Warren County School District

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Aquatic Ecology

Course Number:

Course Prerequisites: Successful completion of Introduction to Environmental Science-CP or Introduction to Environmental Science or concurrently with permission of the principal

Course Description: (Include "no final exam" or "final exam required")

This course will study the complex interactions within the aquatic ecosystem. An emphasis will be placed on the identification and classification of Pennsylvania aquatic species. Appropriate lab activities will be used including elements of science inquiry, concepts of models, and the use of technological devices. Prerequisite: Successful completion of Introduction to Environmental Science CP or Introduction to Environmental Science or concurrently, with permission of the principal.

Suggested Grade Level: 10-12

Length of Course: X One Semester _____ Two Semesters _____ Other (Describe)

Units of Credit: .5 (Insert ***NONE*** if appropriate.)

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s) (Insert certificate title and CSPG#) Biology, Environmental Education

Certification verified by WCSD Human Resources Department:
X Yes _____ No

Board Approved Textbooks, Software, Materials:
Title:
Publisher:
ISBN #:
Copyright Date:
Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: September 2009

Date Approved: _____

Implementation Year: _____

Suggested Supplemental Materials: (List or insert **None**)

Course Standards

PA Academic Standards: (List by Number and Description)

3.1 Unifying Themes

12B. Apply concepts of models as a method to predict and understand science and technology.

12C. Assess and apply patterns in science and technology.

12E. Evaluate change in nature, physical systems and man made systems.

3.2 Inquiry and Design

12A. Evaluate the nature of scientific and technological knowledge.

12B. Evaluate experimental information for appropriateness and adherence to relevant science process.

12C. Apply the elements of the scientific inquiry to solve multi-step problems.

12D. Analyze and use the technological design process to solve problems.

4.6 Ecosystems and Their Interactions

12A. Analyze the interdependence of an ecosystem.

4.7 Threatened, Endangered and Extinct Species

12A. Analyze biological diversity as it relates to the stability of an ecosystem.

12B. Examine the effects of extinction, both natural and human caused, on the environment.

12C. Analyze the effects of threatened, endangered or extinct species on human and natural systems.

4.9 Environmental Laws and Regulations

12A. Analyze environmental laws and regulations as they relate to environmental issues.

WCSD Academic Standards: (List or **None**)

None

Industry or Other Standards: (List, Identify Source or **None**)

None

WCSD EXPECTATIONS

WCSD K-12 Expectations for instruction in writing, reading, mathematics and, technology have been developed and revised annually. The teacher will integrate all WCSD Expectations into this planned instruction.

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

(List Objectives, PA Standards #'s, Other Standards (see samples at end))

ASSESSMENTS

PSSA Assessment Anchors Addressed: This course is written to the 12th grade standards. No assessment anchors have been written for this level.

Suggested Formative Assessments: The teacher will develop and use standards-based assessments throughout the course.

- Pre-Assessments of prior knowledge (e.g. entrance cards or KWL chart)
- Labs/lab reports
- Bell ringers/Problems of the Day(PODs)
- Discussions
- Teacher observation/Questioning
- Graphic organizers (e.g. Venn diagrams, word mapping, webbing, KWL chart, etc.)
- Summarizing
- Retelling
- Notetaking
- Problem-based learning modules
- Authentic assessment
- Oral presentations
- Outlining
- Journaling
- Student presentations/projects
- Open-ended response
- Quizzes/tests
- Activities
- Classroom Performance System (CPS)
- White boards

Suggested Summative Assessments:

- Essays
- Open-Ended Responses
- Projects
- Quizzes/tests
- Student presentations
- Portfolios
- Lab Practical
- Lab Report

District Approved Assessment Instruments

- PSSA Tests-Grades 4, 8 and 11 only

Differentiated Instructional Assessment Strategies

Portfolio Assessment: _____ Yes __X__ No

District-wide Final Examination Required: _____ Yes __X__ No

Course Challenge Assessment (Describe):

REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

Content Sequence	Dates
I. Aquatic Ecosystems	**4 weeks**
A. Water Cycles	
B. Watersheds	
C. Stream Order	
D. Stream Continuum	
E. Types of Aquatic Environments	
F. Functions and Values of Wetlands	
II. Ecology	**2 weeks**
A. Energy Flow	
B. Functional Feeding Groups	
C. Physical and Chemical Properties of Water	
III. Biotic Factors	**6 weeks**
A. Aquatic Organisms	
B. Life Cycles of Aquatic Organisms	
C. Adaptations of Aquatic Organisms	
D. Habitats needs of Aquatic Organisms	
IV. Aquatic Resource Management	**2 weeks**
A. Fishing Regulations	
B. Water Quality Improvement	
C. Habitat and Species Management	
V. Aquatic Resource Issues	**4 weeks**
A. Biodiversity	
B. Endangered/Threatened Species	
C. Invasive Species	
D. Water Pollution	

Objectives:

1. Describe the influence of the water cycle on aquatic ecosystem
2. Identify watersheds and river systems in Pennsylvania.
3. Identify and compare stream order within a watershed.
4. Describe the niche of feeding groups in the stream continuum
5. Identify the types of aquatic environments
6. Describe the functions and values of wetlands.
7. Describe the energy flow in aquatic food chains.
8. Explain the influence of water's physical and chemical properties on aquatic organisms.
9. Describe the life cycles of various aquatic organisms.
10. Identify and describe adaptations of various aquatic organisms and their habitat needs.
11. Describe methods to improve water quality.
12. Describe methods for enhancing aquatic habitats.
13. Explain the impact of threatened and endangered species on biodiversity.
14. Explain how introduced and invasive species affect aquatic ecosystems.

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WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? ___X___ Yes _____ No
2. Does this course issue a mark/grade for the report card?

   ___X___Yes _____ No
3. Does this course issue a Pass/Fail mark? _____Yes ___N___ No
4. Is the course mark/grade part of the GPA calculation?

   ___X___Yes _____ No
5. Is the course eligible for Honor Roll calculation? ___X___ Yes _____ No
6. What is the academic weight of the course?

   _____ No weight/Non credit ___X___ Standard weight

   _____ Enhanced weight (Describe)