Warren County School District

PLANNED INSTRUCTION

# COURSE DESCRIPTION

## Course Title:\_\_\_ Exploring Technology\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Course Number: \_\_\_\_\_\_\_\_\_\_**00730**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Course Description and Prerequisites: No prerequisites; course requires a final exam.

Exploring Technology is an activity-based course that introduces students to technology by examining the basic systems of communication, manufacturing, construction, transportation and bio-related technologies. Students will study the evolution of technology, invention and innovation, impacts of technology, the systems approach and various problem-solving methods. This course provides a foundation for future studies in technology.

Suggested Grade Level: Sixth

**Length of Course:** \_\_\_\_One Semester \_\_\_\_\_Two Semesters \_\_**\_X**\_\_Other

The class cycles as one class of 40 minutes per week for the whole year. Each class is assigned a letter day.

## Units of Credit: .2

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s)

Technology Education CSPG#65

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: 10/06/06

Date Approved:\_\_\_\_12/4/06\_, Revision approved 8/8/11\_\_

Implementation Year:\_\_\_2007-2008\_\_\_\_

Suggested Supplemental Materials: None

Course Standards

PA Academic Standards:

3.1.7(A,D) Unifying Themes, 3.2.7(C,D) Inquiry and Design

3.6.7(A,B) Technology Education

3.7.7(A,B,C,D,E) Technological Devices

3.8.7(A,B,C) Science, Technology and Human Endeavors

WCSD Academic Standards: None

Industry or Other Standards:

Common Core Standards for Literacy in History/Social Studies, Science and Technical Subjects

Beginning the 2010-2011 school year, we will begin implementing the Common Core Standards. This is a three-year implementation plan. By 2012-2013 we should be using the common core standards exclusively.

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| **Reading Standards for Literacy in Social Studies, Science and Technical Subjects Grades 6-8** |
| Key Ideas and Details |
| 1. Cite specific textual evidence to support analysis of science and technical texts. |
| 2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. |
| 3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. |
| Craft and Structure |
| 4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics. |
| 5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic. |
| 6. Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text. |
| Integration of Knowledge and Ideas |
| 7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). |
| 8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. |
| 9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. |
| Range of Reading and Level of Text Complexity |
| 10. By the end of grade 8, read and comprehend science/ technical texts in the grades 6-8 text complexity band independently and proficiently. |

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| **Common Core Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Grades 6 - 8** |
| Text Types and Purposes |
| 1. Write arguments focused on *discipline-specific* content. |
| a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s)  from alternate or opposing claims, and organize the reasons and evidence logically. |
| b. Support claim(s) with logical reasoning and relevant, accurate data and evidence  that demonstrates an understanding of the topic or text, using credible sources. |
| c. Use words, phrases, and clauses to create cohesion and clarify the relationships  among claim(s), counterclaims, reasons, and evidence. |
| d. Establish and maintain a formal style. |
| e. Provide a concluding statement or section that follows from and supports the  argument presented. |
| 2. Write informative/explanatory texts, including the narration of historical events,  scientific procedures/ experiments, or technical processes. |
| a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts,  and information into broader categories as appropriate to achieving purpose;  include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia  when useful to aiding comprehension. |
| b. Develop the topic with relevant, well-chosen facts, definitions, concrete details,  quotations, or other information and examples. |
| c. Use appropriate and varied transitions to create cohesion and clarify the  relationships among ideas and concepts. |
| d. Use precise language and domain-specific vocabulary to inform about or explain  the topic. |
| f. Provide a concluding statement or section that follows from and supports the  information or explanation presented. |
| 3. The standards require that students be able to incorporate narrative elements  effectively into arguments and informative/ explanatory texts. In science and technical  subjects, students must be able to write precise enough descriptions of the step-by-step  procedures they use in their investigations or technical work that others can replicate  them and (possibly) reach the same results. |
| Production and Distribution of Writing |
| 4. Produce clear and coherent writing in which the development, organization, and style  are appropriate to task, purpose, and audience. |
| 5. With some guidance and support from peers and adults, develop and strengthen writing  as needed by planning, revising, editing, rewriting, or trying a new approach, focusing  on how well purpose and audience have been addressed. |
| 6. Use technology, including the internet, to produce and publish writing and present the  relationships between information ad ideas clearly and efficiently. |
| Research to Build and Present Knowledge |
| 7. Conduct short research projects to answer a question (including a self-generated  question), drawing on several sources and generating additional related, focused  questions that allow for multiple avenues of exploration. |
| 8. Gather relevant information from multiple print and digital sources, using search terms  effectively; assess the credibility and accuracy of each source; and quote or paraphrase  the data and conclusions of others while avoiding plagiarism and following a standard  format for citation. |
| 9. Draw evidence from informational texts to support analysis, reflection, and research. |
| Range of Writing |
| 10. Write routinely over extended time frames (time for reflection and revision) and  shorter time frames (a single sitting or a day or two) for a range of discipline-specific  tasks, purposes, and audiences. |

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student’s Individual Education Plan (I.E.P.) or Gifted Individual Education Plan (G.I.E.P.).

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

3.1.7(A,D) Unifying Themes x – performance assessed during that semester

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|  | Performance Indicator | 1 | 2 | Assessment |
| A. | Explain the parts of a simple system and their relationship to each other. |  |  | Formative Assessments:   * Rubrics * Teacher Observation * Peer Evaluation * Quizzes   Summative Assessments:   * Completed Projects * Written Exams |
| D. | Explain scale as a way of relating concepts and ideas to one another by some measure. |  |  |

**3.2.7(C,D) Inquiry and Design**

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|  | Performance Indicator | 1 | 2 | Assessment |
| C. | Identify and use the elements of scientific inquiry to solve problems. |  |  | Formative Assessments:   * Rubrics * Teacher Observation * Peer Evaluation * Quizzes   Summative Assessments:   * Completed Projects * Written Exams |
| D. | Know and use the technological design process to solve problems. |  |  |

**3.6.7(A,B) Technology Education**

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|  | Performance Indicator | 1 | 2 | Assessment |
| A. | Explain biotechnologies that relate to related technologies of propagating, growing, maintaining, adapting, treating and converting. |  |  | Formative Assessments:   * Rubrics * Teacher Observation * Peer Evaluation * Quizzes   Summative Assessments:   * Completed Projects * Written Exams |
| B. | Explain information technologies of encoding, transmitting, receiving, storing,  retrieving and decoding. |  |  |
| C. | Explain physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design. |

**3.7.7 Technological Devices**

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|  | Performance Indicator | 1 | 2 | Assessment |
| A. | Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems |  |  | Formative Assessments:   * Rubrics * Teacher Observation * Peer Evaluation * Quizzes   Summative Assessments:   * Completed Projects * Written Exams |
| B. | Use appropriate instruments and apparatus to study materials. |  |  |
| C. | Explain and demonstrate basic computer operations and concepts. |  |  |
| D. | Apply computer software to solve specific problems. |  |  |
| E. | Explain basic computer communications systems. |  |  |

3.8.7(A,B,C) Science, Technology and Human Endeavors

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|  | Performance Indicator | 1 | 2 | Assessment |
| A. | Explain how sciences and technologies are limited in their effects and influences on society. |  |  | Formative Assessments:   * Rubrics * Teacher Observation * Peer Evaluation * Quizzes   Summative Assessments:   * Completed Projects * Written Exams |
| B. | Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life. |  |  |
| C. | Identify the pros and cons of applying technological and scientific solution~ to address problems and the effect upon society. |  |  |

ASSESSMENTS

PSSA Assessment Anchors Addressed: The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at pde@state.pa.us.

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

Portfolio Assessment: \_\_\_\_ Yes \_\_X\_\_ No

District-wide Final Examination Required: \_X\_\_\_ Yes \_X\_\_ No

Course Challenge Assessment: None

# REQUIRED COURSE SEQUENCE AND TIMELINE

### Content Sequence Dates

Introduction to Technology 2 days

Classroom/Lab Safety 2 days

Systems of Technology 1-2 days

Systems Approach 3 days

Impacts and Trade Offs 2-3 days

Evolution of Technology 2-3days

Invention and Innovation 3-4days

Problem Solving Methods 4-5days

Technology/Mathematics/ Science 1-2days

Communication Technology 4-5 days

Production Technology 4-5 days

Transportation Technology 4-5days

Bio-Related Technology 4-5days

Course Objectives:

1. Develop knowledge in technology and its basic systems of bio-related, communication, manufacturing, and transportation.

2. Identify the systems approach and how it is applied to the study of technology.

3. Identify the relationship between technology, mathematics, and science.

4. Apply problem-solving skills as an individual and in-group situations.

5. Apply knowledge of safety and proper and efficient use of various tools, machines, and equipment.

6. Identify with the evolutions of technology; analyze its impacts on people, society and the environment; and research possible future developments.

7. Explore communication, construction, manufacturing, transportation, and bio-related technologies by performing basic processes.

**WRITING TEAM:** Elizabeth Anderson, Arthur Anderson, David Krack, Andrew Perlstein, John Victor, Patrick Cronmiller

# WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? \_\_**X**\_\_ Yes \_\_X\_\_ 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 \_\_**X**\_\_ No

1. 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

1. What is the academic weight of the course?

\_\_\_\_ No weight/Non credit \_\_.2 @\_\_ Standard weight

\_\_\_\_ Enhanced weight (Describe)\_\_\_\_\_\_