

Elizabethtown Area School District

General Zoology/General Botany

Course Number: 356

Length of Course: 18 weeks

Grade Level: 10-12 Elective

Total Clock Hours: TBA

Length of Period: 84 minutes

Date Written: 2011-2012

Periods per Week/Cycle: 5 blocks/week

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Credits (if app): 1.0

Weighting: 1.0

Offered Even Years Only

Course Description:

Course prerequisite: Biology

General Zoology is a survey of the animal kingdom through comparison of live specimens and dissection of selected preserved specimens. General Botany is a survey of the plant kingdom through comparative classification of live and preserved specimens. Students will work independently on investigations, as well as collaboratively, to pose and answer research problems. This course is recommended for those students interested in a science career.

I. Overall Course/Grade Level Standards

Students will KNOW and be able TO DO the following as a result of taking this course.

- A) Apply concepts of models as a way to predict and understand science and technology.
- B) Assess and apply patterns in science and technology.
- C) Analyze as a way of relating concepts and ideas to one another by some measure.
- D) Evaluate change in nature, physical and man-made systems.
- E) Evaluate the nature of scientific and technological knowledge.
- F) Evaluate experimental information for appropriateness and adherence to relevant science process.
- G) Apply the elements to scientific inquiry to solve multi-step problems.
- H) Identify and apply the technological design process to solve problems.
- I) Explain the relationship between structure and function at all levels of organization.
- J) Analyze the chemical and structural basis of living organisms.
- K) Explain gene inheritance and expression at the molecular level.
- L) Analyze the theory of evolution.
- M) Apply advanced tools, materials and techniques to answer complex questions.
- N) Evaluate appropriate instruments and apparatus to accurately measure materials and processes.
- O) Synthesize and evaluate the interactions and constraints of science and technology on society.
- P) Analyze how human ingenuity and technological resources satisfy human needs and improve the quality of life.
- Q) Evaluate the consequences and impacts of scientific and technological solutions.
- R) Analyze biotechnologies that relate to propagating, growing, maintaining, adapting, treating and converting as applies to plants and animals.

II. Content

Major Areas of Study

List all units of study below:

Unit	Estimated Time	Materials
1. Introduction	2 weeks	Library, internet, computer enhanced presentation software and hardware (PPT, projector) AV equipment, teacher handouts, lab materials, current journals, references
2. Microscopy	1 week	Preserved and fresh specimens, teacher handouts, reference materials, lab materials
3. Collecting and Preserving	2 weeks	Preserved and fresh specimens, teacher handouts, reference materials, lab materials
4. Ecology, Biodiversity, and Conservation	2 weeks	Reference materials, lab materials, teacher handouts
5. Systems Study	9 weeks	Reference materials, lab materials, teacher handouts, AV equipment, fresh and preserved specimens
6. Research Conference	2 weeks	Computer enhanced presentation software and hardware (PPT, projector), AV equipment

III. Course Assessments

Check types of assessments to be used in the teaching of the course and provide examples of each type.

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|-------------------------|----------------------|
| Objective Tests/Quizzes | Response Journals |
| √ Constructed Responses | Logs |
| Essays | Computer Simulations |
| √ Reports | √ Research Papers |
| √ Projects | Class Participation |
| √ Portfolios | Note Taking |
| √ Presentations | Daily Assignments |
| √ Performance Tasks | √ Writing Samples |

Provide copies of common assessments that will be utilized for all students taking this course. Overall course/grade level standards will be measured by a common course assessment. Unit objectives will be measured on an ongoing basis as needed by the classroom teacher to assess learning and plan for instruction. List common assessments below and recommend date/time frame for administration (at least quarterly).

Name of Common Assessment	When given?
1. Constructed Responses ie: Unit EQ/KQ	Given throughout unit as corresponds to daily topic of study
2. Reports	As an introduction to a topic and/or a review of topic
3. Projects	Long-term over several units
4. Portfolios	Culminating collection of sample work from the semester
5. Presentation, Type I	Assigned on a rotating basis during units
Presentation, Type II	Culminating research presentation requiring various technical components as well as acceptable scientific research content
6. Performance Tasks	Each unit: progressively more demanding knowledge and skills needed to manipulate organisms
7. Research Papers	Formal scientific research paper required with

	culminating presentation.
8. Writing Samples	Some types of analysis as appropriate for content before, during, and after new information is presented: Analysis, logic, process oriented, concrete, higher-order thinking, explanations, rationale

IV. Expected levels of achievement

Current grading scale
as per school-wide directive,
currently based on percentages

PA Proficiency Levels
Advanced Proficient
Basic Below Basic

Name of Unit: Intro to Research

Essential Question: How do I design a research project?

Unit Objectives/Key Question	Priority	Aligned to Course Standard	Aligned to PA Standard
1. How do I find a research question?	E	A, C, G, O, Q, R	
2. How do I use tools to aid my inquiry?	E	A, E, G, H, J, M N, P, Q R	
3. How do I collect and interpret data?	E	All	
4. How to I use references to aid my inquiry?	E	B, D, E, F, G, M, P, Q	

Name of Unit: Microscopy

Essential Question: What processes can I use to locate and examine microscopic organisms?

Unit Objectives/Key Question	Priority	Aligned to Course Standard	Aligned to PA Standard
1. How can I interpret my results?	E	A, B, C, D, F, G, I, M, O	A.1.2, A.1.2.1

Name of Unit: Collecting and Preserving

Essential Question: How do I use preserved specimens to enhance my understanding of organism evolution?

Unit Objectives/Key Question	Priority	Aligned to Course Standard	Aligned to PA Standard
1. How do I locate field organisms?	E	B, G, M	
2. How do I preserve field organisms?	E	B, H, M, Q	

Name of Unit: Ecology, Biodiversity, and Conservation

Essential Question: How does interdependence influence populations?

Unit Objectives/Key Question	Priority	Aligned to Course Standard	Aligned to PA Standard
1. How does number of individuals within a population influence an ecosystem?	E	A, B, C, D, E, F, G, H, L, M, N, O, P, Q	B.4.2.56
2. How do numbers of species within a population influence ecosystems?	E	A, B, C, D, E, F, G, H, L, M, N, O, P, Q	B.4.2.5
3. How do stimuli/response influence organisms?	E	A, B, C, D, E, F, G, H, I, M, N, O, P, Q, R	
4. Why conserve organisms?	E	A, B, C, D, E, F, G, H, I, J, L, M, N, O, P, Q, R	B.4.2.1.2
5. How do abiotic/biotic factors influence individuals/communities?	E	ALL	B.4.2.5
6. How do current scientific advances (genetics, technology, etc.) influence changes in organisms and their relationships?	E	ALL	B.4.2.5

Name of Unit: Systems Study

Essential Question: How do form and function influence organisms?

Unit Objectives/Key Question	Priority	Aligned to Course Standard	Aligned to PA Standard
1. How can I compare/contrast organisms using systems?	E	A, B, C, D, E, F, G, H, I, L, M, N, O, P, Q	B.3.1.1, A.3.1.1, B.3.1.2, B.3.1.3
2. What are systems' components and their functions?	E	A, B, C, D, E, F, G, H, I, L, M, N, O, P, Q	A.1.1.1, A.3.2.1, A.3.1.1, A.3.2.1, A.3.2.2, A.4.1.2

Name of Unit: Research Conference

Essential Question: How do I use my new knowledge and skills to improve my world?

Unit Objectives/Key Question	Priority	Aligned to Course Standard	Aligned to PA Standard
1. How can I present my project?	E	A, B, C, F, G, H, M, N	
2. How can I assess other presentations?	E	A, B, C, F, G, H, M, N	
3. How do I inform the larger scientific community?	E	A, B, C, F, G, H, M, N	
