to this imbalance. Research treatments, cures etc... IF appropriate
- b. Format
 1. Your outline should NOT exceed the front and back of a page, but it must be at least one page- 12 pt. font maximum.
 2. This outline will serve as your classmates basis of system information.
 - § Make sure that you provide enough detail so that your classmates will have a suitable study aid for the final exam.

3. Include a **Hands on Activity** or a **Visual Segment: Created by YOU!**

- a. You will need to use more than one type of media.
 1. Some suggestions of visuals to try in any combination:
 - § Comic strips, on computer or by hand. (you might want to copy these as a handout)
 - § Power point, Prezi, Wikispace presentation (created by you, not professional ones downloaded)
 - § Mini plays (done in class or pre-recorded)
 2. Hands on activities can be as simple or complex as you would like.
 - § Check with me for materials I might already have
- b. Feel free to use any combination that allows you to clearly convey the material to the class.

4. This presentation and activity needs to be about **fifteen minutes** in length. Be prepared for questions from your classmates for the 5 minute period allowed.

- a. Please test your presentation on the classroom equipment prior to your date of presentation.
- b. You may do this test after school.
- c. *No consideration will be given for 'technical difficulties' that result from lack of preparation.*

5. Use your textbook AND *at least two* other sources. Cite any additional sources that you have used on a works cited page at the end of your presentation in proper MLA format.

Groups systems will be chosen based on lottery!

1. Digestive Systems & Nutrition **Ch. 41**

- Nutritional requirements and feeding mechanisms
- Evolutionary adaptations with diet
- Discuss the functions of the organs in the digestive system, including: mouth, pharynx, esophagus, stomach, small intestine (3 parts), large intestine (5 parts), rectum, anus, salivary glands, liver, pancreas and gallbladder, and sphincters.
- Distinguish between the organs that food passes through and the accessory organs,
- Compare and contrast physical digestion and chemical digestion.
- Describe where carbohydrate, protein, and lipid digestion takes place and the enzymes that assist in the process

2. Circulatory **Ch. 42**

- Open vs closed systems
- Mammalian double circulation
- How patterns of blood pressure reflect the structure and arrangement of blood vessels
- Structure and function of blood
- pH of blood regulation

3. Gas Exchange/Respiratory System **Ch. 42**

- Pathway oxygen travels
- Gas exchange and specialization
- Importance of hemoglobin to gas exchange
- Adaptations for gas exchange

4. Osmoregulation & Excretion **Ch. 44**

- Osmolarity and energetics
- Transport mechanisms
- Forms of N waste and the evolutionary influences and the environment
- Regulation mechanisms
- Explain urinalysis and tests
- Renin-angiotensin-aldosterone system of regulation
- Survey of types of excretory systems

5. Sensory **Ch. 50**

- Passing of stimulus energy & signals to nervous system
- Types of sensory receptors
- Go through each of the major senses and be sure to include overview of evolutionary trends and evidence

6. Reproduction

Ch. 46

- Overview of types and mechanisms
- Why does the animal kingdom have asexual and sexual reproduction? Cost vs benefit
- Reproductive cycles, organs and anatomy
- Why is there difference in timing and patterns for meiosis in males and females?
- Placental mammals

7. Development

Ch. 47

- stages of development
- morphogenesis and differentiation
- regulation of development of genes facilitating the evolution of new body forms (include HOX, etc.)
- A body building plan, blastula, gastrulation, amniotic adaptations
- Role of cell adhesion, fate mapping, pattern formation by inductive signals

8. Locomotion

Ch. 50

- Diversity of skeletons
- Physical interaction of protein filaments
- Why are there different types of skeletal muscle fibers, why not one type?
- Energetics
- Types of locomotion

Grading Rubric for Body Systems Presentation Project: (100 points)

OUTLINE: 32 points

	4	3	2	1
Format(4)	Presented in an easy-to-follow, clear outline & readable format.	Presented in an easy-to-follow format. Outline format.	Outline present. Somewhat easy to follow format.	Outline present. Difficult to follow.
Information present (12)	Focuses in detail on structure AND function of components in assigned system. Serves as an extensive, in-depth and <i>complete</i> overview of the assigned system.	Focuses on structure AND function of components in assigned system. Serves as an in-depth & <i>complete</i> overview of the assigned system	Broadly focuses on structure AND function of components in assigned system. Serves as a broad overview of the assigned system	Marginally focuses on structure AND function of components in assigned system. Serves as an incomplete overview of the assigned system
Accuracy of information (8)	Information included is correct & accurate information about the system.	Information included is mostly correct information about the system.	Information included has some minor errors in the information about the system.	Information included has major errors regarding information about the system.
Length requirements (4)	Accurately fits length requirements- min.- 1 page; 12 pt font- max 2 pages	Mostly fits length requirements- min.- 1 page; 12 pt font- max 2 pages	Half of the length requirements are met	Less than half of the length requirements are met.
Works Cited for 2 sources (4)	Works cited. Uses at least 2 sources present. Proper MLA format followed	No works cited = 0 for project.	No works cited = 0 for project.	No works cited = 0 for project.

PRESENTATION & VISUAL: 68 points

	4	3	2	1
Timing (8)	Fits time requirement- min 15 minutes	Almost fits time requirement- min 15 minutes	Under 10 minutes	Under 5 minutes.
Presentation (12)	Presented in an easy-to-follow format,. Correctly uses diagrams and other design elements to enhance presentation Includes written text with no errors in mechanics or spelling	Presented in an easy to follow format. Includes appropriate technology Uses diagrams and other design elements that support presentation. Includes written text with few errors in mechanics or spelling	Presentation is somewhat easy to follow. Includes some diagrams and other design elements.	Presentation is not easy to follow. Minimal diagrams and other design elements are included. Uses design elements that confuse or distract audience Includes written text with several errors in mechanics or spelling
Accuracy of information presented (16)	Information included is correct & accurate information about the system. All questions listed in requirements are accurately, extensively and completely answered.	Information included is mostly correct information about the system. All questions listed in requirements are answered completely, minor errors present.	Information included has some minor errors in the information about the system. Majority of questions listed in requirements are answered correctly. Some errors are present	Information included has major errors regarding information about the system. Many questions listed in requirements are not answered or are answered incompletely or incorrectly.
Visual or hands on activity (24)	Interesting, effective, creative and varied use of activity or visual. Relates to system.	Creates visuals or activity that illustrates the system.	Visuals or hands-on activity mostly relate to system	Includes visuals or activity that are unrelated to system
Works Cited for 2 sources (8)	Works cited. Uses at least 2 sources present. Proper MLA format followed for diagrams and slide information.	No works cited = 0 for project.	No works cited = 0 for project.	No works cited = 0 for project.

