AP BIOLOGY – GRADE 11
PLANNED COURSE CURRICULUM GUIDE

I. COURSE DESCRIPTION AND INTENT:

II. INSTRUCTIONAL TIME:

Class Periods:
Length of Class Periods (minutes): 42
Length of Course: 180 days; 120 clock hours
Unit of Credit: 1
Course Weight: 1

PINE GROVE AREA SCHOOL DISTRICT
PINE GROVE, PENNSYLVANIA

PINE GROVE AREA SCHOOL DISTRICT
Pine Grove, Pennsylvania 17963

PLANNED COURSE ADAPTATIONS/MODIFICATIONS
Introduction

The instructional adaptations that follow are provided as suggestions to be implemented with all students, particularly with those in need of special education services including the gifted. This listing is in no way intended to be exhaustive. Rather, it is reflective of some major considerations in the area of curriculum adaptations/modifications.

These instructional adaptations will work with any student, but are especially beneficial to those in need of learning support. Some may argue that these modifications are simply *good teaching*. Indeed, modifications of this type do represent good teaching. These principles of good teaching become instructional modifications whenever: (1) certain students in a particular class require such modifications *above and beyond* what is typically required by *most* students in that class and (2) without these modifications, these same students would not succeed.

PREFACE

Users and information seekers should familiarize themselves with the purpose and terminology of this **Planned Course Curriculum Guide (PCCG)**. We suggest that you first read the following:

- **PCCG PURPOSE AND INTENT**
- **PCCG DEFINITIONS**

The PCCG specifies the unit lesson outcome, essential content, standards, activities, resources, and evaluation of student performance. This sector provides the means to initiate the learning activities to attain the program goal as identified in the course description and intent.

The standards and outcomes are minimal expectations; further embellishment of the course is discretionary with the instructor depending upon the capability of the students.

This PCCG is designed as an ACTIVE document capable of technological modification as required.

The instructional delivery of this curriculum is quality controlled through the lesson plan development of the teacher.

Lawrence J. Mussoline, Jr., Ph.D.
Superintendent of Schools

PLANNED COURSE CURRICULUM GUIDE (PCCG)
PURPOSE AND INTENT

The Planned Course Curriculum Guide (PCCG) is a multi-purpose document:

- All staff, particularly new teachers, can understand instructional expectations through the WRITTEN curriculum
- A continuing district-wide instructional process and scope and sequence of subject matter are enhanced. The WRITTEN curriculum is delivered through the TAUGHT curriculum (instructional content and learning activities) and is evaluated through the TESTED curriculum (expected levels of student achievement - learning outcomes)
- Priority student-centered outcomes are identified and attained through suggested learning activities and content designed to help insure a balanced and comprehensive basic curriculum
- Essential content and course standards provide an efficient basis for selecting appropriate instructional materials and resources
- Staff development areas for curriculum improvement are provided
- The PCCG conforms with current Pennsylvania Department of Education curriculum regulations and serves the dual feature of providing both an administrative document and an instructional guide
- Content and subject format remain flexible and adaptable to modification - an "active" document
- Special Pennsylvania Department of Education (PDE) legislation is identified
- Parents and students are provided with an overview of the instructional program and each course in particular

PLANNED COURSE CURRICULUM GUIDE (PCCG)
DEFINITIONS

- **Course Description and Intent**: a brief overview of the course and program goals
- **Instructional Time**: frequency of class meetings and time/appropriate credit at the secondary level
- **Special Notes**: emphatic features or highlights and identification of Department of Education mandates found in the course
- **Unit Lesson Outcome**: describes the knowledge, skills, attitudes, student performance behaviors and areas of study that have been identified as appropriate to help the student attain the rigorous standards of a quality education
- **Teaching-Learning Activities**: suggested activities designed to help all students achieve the learning outcomes and standards
- **Standards**: statements establishing the minimal knowledge, skills, performance behaviors, and essential learning (content) a student must attain. A standard defines what students should know and be able to do
- **Expected Levels of Achievement (Learning Outcomes)**: what students will be expected to do as a result of the application of teaching-learning activities and content
- **Evaluation Criteria (Actual Level of Attainment):** student performance level achieved and measured through specified evaluation criteria

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #1:

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS *(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful)☺*	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
STANDARD 1 A. Discern structural and functional relationships in living things. B. Explain how genetic information is passed from one generation to the next at the molecular level. C. Explain the theory of evolution. D. Analyze the chemical and structural basis of living organisms.	A. 1. Describe and explain structural and functional relationships in each of the five (or six) kingdoms. • Class reading and discussion on five (or six) kingdoms • Lab activities • Audiovisuals • Computer research • Study guides 2. Explain significant biological diversity found in each of the biomes. • Class reading and discussion on biomes • Audiovisuals • Computer research • Study guides B. 1. Measure the variability of a trait.	• Tests – teacher generated and commercial • Lab grades • Study guide grades • Quizzes • Portfolios	• Lab materials • Audiovisual materials • Study guides • Computer • Tests/quizzes • Text

	• Class reading and discussion on trait variability • Lab activities • Audiovisuals • Computer research • Study guides 2. Describe the roles of nucleic acids in cellular reproduction and protein synthesis. • Class reading and discussion on roles of nucleic acids • Lab activities • Audiovisuals • Computer research • Study guides 3. Describe genetic engineering techniques, applications, and impacts. • Class reading and discussion on genetic engineering • Lab activities • Audiovisuals • Computer research • Study guides 4. Explain birth defects from the standpoint of embryological development and/or changes in genetic makeup. • Class reading and discussion on birth defects • Audiovisuals • Computer research • Study guides C. 1. Know that present earth features and organisms arose from materials and life forms of the past. • Class readings and discussion		

	on evolution • Study guides • Audiovisuals • Computer research 2. Discuss changes in the theory of evolution as new scientific facts have been discovered. • Class readings and discussion on evolution • Study guides • Audiovisuals • Computer research 3. Examine evidence of evolution in the form of fossils, homologous, and analogous structures, embryological studies and DNA studies. • Class readings and discussion on evolution • Study guides • Audiovisuals • Computer research 4. Evaluate the concept of natural selection in illustrating evolution theory. • Class readings and discussion on natural selection • Study guides • Audiovisuals • Computer research D. 1. Evaluate metabolic activities using experimental knowledge of enzymes. • Class readings and discussion of metabolic enzymes • Lab activities • Study guides		

	• Computer research 2. Infer functions of different anatomical parts given their structure. • Class readings and discussion on structure/function • Lab activities • Study guides • Audiovisuals • Computer research <u>Correctives</u> – Individual work with teacher. <u>Extensions</u> – Expanded computer research. Extended lab activities.		

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #2:

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS *(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful)☺*	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
STANDARD 2 A. Apply advanced tools, materials, and techniques to answer complex questions. B. Evaluate appropriate instruments and apparatus to accurately measure materials and processes. C. Evaluate computer operations and concepts as to their effectiveness to solve specific problems. D. Evaluate the effectiveness of computer software to solve specific problems. E. Assess the effectiveness of computer communication systems.	A. 1. Demonstrate the safe use of complex tools and machines within their specifications. • Class demonstration by teacher • Audiovisuals • Computer research • Use of equipment instruction manuals by students to operate said equipment 2. Select and safely apply appropriate tools, materials, and processes necessary to solve complex problems that could result in more than one solution. • Class discussion • Audiovisuals • Computer research • Student application of appropriate equipment needed to solve problems in lab activities.	• Tests – teacher generated and commercial • Lab grades • Portfolios • Quizzes • Grading of computer-generated work • Grading of student presentations	• Text • Lab manuals and materials • Audiovisual materials • Computers • Tests/quizzes • Computer manuals

	3. Evaluate and use technological resources to solve complex multi-step problems. • Class discussion • Audiovisuals • Computer research • Student use of technological resources to solve problems in lab activities B. 1. Use appropriate instruments to accurately measure scientific and technological phenomena within the error limits of the equipment. • Class discussion • Audiovisuals • Computer research • Student use of instruments in measurement in lab activities 2. Evaluate the appropriate use of different measurement scales (macro and micro). • Class discussions • Audiovisuals • Computer research • Student use of different measurement scales in lab activities 3. Evaluate the utility and advantages of a variety of absolute and relative measurement scales for their appropriate application. • Class discussion • Audiovisuals • Lab activities comparing measurement scales and applications C.		

	1. Analyze and solve hardware and advanced software problems. • Class readings and discussions • Computer use and solution of arising problems 2. Assess and apply multiple input and output devices to solve specific problems. • Class readings and discussions • Computer use of multiple input and output devices to solve problems 3. Demonstrate the ability to perform software installation. • Class readings and discussions • Student installation of software D. 1. Look up the legal responsibilities of computer users. • Class discussions and readings 2. Demonstrate the ability to merge software to produce an output. • Class discussions and readings • Student use of multiple software in producing an output 3. Analyze, select, and apply the appropriate software to solve complex problems. • Class discussions and readings • Student selection and use of software to solve a problem 4. Design and apply advanced multimedia techniques. • Class discussions and readings • Student use of computer, VCR, laser discs, etc., for a presentation.		

	5. Evaluate the effectiveness of the computer as a presentation tool. • Class discussion • Comparison of traditional presentation versus student generated computer presentation E. 1. Analyze the effectiveness of on-line information resources to meet the needs for collaboration, research, publications, communications, and productivity. • Class discussions comparing effectiveness on on-line resources 2. Transfer files between different computer platforms. • Class discussions and readings • Student transfer of files between platforms <u>Correctives</u> – Individual work with teacher. <u>Extensions</u> – Extended laboratory experimentation. Individual student computer work.		

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #3:

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS *(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful)☺*	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
STANDARD 3 A. Apply scientific research methods to complex problems. B. Apply problem solving in technology as a systematic process. C. Evaluate the nature of scientific and technological knowledge.	A. 1. Generate questions that can be studied in science. • Class discussions and readings on experimentation 2. Evaluate appropriateness of questions. • Class discussions 3. Design an investigation with adequate control and limited variables to investigate a question. • Class readings and discussions • Student-designed investigation 4. Conduct an experiment. • Class readings and discussions • Student-conducted experiment 5. Organize experimental information	• Tests/quizzes • Portfolios • Grading of student-run research	• Tests • Quizzes • Portfolios • Lab equipment and materials • Text • Audiovisual materials • Text • Computer

	using analytical and descriptive techniques. • Class readings and discussions • Student analysis of data 6. Evaluate the significance of experimental information in answering the question. • Class discussions 7. Project additional questions from a research study that could be studied. • Class discussions B. 1. Assess the problem. • Class discussions 2. Propose, develop, and appraise a solution. • Class discussions • Student-designed experiment set up 3. Implement and assess the solution. • Class discussions • Student-designed experiment 4. Evaluate and assess the solution. • Class discussion • Student evaluation of data and redesign and retest if necessary 5. Communicate and assess the problem, design, and solution. • Class discussions • Student presentation of experimental problem solving C. 1. Know and use the ongoing scientific processes to continually		

	improve and better understand how things work. • Class readings and discussions • Student presentations 2. Critically compare or contrast the statues of existing theories. • Class readings and discussions • Computer research <u>Correctives</u> – Individual work with teacher. <u>Extensions</u> – Extended student experimentation. Extended computer research.		