



Edna Karr Secondary School



A Nationally Recognized Blue Ribbon School of Excellence

2007-2008

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Welcome to Pre-AP Biology at Karr! We want to commend you for taking the challenge of a life-long learner. The following information will help you complete the course successfully.

COURSE DESCRIPTION:

This course is designed to prepare the students for AP Biology, which is an equivalent of a college introductory survey biology course usually taken by biology majors during their freshman year. The main goals are to acquire a background of modern biology and to gain experience and appreciation of biology through experimentation and inquiry.

COURSE OUTLINE:

- I. Introduction to Science
 - A. Science Equipment and Measurement
 - B. Laboratory Safety
 - C. Scientific Method
 - D. Science Projects

- II. Introduction to Biology
 - A. Characteristics of Living Things
 - B. Levels of Organization

- III. Inorganic Chemistry
 - A. Matter (Phases, Physical/Chemical Properties)
 - B. Atom (Subatomic Particles, Neutrons, Ions, Isotopes)
 - C. Elements
 - D. Periodic Table (Calculating Atomic Number, Mass Number)
 - E. Bonding

- IV. **Organic Chemistry**
 - A. **Nature of Carbon**
 - B. **Dehydration Synthesis/Hydrolysis**
 - C. **Major Biomolecules (Carbohydrates, Lipids, Proteins, Nucleic Acids)**
 - D. **Enzyme Focus**
- V. **Cell Biology**
 - A. **Microscopes (Types, Use, Safety)**
 - B. **Cell Theory**
 - C. **Cell Types and Organelles**
 - D. **Active/Passive Transport**
- VI. **Photosynthesis**
 - A. **ATP Cycle**
 - B. **Sources of Energy**
 - C. **Plant Pigments**
 - D. **Light/Dark Reactions**
 - E. **Cellular Respiration**
- VII. **Genetics**
 - A. **Cell Reproduction (Mitosis and Meiosis)**
 - B. **DNA Discoveries, Structure, Replication**
 - C. **Protein Synthesis**
 - **RNA, Transcription/Translation**
 - D. **Mutations**
 - E. **Biotechnology (DNA Recombination, Gel Electrophoresis)**
 - F. **Introduction to Genetics**
 - **Mendel's Crosses**
 - **Dominance/Recessiveness**
 - **Genotype/Phenotype**
 - **Genetic Crosses (Polygenic Traits, Incomplete Dominance, Co-dominance, Sex-Linked)**
 - G. **Human Genetics**
 - **Disorders (Sex-Linked, Autosomal Dominant and Recessive, Nondisjunction)**
 - **Detection, Prevention (Karyotypes, Amniocentesis, Chronic Villi Biopsy)**
 - **Pedigree Analysis**
 - H. **Modeling Genetic and Environmental Influences**

- VIII. Evolution
 - A. Theory Vs. Hypothesis
 - B. History
 - C. Evidence (Fossils, Biochemistry, Anatomy)
 - D. Darwin/Wallace
 - E. Mechanisms of Evolution (Natural Selection, Migration, Genetic Drift, Mutation)
 - F. Patterns of Evolution (Divergent, Convergent, Co-evolution)
 - G. Micro/Macro Evolution
 - H. Rate of Evolution (Gradualism, Punctuated Equilibrium)
- IX. Classification
 - A. History, Rules, Categories
 - B. Dichotomous Key
- X. Microbiology
 - A. Virus (Characteristics, Structures, Replication, Discovery, Examples, Uses)
 - B. Non-viroid Particles (Prion/Viroid)
 - C. Bacteria (Classification, Characteristics, Structures, Reproduction, Ecological Roles, Pathogens, Control)
 - D. Protist (Characteristics, Classification, Diseases, In Biosphere)
 - E. Endosymbiotic Theory
- XI. Fungi
 - A. Characteristics, Classification, Reproduction
- XII. Animals
 - A. Invertebrate Animals
 - Porifera
 - Cnidaria
 - Worms (Platyhelminths, Annelids, Nematods)
 - Echinoderms
 - Mollusks
 - Arthropods
 - B. Vertebrate Animals
 - Fish
 - Amphibians
 - Reptiles
 - Birds
 - Mammals
- XIII. The Human Body

- A. General Overview of Systems
 - B. Muscle System Focus
 - Types
 - Muscle Cell Components
 - Contraction
 - Models
 - C. Nervous System (Parts, Specialized Cells, Nerve Transmission, Drugs that Affect, Reflex Arc)
 - D. Circulatory System
 - Heart
 - Electricity, Transmission of Excitation, Vessels
 - Blood
 - E. Respiratory System (Components, Pigments, Ventilation, Neural Regulation, Factors Affecting)
 - F. Digestive System (Digestion, Organs, Functions, Enzymes)
- XIV. Plants
- A. Introduction to Plants
 - B. Evolution
 - C. Adaptation to Life on Land
 - D. Energy, Growth, and Transport
 - E. Transpiration
 - F. Reproduction
- XV. Ecology
- A. Introduction to Ecology
 - B. Biomes
 - C. Ecosystem Structure (Food Chains, Food Webs, Pyramids)
 - D. Populations (Population Growth, Limiting Factors, Carrying Capacity)
 - E. Communities (Predator/Prey Relationships, Symbiotic Relationships)
 - F. Population Sampling
 - G. Biogeochemical Cycles

MAJOR ACTIVITIES:

Daily Lessons are focused on science concept development and enhancement of science inquiry skills. The students will engage in investigative activities which are appropriate to their level using techniques which include experimentation, interpreting diagrams/models/charts/graphs/film/video clips/video documentary, world wide web research, group discussion, creative journal/reflective writing and problem-solving.

Science Project – The students choose a topic and design a science investigation based on the topic. This project must follow the scientific method. The students present the project using PowerPoint.

Learn Excel and PowerPoint – The students will create graphs and tables using excel program and develop PowerPoint slide show on science career.

DNA Profiling or DNA Fingerprinting provides students with experiences to help convict suspects in criminal cases using techniques like gel electrophoresis.

Blood Typing provides the students with basics in identifying the blood type by analyzing samples.

Field Trips near Mississippi River and/or Lake Pontchartrain to collect and analyze water samples for the presence of microorganisms, dissolved oxygen, acidity, turbidity, temperature, pressure. Other field trips will also be scheduled this year. The students will be informed by the teacher for details.

Dissection provides the students experiences in studying the internal physiology of vertebrates and invertebrates using preserved earthworm, frog, fetal pig and /or sheep brain.

Plant Taxonomy enables the students to identify the plants in the school campus using dichotomous key.

RESOURCES:

1. Biology Textbook by Prentice Hall
2. Online Textbook at www.phsuccessnet.com
3. Online Lessons: <http://algiers-J7th4v6/moodle>
4. Other resources will be provided at a later date

LABORATORY ACTIVITIES: Topics will be provided on a separate handout

EVALUATION:

Assessment of student progress for a particular unit will be evaluated using

Tests and Quizzes

Classwork/Participation

Laboratory Investigations

Homework

Project Presentations

Semester Exams

LAB FEE (DUE by August 16, 2007)

A lab fee of \$15.00 is collected from each student to purchase a Tyvek laboratory coat and consumable materials such as gloves, live and preserved specimens, chemicals and the like.



Tyvek \$5.25
(disposable and water repellent)



Cloth \$35.00
(durable poly/cotton)

Any student who wishes to order poly-cotton lab coat will need to add \$30.00. The lab coat will be a property of the student and he/she is responsible of keeping it in the locker, ***not in the classroom.***

CLASSROOM MATERIALS

You need to bring the following items to class EVERY DAY:

Pocket folder with clips for loose-leaf paper

The folder assigned to the students will contain student information, course syllabus, notes/handouts, enrichment readings, checked lab reports/quizzes/tests/exams, and other important information. The students are responsible for keeping the folder neat and orderly.

USB Flash Drive

Technology will be integrated into classroom instruction. Students need to store lab and other data on a flash/jump drive. Students are required to bring a USB flash drive with a memory of at least 1 gigabyte.

School Supplies

Students are required to bring a **black or blue** ink pen, **sharpened** pencil and loose-leaf paper.

Spiral notebook paper will not be accepted !!!!! Students must obtain a cover for their textbook (Books must be covered at all times)

Other supplies will be identified based on planned classroom assignments/activities

HOMEWORK

Homework is expected to be assigned at least 3 times per week. Students must review work completed in class on a daily basis.

GRADING SCALE

A	90-100
B	80-89
C	70-79
D	65-69
F	Below 64

Student grades will be based on a semester of work. Students will earn ½ units of credit at the end of each semester this year. Quarters one and three will be progress reports only.

KNOWLEDGE THEFT

Be sure that the work that you turned in is your own work. Please understand that even in “group work”, your own contribution is expected. Students caught CHEATING will receive no credit for that assignment.

The **Academic Honesty Policy** will be strictly enforced:

Type of Offense	Major: <u>Exam, Chapter/Unit Test, Research/Term Paper</u>	Minor: <u>Quiz, Class work, Homework</u>
1st Offense	F on assignment, parent-teacher conference	F on assignment, phone call to parent
2nd Offense	F on assignment, in-school counseling, removal from elected office/position, unable to represent the school at outside academic or leadership functions	F on assignment, parent-teacher conference
3rd Offense	F on assignment, Saturday School, recommendation for non-retention	F on assignment, in-school counseling, removal from elected office/position, unable to represent the school at outside academic or leadership functions
4th Offense	F on assignment, non-retention	F on assignment, Saturday School, recommendation for non-retention
5th Offense	F on assignment, suspension	F on assignment, non-retention
6th + Offense	F on assignment, suspension	F on assignment, suspension

ABSENCES

Regular Days

Students will be given a week to make up for the assignments missed due to excused absences. After a week, no extensions will be given. Students are responsible for scheduling an appointment with the teacher.

Quiz/Exam Days

If you miss a class on a quiz/exam day, you have until the *FOLLOWING Thursday* to make up the quiz/exam. Make ups will be more difficult.

You must schedule an appointment to make up your quiz/exam. You may schedule before or after school.

BEFORE Exam Days

If a student misses a class before an exam, the student must still take the exam on the scheduled day.

TARDINESS

If a student comes to class late, the student will be given a School Wide Detention Form stating the period and time when the student enters the classroom. If the reason for the tardiness is valid, then the student will be excused.

FOOD/DRINK

No food or drink will be allowed in the classroom.

TRASH

The classroom area must be kept clean at all times. Trash should be placed in the garbage can when the students leave the room.

PENCIL SHARPENER

An electric sharpener will be available for students' use in the classroom. However, sharpener will only be used **BEFORE** or **AFTER** but not **DURING** the class (when the teacher is in the middle of a learning instruction).

RESTROOM

Each student is expected to have gone to the restroom before coming to the class. If there is any health problem that requires going to the bathroom periodically, students are required to bring a doctor's slip. Passes will be given sparingly.

LAB SAFETY

Each student will receive a Student Safety Contract and a copy of the Safety Rules. Students and Parents are required to read and sign the contract. If the safety rules are not followed, the following sanctions represent the minimum response to violations of our health and safety policy:

First Offense – a verbal warning with a record of the warning

Second Offense – a written warning with the rule reviewed and a statement signed by

*both the student and the student's parents that the rule is understood
and will be followed.*

*Third Offense – a suspension from all lab activities until a conference is held with the
student, parents, the teacher and the administrator.*

Fourth Offense – suspension from all lab activities for the remainder of the year.

Alternate assignments will be provided