

Principles of Biomedical Science Syllabus

RCAS Policies/Procedures

Students will be required to follow all RCAS policies and procedures. To view the RCAS High School Student Handbook, click [handbook](#).

Course Description

Students investigate the human body systems and various health conditions to determine the factors that led to the death of a fictional person and investigate lifestyle choices and medical treatments that might have prolonged the person's life, introducing students to human physiology, medicine, research processes and bioinformatics.

Grading

All grades and assignments will be weighted the same but will have a different amount of points depending on the assignment. The grading scale is as follows; A 100%-90%, B 89%-80%, C 79%-70%, D 69%-60%, F 59%-0. Grades are subject to change by the instructor as necessary.

Textbook

N/A

Reading

N/A

Optional Reading

N/A

Instructional Resources

Project Lead the Way

ARCGis

TinkerCad

Essential Questions

Unit 1

1. What are different forms of evidence, how infallible are they, and how are they useful in resolving potential criminal cases?
2. How can varying forms of evidence be evaluated for meaning?
3. How does technology help bring resolution to forensic cases? Or how does technology advance the understandings in forensic science?
4. How can the cause, mechanism, and manner of death be established?
5. What information can be collected from an autopsy?
6. How can information collected during an autopsy lead to an understanding of disease and/or cause of death?

7. In what ways are the careful evaluation of evidence and accurate recording of data critical to establishing legitimate testimony?
8. How can individual pieces of evidence, evaluated against the whole, be used to resolve questions?
9. In what ways can scientific writings and presentations be utilized to present evidence and justify conclusions?
10. To what extent can current understandings be reinforced through practice?

Unit 2

1. How can an individual's health status be assessed and evaluated?
2. What factors make an individual more susceptible to disease?
3. What are strategies for maintaining health?
4. What are effective means of communicating with others in order to reach common goals?
5. What qualities make for an effective medical professional?
6. In what ways, and for what purpose, can patient confidentiality be maintained?
7. How can changes in a genome lead to disease?
8. Why is an understanding of heredity an important factor in human health?
9. In what ways are genetic changes acquired?
10. In what ways can altered biological processes lead to disease?
11. How can the genetic health of an individual be evaluated?

Unit 3

1. In what ways, and for what purpose, can microorganisms be characterized?
2. What factors affect the growth and death of microorganisms?
3. What are effective strategies for preventing and treating disease?
4. How does an immune system identify and eradicate infection?
5. How can pieces of evidence be evaluated to form conclusions and inform decisions?
6. How can an individual's health status be assessed and evaluated?
7. How is patient case information summarized and communicated efficiently?
8. What professions respond in emergency situations, what are their roles, and how do they work together?
9. What are several career paths in the field of emergency medicine?
10. How do patient vitals and presumptive diagnoses inform the prioritization for treatment options in emergency medical situations?
11. What make for effective emergency and disaster response protocols?
12. How do medical professionals manage emergencies that involve multiple patients?
13. To respond to emergency situations, what common medical resources and facilities need to be available?
14. What are features of a user-friendly app?
15. In what ways can technology enable a faster response and quicker resolution during medical emergencies?

Unit 4

1. How do the engineering and experimental design processes enable innovation?
2. Who innovates, and why?
3. What is the process for innovation and what characteristics are required for success?

4. How do innovations impact and advance human health?
5. How does technology function as a vehicle for innovation?
6. In what ways do different types of scientists and engineers collaborate in the biomedical sciences field?
7. What are potential untapped resources that could work to advance the field of biomedical sciences?

Essential Learning Intentions

Explain the education and skills required for biomedical science professionals.

Describe the societal impact of biomedical science professionals.

Communicate effectively with a specific audience

Create an effective team environment to promote successful goal attainment.

Apply professional standards, as they relate to the personal traits of a biomedical science professional.

Devise and execute a plan to solve a problem while considering the impacts of the possible solutions.

Use data and evidence to evaluate and justify decisions.

Apply an iterative design process to creatively address a need or solve a problem.

Design and carry out an experiment that investigates a research question.

Collect and analyze experimental data to draw conclusions.

solve problems. GLP-B. Demonstrate mastery of general laboratory practice common to many biomedical science fields.

Explain the connection between structure and function in biology.

Describe how the systems of the body work together to maintain homeostasis.

Document patient information.

Synthesize complex medical information to diagnose a disease, disorder, or injury or to determine cause of death.

Respond to patient and/or community needs and propose treatment strategies for disease, disorder, injury, or the prevention thereof.

Explain the role of DNA, RNA, and proteins in the inheritance of traits and the development of diseases or disorders.

Select and use appropriate tools, techniques, and/or technologies to analyze genetic information and diagnose disease.

Explain how the composition, structure, and activities of cells build functional systems in the human body.