Human Body Systems
Course Syllabus 2021-2022
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Course Description

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Exploring science in action, students build organs and tissues on a skeletal Maniken®; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases.

Goals for Student Learning

Unit 1: Identity The goal of Unit 1 is to engage students in a discussion of what it means to be human. Students investigate the body systems and functions that all humans have in common and then look at differences in tissues, such as bone and muscle, and in molecules, such as DNA, to pinpoint unique identity.

Unit 2: Communication The goal of Unit 2 is for students to investigate modes of communication within the human body as well as the ways the human body communicates with the outside world. Students map the function of key regions of the brain and explore how the body detects, processes, and responds to internal and external stimuli.

Unit 3: Power The goal of Unit 3 is for students to investigate the human body systems that work to obtain, distribute, or process the body's primary resources for energy and power—food, oxygen, and water.

Unit 4: Movement The goal of Unit 4 is for students investigate movement of the human body as well as the movement of substances within the body.

Unit 5: Protection The goal of Unit 5 is for students to explore ways in which the human body protects itself from injury and disease.

Textbook and Materials

- *1.5-2 inch Binder & Paper*
- *Lab Gloves*
- *Pens/Pencils*
- *HCPL Library Card*
- *Headphone/Earbuds*
- *School-issued laptop*
- *Accounts with various online services will also be required throughout the year.*

Course Outline

Unit 1: Identity Students play the role of forensic anthropologists as they unlock the clues of identity found in bone and use restriction analysis and gel electrophoresis to analyze differences in DNA. Students begin to study histology and build upon their knowledge of human tissue. In the HBS course, students will be working with an Anatomy in Clay™ two foot skeletal model. Students will work in pairs on an assigned Maniken® model and will use clay to build various organs, tissues, and vessels on the skeletal frame. Over the year each Maniken model will take on a unique identity. Even though students are technically building the same structures on their model, students will notice that the Manikens do not all look the same. Faces will look different. Muscles may be more defined. Blood vessel placement may vary slightly. The Maniken may manifest a disease or illness. The core remains the same, but the specific details will lead to the individual.

Unit 2: Communication Students investigate the roles of electrical and chemical signals in communication and response in the human body. They explore the ways in which hormones and the endocrine system control body function in order to solve a medical mystery. Students compare response time to reflex and voluntary actions using data acquisition software, and they design experiments to test factors that can impact this response. By investigating the anatomy and physiology of the human eye, students learn how the body receives and interprets stimuli from the outside world.

Unit 3: Power Students make a model of the digestive system and design experiments to test the optimal conditions for enzymatic digestion. They explore lung function by diagnosing and treating a patient with breathing problems and use probes and data acquisition software to monitor their own lung function. Students investigate the anatomy and physiology of the urinary system and run simulated urinalysis to identify health conditions and diagnose disease.

Unit 4: Movement By building muscle groups on a skeletal model, students learn how a muscle's structure is directly related to its function and to the actions it can produce. Students design experiments to test the requirements for muscle contraction and create models to show relaxation and contraction of the sarcomere. A study of blood flow illustrates the roles that smooth and cardiac muscles play in the transport of substances around the body. At the end of the unit, students combine information about power and movement to describe how the body fuels and responds to exercise. Playing the role of biomedical professionals in a combined medical practice that caters to athletes, students design a comprehensive training plan for an athlete. The plan includes all aspects of training, from diet and exercise to hydration and injury prevention.

Unit 5: Protection Before students investigate specific defense mechanisms and the immune system, they explore the protective functions of skin, bone, and the feeling of pain. Antigen-antibody interactions are introduced as well as the structure of the lymphatic and immune system. Students analyze data from a fictional illness and relate antibody response to the action of specific white blood cells.

HCPS Grading Policy

Examples of Product, Process, and Practice		
PRODUCT (50%) *Culminating Demonstration of Knowledge*	**PROCESS (30%)** *Addressing Specific Short-Term Learning Outcomes*	**PRACTICE (20%)** *Building Attitudes, Habits, and Skills*
Does it measure how well students achieved specific learning goals, standards, and/or competencies?	Does it provide feedback to students regarding growth towards the attainment of specific learning goals, standards and competencies?	Does it allow students to practice skills and/or reinforce content learning?
• Primarily completed in presence of teacher • Rubric aligned to standards • Accuracy graded	• Primarily completed in presence of teacher • Rubric aligned to standards • Accuracy graded	• Graded for completion and participation

Extra credit will not be given for non-academic purposes

Mastery Assessments

One of the core elements of gamification is the ability for a student to get immediate feedback, learn from their mistakes, and try again. As such there will be a small quiz for every activity (i.e. 1.1.1) that students must complete successfully to move on to the next piece of content.

If a student does not successfully pass the boss battle, they will have to retake the quiz. Students will be told what questions they got wrong but not what the correct answers are. Students are expected to revisit the applicable instruction before taking the quiz again. If a student is unsuccessful passing the quiz after 3 attempts, they are locked out and must visit their teacher to get clarification and move on.

Accumulation Grading

The most shocking element of game design in a classroom for most parent and students is the concept of building your grade. As described in the video from the X-Prize foundation most classes think of grading as starting with an A and that grade falling over the course of the semester with every mistake. However, in game design you build your grade from nothing, every action you perform will raise your grade. This means that at the start of a unit you will see a grade book full of zeros and you will build your grade up as high as you can. To provide you correct feedback, grades will be updated weekly.

Absent Work Policy

All assignments should be submitted on time. Students will be given the number of class periods equal to the number of lawful class periods absent to turn in completed make up assignments without penalty. If a student is unlawfully absent, work will be accepted (for the next 2 class periods after the due date) with a penalty of one letter grade off the assessed value.

Late Work Policy

All assignments should be submitted on time. If a student submits an assignment late (past the due date) the student can submit the assignment before the next HAC grade update with no penalty. After that period, the late penalty will be one letter grade.

Academic Integrity

Academic integrity is taking responsibility for the quality and completion of one's own work. Academic dishonesty is taking someone else's work and claiming it as one's own. Students at Bel Air High School are responsible for knowing what is considered to be Academic Dishonesty and the subsequent consequences. More information can be found in the BAHS Student Planner.

Classroom Rules and Procedures

Dissections: There is a participation grade associated with the dissections. The animals used in this class are to be treated with respect and care. Any cruelty to these animals will result in a zero for the participation grade of that dissection and you will be excluded from all future dissections.

Cell Phone Policy

Students will silence their electronic devices when entering the classroom. Students will place these devices in teacher designated areas for the class period. The devices will remain in the teacher designated areas unless teachers explicitly tell students to use them as a part of classroom instruction.

- Devices will remain in the teacher designated area during bathroom visits.
- Devices will be retrieved from the teacher designated area at the end of the class at the direction of the teacher.
- School-appropriate cellphone use is permitted during class changes and lunch. Students are not permitted to make phone calls during school hours.
- Students will NOT be permitted to carry their electronic devices in a book bag throughout the school day.

If the electronic device policy is violated, the student shall then be subject to disciplinary action up to, and including, confiscation of the device as well as an office referral.

Bel Air High School
Digital Teaching and Learning (DTL)
Virtual Learning Expectations and Norms

It is important to remember that the virtual classroom, while different from a face-to-face classroom setting, remains a classroom; subsequently, standards of professional behavior and expectations for polite interactions still exist.

"Good netiquette means conducting yourself in an online class with the same respect, politeness and professionalism that you would exhibit in a real-life classroom." – Erin Lynch, Senior Educator at Test Innovators

All BAHS students are expected to adhere to the following expectations during online instruction.

Expectations for How to Communicate during Online Instruction
Remember: Human beings are on the other side of your written communication.

- ✔ **When communicating electronically, whether in the "chat," through email, as part of a discussion post, in a shared document, or by some other method, your written words are read by real people, all deserving of respectful communication.**
  - Before you press "send" or "submit," pause and ask yourself, "Would I be okay with this if someone else had written it?" or "Would I be okay if someone said this to or about me?"
  - If your teacher incorporates a discussion board into a lesson, be cautious about attempts to use humor. Do not write anything that could be perceived as angry or sarcastic; without hearing the tone of your voice or being able to see your facial expressions, your peers might not realize you are joking.
  - Keep your posts appropriate to the assignment, polite, and kind.
  - Avoid posting anything in the "chat" during a Teams meeting unless directed to do so by your teacher.

- ✔ **Represent yourself professionally when communicating "verbally" (i.e. discussion boards, electronic chat, Socratic discussions, etc.).**
  - Know what you are talking about and state it clearly.
  - Be pleasant and polite.
  - Do not "YELL!!!" by using all caps or multiple exclamation marks, even if you disagree with what someone has written.
  - Be mindful of your use of emojis.
  - Check for spelling and grammar errors.

- ✔ **Present yourself professionally when communicating electronically.**
  - Make sure you are appropriately clothed.
    - Remember: Even though you are at home when participating online, you are still involved in a classroom setting and should therefore wear clothing appropriate for a school environment.
      - For example, it would be inappropriate for you to be on camera in a bathing suit, even if you happen to be sitting outside at a pool.

     ○ Rule of thumb: If what you are wearing is not something that would be appropriate for you to have on while interacting with your teacher during a normal school day, do not wear it while on camera.

  ● Be mindful of messaging on clothing, hats, or headwear.
    ▪ We will adhere to HCPS specifications and BAHS expectations in this matter. Displaying language, images, symbols, or messaging that does not follow HCPS guidelines or meet BAHS's standards of professionalism as specified in our *Habits of Success* will not be allowed.

✔ **Be aware of your physical surroundings (i.e. your environment) when communicating electronically.**
  Think about what is on your walls and/or in your background. Displaying language, images, symbols, or messaging that does not follow HCPS guidelines will not be allowed. Let other people in the household know when you are online and communicating with your camera and/or mic on. You do not want to inadvertently catch someone off guard. Eliminate environmental distractions.
  ● Turn off or mute your cell phone.
  ● Turn off the TV and/or radio to minimize background noise.
  ● Clear the room of noisy pets.
  Keep your mic muted unless directed by your teacher to participate verbally.
  Try to find a space such as a kitchen table, a countertop, or a desk from which to work; avoid having your camera on while lying in bed.

Expectations to Meet when Submitting Work Electronically

✔ **Teachers will be evaluating and assessing many pieces of students' work, so be sure to adhere to the submission guidelines set by each of your teachers, including**
  where completed work should be submitted.
  ● Ex. If a teacher directs you to submit an assignment via Itslearning or NearPod, do not send it as an attachment in an email.
  the type of document to submit.
  ● Ex. If a teacher asks for a power-point, do not submit a word document.
  the naming conventions as specified in the assignment.
  ● Ex. If a teacher directs you to name an assignment "DBQ #1," do not submit an assignment saved as "My Work."
    ▪ Work that does not follow submission guidelines may require resubmission to meet the assignment's specifications, which can cause a delay in assessing, grading, and providing feedback.

Expectations to Meet when Communicating Electronically with School Personnel (teachers, counselors, support staff, administrators)

✔ **Use HCPS Student Email Only**
  When it is necessary to send an email, email directly through your HCPS-student account. Students should not initiate communication with teachers via personal emails.

✓ Include **Course/Period (Ex: English 10/2A)** in the subject line of the message.
> Failing to use your HCPS account and/or include **Course/Period** in the subject line may delay or prevent a response.

✓ Adhere to the following writing standards
> Begin all email correspondence with an appropriate greeting/salutation.
> - Ex: *Hi, Ms. Jones,*
>   - Tone is easily misunderstood in electronic exchanges; skipping this step can make your email sound unintentionally rude.
>
> Provide some context for the purpose of your email.
> - Ex: *I'm emailing you because I can't remember how to submit my assignment on Itslearning.*
>   - Teachers will need this context to provide you a specific response.
>
> Make sure that your questions are direct but politely worded.
> - Ex: *Can you please remind me where I can find these directions?*
>   - If your questions are too vague, your teacher will not be able to determine how to help you.
>
> End your email with an appropriate closing.
> - Ex: *Thank you for your help.*
>   - Skipping this step can make your email sound too curt or demanding.
>
> Include your name after the closing.
> - Ex: *John Doe*
>   - Proofread and spell check before you hit "send."

> Sending an email with multiple typos is unprofessional and can interfere with the clarity of your message, as can use of abbreviations and slang. Email communication with school personnel is not synonymous with posts on social media such as Twitter or Snapchat. Punctuation matters. Capitalization matters. Formal language matters. Use these writing conventions consistently and purposefully, just as if you were communicating with your boss in a workplace setting.

Reminders about Your Digital Footprint

✓ Remember: Your account can be traced back to you easily, even if you post under an alias or a made-up handle. You leave data footprints whenever you are online. HCPS's Office of Technology can identify when you log on and off, when you access or open a folder or document, and when you submit an item. This data is all stored and can be retrieved.

Reminder about Academic Integrity

✓ Academic integrity is of the upmost importance whether you are learning in a traditional face-to-face environment or learning virtually. Please see the full BAHS student handbook for our academic integrity policy.