Curriculum Sample Template
Max. 8 Pages

Grade Level	8	**Content Area**	Science
Course Title (grades 9-12 Only)			
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	In addition to having studied basic biological structures (including the cell) and fundamental biological dichotomous keys, students will have completed the "Characteristics of Life" lesson which will introduce them to the seven characteristics: 1) Biologically organized; 2) Acquire Materials and Energy; 3) Reproduce; 4) Respond to stimuli; 5) Homeostatic; 6) Grow and develop; 7) Able to adapt. Students will also have previously discussed animal behavior in relation to environment. This lesson will build upon concepts of adaptation and homeostasis in particular.		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	The science program will employ the Socratic Method and discovery learning techniques as described and developed in the ASU Modelling Method program. Where appropriate, science teachers will also use Socratic techniques from Michael Strong's *The Habit of Thought*. *(Portions of this lesson were adapted from curriculum materials written by Kathy Foust and Karyn Coulon from Masconomet Regional High School.)*		
Standard Number and Description *List the Number* and the full description for the Required Standard or Science Performance Objective listed in section A.6.*	8.4.4.2 Grade: 8 Strand: 4 – Life Science Concept: 4 – Diversity, Adaptation and Behavior PO: #2 - Describe how an organism can maintain a stable internal environment while living in a constantly changing external environment.		
Materials/Resources Needed	Thermometers, alcohol swabs, graph paper, multimedia projector.		

**** Standard Number**: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Standard (e.g., 6.EE.7). For HS Math, use Conceptual Category-Domain, Standard (e.g., A-REI.6). For Science, use Grade, Strand, Concept, PO (e.g., 4.1.3.1).*

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Lesson (add as needed)	**Instructional Strategies**	**Student Activities**
1	This is a 3 day lesson. Day 1 In this activity, students learn how the human body self-regulates to maintain a stable internal environment despite changes in the external environment -- a process called homeostasis. They begin by looking at how the human body regulates temperature and the value of a fever in fighting infection. The teacher will begin by asking students the following questions: • What is considered to be normal body temperature? • Why do you think that normal body temperature is as high as the temperature on a hot summer day? • How do you think an organism and its cells would be helped by a warm temperature? Next, the teacher will ask students take their own temperature and report it to the class. Have the class plot these temperatures on a graph to find the mean value and the degree of variation. The teacher will then ask: Why do you think there is so little difference in normal human body temperature while humans vary so much in other traits?	Students will engage in brief discussions to answer the teacher's questions. Students will perform the brief lab activity and graph the data and then will engage in discussion.

2	Day 2 The teacher will review the discussion and data from the previous day and then show students a video entitled "Fever!" The teacher will then ask students to brainstorm about other ways does in which the body self-regulates? This discussion should include references to heart rate, respiration, blood pressure, digestion, blood sugar, etc. Following the discussion, the teacher will introduce the term "homeostasis" and ask student to explain what they already understand about it. The teacher will then present a general diagram of a homeostatic system which includes a sequencing of concepts labeled as: control center, sensor, stimulus, effect, negative feedback and positive feedback. The teacher will next assign each student a body system to research in terms of homeostasis. Student research should explain how this body system helps to maintain homeostasis within the body and provide 3 examples of ways in which this system may be damaged so as to not be able to fulfill its role in the homeostatic function or three ways in which the system can be stressed by an externally changing environment.	After watching the video on fever, students will discuss the following: • What sets body temperature? What can change the set point for body temperature? • How does stress affect body temperature? • How is fever different from a simple rise in body temperature? • What role might fever play in fighting infection? • Why does the body sweat when a fever breaks? Students will discuss various concepts of homeostasis and ask questions about the diagram and process presented by the teacher. **Summative Assessment #1**: Students will independently research (using any resource including the textbook, internet, etc.) homeostasis for their assigned body system. Students will write one paragraph responses to be turned in the next day.
3	Day 3 After collecting student paragraphs, the teacher will organize	**Summative Assessment #2**: Students will work in groups of 4

	students into small groups according to the body systems they researched the previous night. The teacher will then ask each group to prepare a diagram of how their assigned body system works to achieve homeostasis in circumstances in which the environment is changing. After the teacher has guided a discussion among students about their diagrams, he/she will assign each student a disease to research. Specifically, each student must write a short essay that explains what body system the disease impacts as well as how it relates to homeostasis. The written portion of the essays should be at least 1 page in length, but no more than 2 pages. Students should include a properly formatted bibliography (which will be reviewed, but which will have been covered in previous classes) and any relevant diagrams.	or 5 to produce a diagram of their body system with respect to homeostasis. Groups will then present their diagrams to the class for comments and questions. When all groups have presented, the students should make comparisons of their diagrams to find similarities and differences. Students should pay particular attention to the different ways in which the environment changes and how the body has developed varying systems to maintain homeostasis under such conditions. **Summative Assessment #3**: Students will begin to research the disease they have been assigned. Students will be given one week to produce a short essay on their disease and its effect on homeostasis.

Summative Assessment Items: *Attach here.* For each summative assessment item, include an answer key or scoring rubric describing how points are to be awarded.

Summative Assessment #1: Homeostasis and Body Systems Paragraph

	1	2	3	4
Explanation of how the body system contributes to homeostasis	Explanation is unclear and contains incorrect information.	Explanation has some correct information but is unclearly presented.	Explanation is clear, but leaves out some important details.	Explanation is clear and thorough.
Examples of the function of damaged systems or environmental changes	Examples are provided but are incorrectly presented.	1 correct example is provided.	2 correct examples are provided.	3 correct examples are provided.
Grammar and style	The paragraph contains numerous grammatical	Grammatical errors detract from the clarity	The paragraph has some minor grammatical	The paragraph has few, if any, grammatical

	errors and is not clearly written.	of the paragraph and the style is somewhat unclear.	errors but overall is written clearly.	errors and an exceptionally clear and elegant style.

Students will also earn 2 points for the inclusion of bibliographic information.

Total Points Possible: 14
Mastery: 12 points (85%)

Summative Assessment #2: Homeostasis Diagrams for Body Systems

	1	**2**	**3**	**4**
Use of Terms	3 or fewer of the 6 terms are included.	4 of the 6 terms are included.	5 of the 6 terms are included.	All terms are included
Order of Terms	Fewer than 3 terms are correctly ordered.	3 of the 6 terms are correctly ordered.	4 of the 6 terms are correctly ordered.	All terms are correctly ordered.
Clarity of Explanation	Explanations are unclear and scientific vocabulary is not used accurately.	Explanations are somewhat muddled although scientific terms are generally used accurately.	Explanations are generally clear although greater specificity is desired. Scientific vocabulary is used appropriately.	Explanations are exceptionally clear, and student uses vocabulary accurately and appropriately.

(Diagrams written by each group will vary, but must include the following terms in the correct order: control center, sensor, stimulus, effect, negative feedback and positive feedback.)

Total Points Possible: 16
Mastery: 14 points (≈85%)

Summative Assessment #3: Homeostasis and Disease Reports

	1	2	3	4
Student research	The student's research contains serious flaws or fails to acknowledge essential elements of the biological systems.	The student's research is basic but unclearly presented, or contain inaccurate statements.	The student's research is fairly detailed and reasonably presented but may contain minor logical flaws.	The student's research is thorough, accurate, and well-developed.
Diagrams/Illustrations	The student includes diagrams, but they are inaccurate of inappropriate to the assignment.	The student includes diagrams, but they may contain inaccuracies or are used in the essay inaccurately.	The student adequately includes and uses diagrams.	The student includes detailed diagrams that help to accurately explain important elements of the essay.
Introduction	The essay does not contain an introductory paragraph giving the background of the discussion.	The introduction does not clearly give the background to the discussion of homeostasis.	The introduction provides a basic background to the essay's research.	The introduction gives good background to the process of homeostasis in a way that builds interest in the essay.
Conclusion	The essay does not contain a concluding paragraph.	The essay contains a concluding paragraph, but one which does not clearly summarize the main points.	The concluding paragraph provides a basic summation of the essay's scope.	The concluding paragraph summarizes the essay in a particularly forceful or interesting manner.
Grammar and style	The essay contains numerous grammatical errors and is not clearly written.	Grammatical errors detract from the clarity or the essay and the style is somewhat unclear.	The essay has some minor grammatical errors but overall is written clearly.	The essay has few, if any, grammatical errors and an exceptionally clear and elegant style.
Bibliography	The student includes only minimal bibliographic information which may be suspect.	The student includes bibliographic information which is improperly formatted.	The student includes bibliographic information that has only minor errors in format.	The student includes a flawless bibliography.

Total Points Possible: 24
Mastery: 21 points (≈85%)

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