

Curriculum Map for: Topics in Human Biology

Prerequisites: Biology 9, Earth Science

Scope: Topics in Human Biology is a course that covers a number of high-interest current subjects in the field of Biology and Forensic Science. The course spans the entire school year and is divided into two main subjects. Semester 1 covers cutting edge high interest Topics in the field of Biology. Semester 2 focuses on topics dealing with Forensic science subjects and analysis techniques. The course integrates a variety of disciplines including science, math, and English language skills. An important component of the course includes laboratory investigations where students must apply the skills they have learned in the lecture portion of the course.

Assessment:

Assessment comes in a variety of forms and wherever possible should be used to reflect and enhance the teaching and learning process that occurs in a classroom. Assessment should not be seen as a separate activity, but as an integral part of the teaching and learning process. Alternative assessments apply to any and all assessments that differ from multiple choice, timed, one-shot approaches that characterize most standardized and classroom assessment. Authentic assessments are assessments that engage students in applying knowledge and skills in the same way they are used in the real-world. Performance assessment is a broad term, encompassing many of the characteristics of both authentic and alternative assessments.

As this course of study demonstrates, it is clear that no single type of assessment could provide an accurate measurement of the learning experience. Students should have the best opportunity to demonstrate their understanding of the learning experience. Therefore, it is suggested that a variety of data gathering methods be used such as objective tests, observations, products, written reports, performances and a collection of student works.

The **TIME** column offers a suggested time-line so that all topics listed in the **CONTENT/SKILLS** column are feasibly met. It is understood that times will need adjustments as the course develops. The **APPLICATION/PROJECT IDEAS** column offers suggestions and sources for the teacher. This column should be updated periodically to keep current and as new ideas are generated. The **KEY IDEA/PERFORMANCE INDICATOR** column coordinates topics with the NYS standards.

TIME	CONTENT / SKILLS	APPLICATIONS / IDEAS	KEY IDEA / PERFORMANCE
SEMESTER 1			
6 weeks	<u>Communicable Disease and Epidemiology</u>		
	Disease transmission	Hand-shake / infection tree activity	
	Epidemiology: tracing the spread of		
	Discussion of communicable diseases:		
	Avian flu disease characteristics community planning for a pandemic virology (viral mutation, virulence of strains)		
	HIV/AIDS disease characteristics cultural aspects of disease transmission economic impacts	ELISA LAB (BioRad Lab Kit)	
	Hemorrhagic diseases Ebola Lassa Marburg		
	ELISA technique and applications		
4 weeks	<u>Human Nervous System</u>	Left vs. right Brained Lab	
	Pathology of the nervous system	Swim cap Brain Anatomy Lab	
	Nervous system anatomy and function		
	Biology of addiction		
1 week	<u>Human Reproduction</u>		
	Human reproductive system review		
	Fetal development		
1 week	<u>Stem Cells</u>		
	Cell differentiation		
	Stem cell types		
	Applications of stem cell research		
	Ethical concerns with stem cells		
2 weeks	<u>Cloning</u>		
	Cloning techniques		
	Therapeutic cloning		
	Mammalian cloning		
6 weeks	<u>Genetic Engineering</u>	Paper Plasmid lab	
	Bacteriology	BioRad Bacterial Transformation Lab	

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	Genetic engineering methods		
	Role in food and medicine		
	Transgenic animals		
	Mouse models and research		
	Bacterial transformation		
SEMESTER 2			
3 weeks	<u>DNA Analysis</u>		
	Structure of DNA	CAT lab	
	Gel electrophoresis	Sickle Cell Anemia Lab	
	Applications of DNA analysis: isolating diseased genes paternity testing crime scene evidence analysis DNA fingerprinting		
1 weeks	<u>Crime Scene Analysis</u>	Who Stole the Cookie Lab	
	Crime scene evidence collection	On-line Crime scene Analysis Lab	
	Observational methods		
	Trail of evidence		
1 week	<u>Human Blood Basics</u>		
	Blood typing	Neo-sci online tutorial	
2 weeks	<u>Blood Spatter Analysis</u>	Ward's Blood Spatter Kit	
	Lines of convergence		
	Point of origin		
	Review of basic trigonometry		
	Angle of impact		
	Height of blood source		
2 weeks	<u>Time of Death</u>		
	blowfly models insect life cycle	Fly larval development lab (growing maggots)	
	applications for determining time of death muscle physiology		
	Stomach content analysis		
2 weeks	<u>Osteobiology</u>		
	Human Skeletal Structure		
	Bone Analysis: sex determination individual's age disease and injuries individual's occupation	Ward's Bone Kit	
	Teeth and Dental Records individual identification bite marks age determination		

TIME	CONTENT / SKILLS	APPLICATIONS / IDEAS	KEY IDEA / PERFORMANCE
2 weeks	<u>Fingerprinting</u>		
	Patterns		
	Latent Print Lifting Techniques		
	Electronic Government Databases	Class fingerprinting lab	
2 weeks	<u>Ballistics</u>		
	Crime Scene Evidence		
	Matching Bullets to Guns		
	Bullet Trajectory		
2 weeks	<u>Trace Evidence</u>		
	Hair Evidence and Analysis	Lab	
	Fiber Evidence and Analysis		
	Pollen		
1 weeks	<u>Handwriting Analysis</u>	Handwriting Analysis Lab	
	Techniques and Applications		
if time permits	<u>Other</u>	Foot casting lab	
	Impressions: tire and foot		

