

Dr. Daniluk  
vdaniluk@lakewoodpiners.org  
Room B225

**Course Description:**

PLTW's mission statement is to create courses aimed to develop the knowledge and skills necessary to compete in the workforce, solve important challenges, and contribute to global progress.' Much of the class will require student research and becoming educated on a subject in a group setting. The primary goal of this course is to learn and apply biomedical knowledge to the human body. Students will be actively involved in a wide variety of projects, presentations, research, dissection, building models, learning of computer software, labs, and activities. This course is comprised of four units that continually reveal topics addressed in patient cases. As subject content is revealed objectives and essential questions are addressed and can be found on Google Classroom.

**Course Overview**

Unit 1 - Road to Rehabilitation

Unit 2 - Research Read

Unit 3 - Adventure Awaits

Unit 4 - Patient Perspectives

By the end of this course students will:

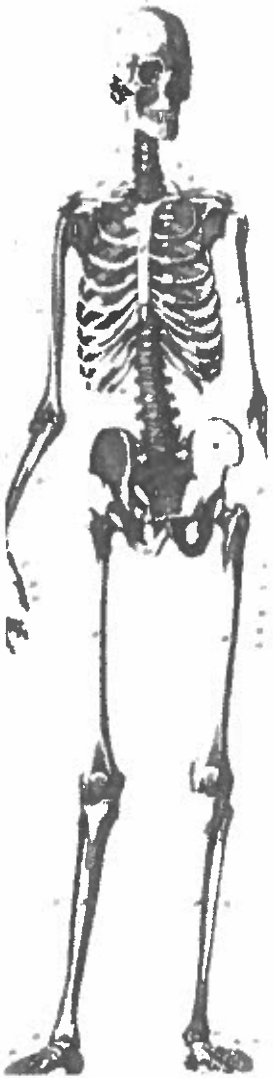
- Recognize the connection between human body systems
- Identify and be able to use the terminology, technology, equipment and techniques that biomedical professionals use.
- Understand the diverse set of careers and related skills in the biomedical science skills

**Required Materials:**

- 3 ring binder with dividers

**Technology Use:**

- o Note: Some assignments will be required to be submitted electronically.
- o You will be assigned a laptop for this class. It is your responsibility to make sure that you log out of your laptop at the end of class, return the laptop to the cart in the correctly numbered slot and plug in the charger.
- Handouts will be made available electronically via google classroom. Students will receive paper copies of most handouts as well.
- Students will complete some assignments electronically via Google Docs / Slides / Sheets, Microsoft Word / PowerPoint / Excel, and/or other computer programs as designated by the teacher.



## **Grading:**

The following scale will be used for grading each marking period.

**70%- Tests**

**25% Quizzes/ Assignments**

**5%- Homework**

## **Attendance / Lateness Policy:**

- Students are expected to be on time to class every day.
- Students who are late must have a pass that is signed by a staff member that includes the date and time for which it is valid.
  - o 3 unexcused lates will result in an afterschool detention and home contact, the 4<sup>th</sup> unexcused lateness will result in an office referral.



### **HBS Manikens**

You will be assigned a Maniken (™) in this class. You are responsible for taking care of your manikin and the clay tools assigned to you.

### **Late Work Policy:**

- It is vital that all work is completed and submitted on time. In doing so, your teacher will be able to address misconceptions and reinforce concepts before moving on to the next concept.
- Assignments are due when requested for by the teacher. An assignment due at the beginning of the class that is not turned in when requested is considered late (even if it is turned in at the end of the class) and will be subject to a grade reduction.

### **Make-Up Work Policy:**

- Students are responsible for contacting the teacher to obtain assignments missed on the date(s) of an absence.
- Regardless of the reason for an absence, you will be allowed 2 days to complete your missing work. You will be expected to check google classroom for assignments and any work you missed during your absence.
- If an assignment is turned in beyond the allotted two days per day absent, then the assignment is subject to the late work policy described above.
- Assignments due the day of an absence are due the day the student returns to class. Assignments not turned in when the student returns to class are subject to the late work policy described above.

## **Classroom Expectations:**

*BE RESPECTFUL*

*BE RESPONSIBLE*

*BE READY*

1<sup>st</sup> offense: verbal warning

3<sup>rd</sup> offense: detention and home contact

2<sup>nd</sup> offense: student-teacher conference and home contact

4<sup>th</sup> offense: office referral and home contact

## **Academic Integrity:**

- Integrity is at the heart of a sound academic policy. The integrity of a school course and program depends on the honest completion of student work. Cheating and plagiarism violate the most basic understanding between a student and a teacher that a student's work is his/her own and occurs when someone takes credit for something he/she did not do.
- Examples of cheating include but are not limited to:
  - o Copying someone else's work.
  - o Allowing someone else to copy his/her work.
  - o Allowing someone to complete his/her work.
  - o Completing someone else's work.
  - o ChatGPT
- Plagiarism is the representation of someone else's ideas, statements, or words as one's own without giving credit. Any direct statements from outside sources must be properly cited using standard APA format.
- Students found to have cheated or plagiarized work will be referred for administrative disciplinary action and will receive a 0% for the original assignment

I look forward to a fun and productive class! If you have any concerns or questions, feel free to discuss these with me in person, or contact me any time by email ([vdaniluk@lakewoodpiners.org](mailto:vdaniluk@lakewoodpiners.org))

## 9.3 – Career & Technical Education (CTE)

### Content Area: 21<sup>st</sup> Century Life and Careers

<b>CONTENT AREA:</b>	<b>9.3 CAREER AND TECHNICAL EDUCATION</b>
<b>HEALTH SCIENCE CAREER CLUSTER*</b>	
<b>Number</b>	<b>Standard Statement</b>
<i>At the end of Grade 12, Career and Technical Education Program completers will be able to:</i>	
<b>CAREER CLUSTER*:</b>	<b>HEALTH SCIENCE (HL)</b>
9.3.HL.1	Determine academic subject matter, in addition to high school graduation requirements, necessary for pursuing a health science career.
9.3.HL.2	Explain the healthcare workers' role within their department, their organization and the overall healthcare system.
9.3.HL.3	Identify existing and potential hazards to clients, coworkers, visitors and self in the healthcare workplace.
9.3.HL.4	Evaluate the roles and responsibilities of individual members as part of the healthcare team and explain their role in promoting the delivery of quality health care.
9.3.HL.5	Analyze the legal and ethical responsibilities, limitations and implications of actions within the healthcare workplace.
9.3.HL.6	Evaluate accepted ethical practices with respect to cultural, social and ethnic differences within the healthcare workplace.
<b>PATHWAY:</b>	<b>BIOTECHNOLOGY RESEARCH &amp; DEVELOPMENT (HL-BRD)</b>
9.3.HL-BRD.1	Summarize the goals of biotechnology research and development within legal and ethical protocols.
9.3.HL-BRD.2	Apply the fundamentals of biochemistry, cell biology, genetics, mathematical concepts, microbiology, molecular biology, organic chemistry and statistics to conduct effective biotechnology research and development of products.
9.3.HL-BRD.3	Demonstrate basic knowledge of recombinant DNA, genetic engineering, bioprocessing, monoclonal antibody production, nanotechnology, bioinformatics, genomics, proteomics and transcriptomics to conduct biotechnology research and development.
9.3.HL-BRD.4	Demonstrate the principles of solution preparation, sterile techniques, contamination control, and measurement and calibration of instruments used in biotechnology research.
9.3.HL-BRD.5	Determine processes for product design and production and how that work contributes to an understanding of the biotechnology product development process.
9.3.HL-BRD.6	Summarize and explain the larger ethical, moral and legal issues related to biotechnology research, product development and use in society.

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<b>HEALTH SCIENCE CAREER CLUSTER*</b>	
<b>Number</b>	<b>Standard Statement</b>
<b>PATHWAY:</b>	<b>DIAGNOSTIC SERVICES (HL-DIA)</b>
9.3.HL-DIA.1	Communicate key diagnostic information to healthcare workers and patients in an accurate and timely manner.
9.3.HL-DIA.2	Assess and report patient's/client's health status in order to monitor and document patient progress.
9.3.HL-DIA.3	Demonstrate the principles of body mechanics for positioning, transferring and transporting of patients/clients, and perform them without injury to the patient/client or self.
9.3.HL-DIA.4	Explain procedures and goals to the patient/client accurately and effectively, using strategies to respond to questions and concerns.
9.3.HL-DIA.5	Select, demonstrate and interpret diagnostic procedures.
<b>PATHWAY:</b>	<b>HEALTH INFORMATICS (HL-HI)</b>
9.3.HL-HI.1	Communicate health information accurately and within legal and regulatory guidelines, upholding the strictest standards of confidentiality.
9.3.HL-HI.2	Describe the content and diverse uses of health information.
9.3.HL-HI.3	Demonstrate the use of systems used to capture, retrieve and maintain confidential health information from internal and external sources.
<b>PATHWAY:</b>	<b>SUPPORT SERVICES (HL-SUP)</b>
9.3.HL-SUP.1	Describe, differentiate and safely perform the responsibilities of healthcare support services roles.
9.3.HL-SUP.2	Demonstrate work practices that maintain a clean and healthy healthcare facility to reduce or eliminate pathogenic organisms.
9.3.HL-SUP.3	Follow established internal and external guidelines in order to provide high-quality, effective support services in the healthcare facility.
9.3.HL-SUP.4	Maximize available resources for proper care and use of healthcare equipment and materials.
9.3.HL-SUP.5	Implement healthcare facility standards in order to maintain high-quality healthcare facilities.

<b>PATHWAY:</b>	<b>THERAPEUTIC SERVICES HL-THR</b>
<b>9.3.HL-THR.1</b>	Utilize communication strategies to answer patient/client questions and concerns on planned procedures and goals.

**9.3 – Career & Technical Education (CTE)  
Content Area: 21<sup>st</sup> Century Life and Careers**

<b>CONTENT AREA:</b>	<b>9.3 CAREER AND TECHNICAL EDUCATION</b>
<b>HEALTH SCIENCE CAREER CLUSTER*</b>	
<b>Number</b>	<b>Standard Statement</b>
<b>9.3.HL-THR.2</b>	Communicate patient/client information among healthcare team members to facilitate a team approach to patient care.
<b>9.3.HL-THR.3</b>	Utilize processes for assessing, monitoring and reporting patient's/clients' health status to the treatment team within protocol and scope of practice.
<b>9.3.HL-THR.4</b>	Evaluate patient/client needs, strengths and problems in order to determine if treatment goals are being met.

# Next Generation Science Standards

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## From Molecules to Organisms: Structures and Processes

HS.LS1.2

Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Unit 1     Unit 2     Unit 3     Unit 4

HS.LS1.3

Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Unit 1     Unit 2     Unit 3     Unit 4

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## Engineering Design

HS.ETS1.1

Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

Unit 1     Unit 2     Unit 3     Unit 4

HS.ETS1.3

Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

Unit 1     Unit 2     Unit 3     Unit 4

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## Disciplinary core ideas

### ETS1.A Engineering Design - Defining and Delimiting Engineering Problems

• Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them. (secondary to HS-PS2-3)

Unit 1     Unit 2     Unit 3     Unit 4

### ETS1.B Engineering Design - Developing Possible Solutions

• When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts. (HS-ETS1-3)

Unit 1     Unit 2     Unit 3     Unit 4

### LS1.A From Molecules to Organisms: Structures and Processes - Structure and Function

• Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)

Unit 1     Unit 2     Unit 3     Unit 4

## Next Generation Science Standards

- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

Unit 1     Unit 2     Unit 3     Unit 4

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### Science and Engineering Practice

Practice 1 - Asking questions and defining problems in 9-12 builds on K-8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

- Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on a model or theory.

Unit 1     Unit 2     Unit 3     Unit 4

Practice 2 Developing and Using Models

Modeling in 9-12 builds on K-8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.

- Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.

Unit 1     Unit 2     Unit 3     Unit 4

- Design a test of a model to ascertain its reliability.

Unit 1     Unit 2     Unit 3     Unit 4

Practice 3 Planning and Carrying Out Investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

- Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled.

Unit 1     Unit 2     Unit 3     Unit 4

- Select appropriate tools to collect, record, analyze, and evaluate data. Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.

Unit 1     Unit 2     Unit 3     Unit 4

## Next Generation Science Standards

### Practice 8 Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in 9-12 builds on K-8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs.

- Critically read scientific literature adapted for classroom use to determine the central ideas or conclusions and/or to obtain scientific and/or technical information to summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

Unit 1     Unit 2     Unit 3     Unit 4

- Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.

Unit 1     Unit 2     Unit 3     Unit 4

- Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible. Communicate scientific and/or technical information or ideas (e.g., about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e., orally, graphically, textually, mathematically).

Unit 1     Unit 2     Unit 3     Unit 4

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### Crosscutting Concepts

#### Structure and Function

- The way an object is shaped or structured determines many of its properties and functions.

Unit 1     Unit 2     Unit 3     Unit 4

#### Stability and Change

- Feedback (negative or positive) can stabilize or destabilize a system.

Unit 1     Unit 2     Unit 3     Unit 4



## Human Body Systems

Dr. Valerie Daniluk  
PLTW Biomedical Science Teacher  
Lakewood High School

### Students...

I have read and understand all information contained in this syllabus. I will adhere to all procedures, policies, rules, and regulations of the class, the school, and the school system. I will be an active and productive member of class and will do my best to ensure that I am making the best decisions and doing all that I can to help myself and my classmates succeed.

Student name (print): \_\_\_\_\_

Student name (sign): \_\_\_\_\_

### Parents / Guardians...

I have read and understand all information contained in this syllabus. I will be an active member of my child's education and do all that I can to help him/her succeed.

Parent / Guardian Name(s) (print): \_\_\_\_\_

Parent / Guardian Name(s) (sign): \_\_\_\_\_

Phone number(s): \_\_\_\_\_

E-mail address: \_\_\_\_\_

Feel free to add any comments or additional information on the back of this paper.