Life Sciences Regents Course at Pablo Casals Middle School

Dear Parent or Guardian,

This year, in science class, your child will have many opportunities for learning, growth, and achievement. Your child will have the opportunity to take the Living Environment Regents Exam. This high school level course comes with some added responsibilities. In order to qualify for the exam in June, students must meet the following expectations:

 -Maintain a cumulative average of an 80% or higher

 -Complete the state requirement of 1200 minutes participating in Lab classes

 -Successfully complete the 4 state required Labs

 -Diffusion Through the Membrane

 -Making Connections

 -Relationships and Biodiversity

 -Beaks of Finches

Satisfactorily complete the course work in a timely fashion

We will be encouraging all students to meet the previously mentioned requirements in order to ensure them the chance for obtaining their first high school science credit. The successful completion of this course will allow them to get a head start on their high school requirements thus freeing up time as an upper classman to take more challenging curriculum or curriculum matching their personal interests.

Labs: One of the most crucial parts of Regents science courses is the laboratory section. Presently, 1200 minutes of lab time are required by New York State to be eligible to take the Regents Exam. Therefore, labs are treated very seriously and will be collected on time, graded and kept on file within the classroom per State requirements. Labs may require a written report. Guidelines for writing a proper lab report will be provided. It is essential that each student turns in ALL labs completed and on time. Labs are a great way to boost class averages, break up class time and give students “hands on” experiences. Hopefully this will encourage all students to reach the lab requirement.

Students will be meeting with their science teacher daily as well as one extra lab period a week. All lab work is to be completed in class and must remain in class under the supervision of the teacher. **If a student is absent on a lab day, they must seek out their teacher immediately to schedule a time to make up the missed lab minutes.** This will be done during lunch or before/after school if necessary. Their lab work grades will be added into their classroom average and they will receive a separate grade for the lab period (pass/fail).

**Attendance:**

Consistent attendance is linked with improved grades! In science, each class is jam packed with learning activities and lab work… Students are responsible for missed work, which must be made up during their free time or before/after school. **Any missed assignments due to absence are considered “excused” for one week and will become zeros after that time if not made up.**

**Grading**:

• Meeting the objectives mentioned earlier ensures a high grade

• Everything Counts!! Understanding Life Science requires practice! Therefore, brief class assignments and homework assignments are regular and will be graded.

• Small quizzes are given periodically to see where everyone (including the teacher) stands while projects, and exams will be given as necessary.

• There is a **penalty for lateness.** Homework and assignments turned in late will lose a small amount of points. Your teacher will be able to give you the penalty.

• One of the most important parts of your grade is YOU! Being in class and participating is very important. This is an easy grade!

• Class Work and Homework will be given a number grade or marked as complete or missing. Make sure to check Skedula/PupilPath for your child’s current status.

* Lab work is given a separate grade on your report card. This grade will be pass/fail. You must have satisfactory marks on your labs to pass this class.

•Here is how final quarterly averages will be determined for the class grade:

 30% Assessments/Labs

 60% Class work/Lab work

 10% Homework

**Classwork Breakdown:**

As stated earlier in this course outline, attendance and participation are important, and counts as 25% of the classwork average. “Participation” is a broad area and is broken down as follows:

* Notebooks and Journals checked periodically each quarter for organization, completeness, and neatness. This includes all assignments given during class that should appear completed in your notebook. Each day must have a fresh heading to mark the start of the classwork.
* Attendance and Participation in classroom discussions (see below).
* Having the daily classwork completed in your notebook neatly and making the appropriate corrections.

**Classroom Expectations**:

• Lab Safety Rules/Precautions are NOT taken lightly and should be followed.

\*\*\*Failure to do so will result in removal from class/lab\*\*\*

• Please follow the routine of coming to class **on time** and **prepared**.

• Leave issues at the door…we need to focus without distractions

(students tend to need the break anyway).

• Respect each other…be courteous and polite…all students deserve to learn in a safe and comfortable environment

• ONE person talks at a time…**raise a hand** to ask/answer questions.

• Use low tone…**CURSING WILL NOT BE TOLERATED**.

• **Bathroom policy**: before and after class…plan around this class.

• Each student is to complete his or her **own** work unless it is a group activity.

• Writing is limited to class work and papers…NOT desks, lab tables, etc.

• Equipment is expensive and potentially dangerous…be sure to treat it appropriately.

• Garbage containers are located in the classroom…USE THEM!

• Respect teacher’s personal space and that of others, including desks and materials.

• Computer use is to be **school/science** related unless specified otherwise. Abuse of computer time will result in loss of that privilege.

• **Attempt all work and all questions…Leaving blanks is not acceptable!**

**• Try to have fun while learning!**

Following expectations is rewarded…not following hurts **everyone**. This class will be as fun and interesting as we can make it. **Good Luck!!**

The level of rigor will be challenging for some, but it has been proven that this course can successfully be completed by eighth grade students. Please be diligent in checking homework pages for updates and to see what is happening in the classrooms. Students will need your support this year, especially with challenging vocabulary, the CCLS standards in literacy and general organization.

Regents test breakdown:

The Life Sciences Regents Test is a standardized assessment given to students enrolled in New York State schools in June, August, and January.

The examination is based on the Living Environment Core Curriculum which is based on Standards 1 & 4 of the New York State Learning Standards for Mathematics, Science, and Technology.

The total test raw score will be converted to a scaled score using a conversion chart accompanying the scoring key for each examination. The number of questions, raw scores and converted scores are subject to change slightly from year to year.

|  |  |  |
| --- | --- | --- |
| **Exam Section** | **Question type** | **Raw score** |
| A | Multiple choice | 30 |
| B1 | Multiple choice | 12 |
| B2 | Multiple choice & free response | 13 |
| C | Multiple choice | 17 |
| D | Multiple choice & free response | 13 |
|  | Total | 85 |

Additional information:

* Section B-2 generally contains a graph.
* Section C often contains several multi-step bulleted questions.
* Section D tends to contain questions about laboratory skills and procedures. There are often questions regarding the four state labs, as well as general lab safety.
* **Part A:** This section consists of 30 content-based multiple-choice questions. These questions are worth 1 credit each, for a total of 30 credits.
* **Part B:** This section consists of 25 content- and skill-based questions assessing your ability to apply, analyze, and evaluate material from the core curriculum. The items from Part B may be either multiple-choice or short constructed response questions (CRQ). CRQs are a new item type for this exam, and require that students write out the answer to a question. The answer to each CRQ question may come from a document provided on the exam, or may require that you incorporate outside information that you learned while studying this subject.
* **Part C:** This section consists of 8-9 content and application questions designed to assess your ability to apply your knowledge of science concepts and skills to address real-world situations. The items in this section are worth a total of 17 credits. The items from Part C may be either short constructed response questions (CRQ) or extended CRQs.
* **Part D:** Questions concerning the concepts and skills learned while performing the four lab activities that New York State requires: **Making Connections, Diffusion through a Membrane, Beaks of Finches** and **Relationships and Biodiversity.** Multiple choice and open-ended questions (similar to the questions in Part B and C), will assess the concepts, content, and process skills associated with laboratory experiences in Living Environment that are aligned to the New York State Living Environment Core Curriculum.

**How is the subject matter weighted on the Living Environment Regents Exam?**

|  |  |
| --- | --- |
| Content | Approximate Weight |
| Standard 1—Laboratory Checklist | 10-20 % |
| Standard 4 |  |
| Key idea 1: Living things are both similar to and different from each other and from nonliving things.  | 13-17 % |
| Key idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring. |  9-13 % |
| Key idea 3: Individual organisms and species change over time. |  8-12 % |
| Key idea 4: The continuity of life is sustained through reproduction and development. |  6-10 % |
| Key idea 5: Organisms maintain a dynamic equilibrium that sustains life. | 13-17 % |
| Key idea 6: Plants and animals depend on each other and their physical environment.  | 10-14 % |
| Key idea 7: Human decisions and activities have had a profound impact on the physical and living environment. | 11-13 % |

Resources that can be used for extra study:

<http://regentsprep.org/regents/biology/biology.cfm>

(regentsprep.org will have practice exams for all regents)

<http://www.nyslivingenvironment.net/>

<http://www.proprofs.com/quiz-school/story.php?title=biology-regents-review-2>

<http://newyorkscienceteacher.com/sci/files/user-submitted/LE_Must_Know_Facts.pdf>

NYS Standards 1 & 4

<http://www.p12.nysed.gov/ciai/mst/pub/livingen.pdf>

Parents,

 With a lot of effort on your child’s part and your continued support, encouragement and oversight, your child will gain high school credit for the Living Environments Regents. As teachers we appreciate your help in getting your child ready for this big step. We look forward to a very full and exciting year in Eighth grade science.

 Please stay current on our new Skedula/PupilPath app to make sure your child is current in his/her work. If we all work together, your child will be successful!!!

Good luck,

The Science Dept.

 Mr. Negron: Classes 801 and 805 dnegron5@schools.nyc.gov

Ms. Campanella: Classes 805 and 806 scampanella@schools.nyc.gov

**113 THINGS YOU SHOULD KNOW FOR THE LIVING ENVIRONMENT REGENTS EXAM**

1. Amino acids are the individual units that bond together to form a polypeptide (protein).
2. Monosaccharides are the individual units that bond to together to form a polysaccharide (starch).
3. Enzymes are protein molecules that catalyze (help) chemical reactions.
4. The 3-dimensional shape of a molecule it important to its proper functioning.
5. Bacteria are prokaryotic cells, which lack a nucleus, and other membrane bound organelles.
6. The nucleus contains DNA in eukaryotic cells.
7. Chloroplasts are organelles found in autotrophic cells that produce glucose in the process of

photosynthesis.
8. Mitochondria are the organelles where aerobic cellular respiration occurs to produce ATP energy in cells.
9. The cell membrane is a selectively permeable boundary around a cell.
10. Diffusion from high to low concentration will occur across a membrane if the molecules are small and

unchanged.
11. A large surface area will allow for a fast rate of diffusion into a cell. (e.g. root hairs, villi)
12. Active transport occurs when membrane proteins use ATP energy to carry materials into and out of a cell.
13. Receptor proteins in cell membranes attach to specific molecules.
14. Many of the cells inside the human body are differentiated to carry out specific functions. While all cells

have the same DNA, some genes are activated and others inactivated, causing cells and tissues to

differentiate.

15. Mitosis involves a diploid cell dividing into two identical daughter cells.
16. Cancer involves body cells dividing uncontrollably by mitosis.
17. Meiosis is the process of producing monoploid cells.
18. Meiosis is one of the factors responsible for producing variation among the gametes produced by an

organism.
19. New individuals of an existing species are produced through the process of reproduction.
20. Asexual reproduction produces offspring that are genetically identical to the parent organism.
21. Modern cell biology techniques allow complex organisms such as mammals to be clones.
22. DNA mutations and chromosomal abnormalities may be passed on to the next generation if they are

located in cells that produce gametes.
23. Testosterone is the hormone that stimulates gamete (sperm) production and the formation of secondary

sex characteristics in males.
24. Fertilization is the process that involves the fusion of a monoploid sperm cell with a monoploid egg cell

to form a diploid cell called a zygote.
25. During intrauterine development in humans, the placenta are necessary to maintain homeostasis.
26. If parents with desirable characteristics are selected to mate, the chance that their offspring will possess

the allelles for these characteristics is high.
27. Genetic diseases are inherited through DNA codes and are transmitted from parents to offspring during

sexual reproduction.
28. Each chromosome holds hundreds of genes. 46 chromosomes hold 40,000 genes.
29. Environmental factors such as temperature and light can turn-on and turn-off genes in organisms.
30. DNA replication involves making an identical copy of a cell’s DNA.
31. DNA replication involves matching nucleotide bases together using the law of complementary base

pairing.A-T and C-G
32. During DNA replication, the double strand of DNA unzips, as weak H bonds between the base pairs are

broken.
33. DNA —> RNA —> Protein

34. DNA mutations may result in the production of abnormal proteins that do not function correctly, or in

the stopping of protein production.
35. Insertion of recombinant plasmids into bacterial cells by transformation will allow them to produce new

proteins.
36. Electrophoresis is a technique used to separate fragments of cut DNA according to size.
37. Organisms have different structural, behavioral or chemical adaptations to carry out essential life

functions.
38. Natural selection is the process that may lead to the evolution of new species.
39. The fossil record provides evidence that evolution has occurred.
40. The first **living** organisms were single celled prokaryotic organisms.
41. The rate at which evolution occurs varies from organism to organism.
42. The allele frequency in a population is the percentage of alleles for a specific characteristic.
43. When a small group of individuals is separated from the main population, they may evolve into a

new species that is specialized for a different **environment** or become extinct.
44. Changes in genes result in variation that lead to the formation of new species.
45. Changes in genes make evolution possible.
46. If a population has a wide range of variation due to genetic diversity, it gives the population an increased

ability to adapt if the **environment** ever changes drastically.

47. Cladograms, similar to a family tree, are a pictorial illustration that represents common ancestry vs. time

48. Speciation (the formation of a new species from an old one) is driven any isolating mechanism because

it stops populations form mating and mixing genes. They therefore adapt independent of each other

and, eventually can’t mate with each other
49. Organs and systems in the human body help maintain homeostasis.
50. Enzymes in the digestive system are responsible for the hydrolysis (breaking down) of carbohydrates,

proteins, and lipids.
51. The circulatory system is responsible for moving plasma and cells to all regions of the body through the

blood vessels, while the lymphatic system moves fluid through lymph nodes to filter phagocytized

bacteria and other debris.
52. The right side of the heart is the pump that moves deoxygenated blood to the lungs and the left side of the

heart is the pump that moves oxygenated blood to the body’s cells.
53. White blood cells fight pathogens in the body.
54. Antibodies are proteins produced by white blood cells in the human body that attach to invading pathogens

and clump them together: antigen-antibody complex.
55. When a person gets an organ transplant, the cells of the implanted organ are recognized as foreign

invading cells by the recipient’s immune system.
56. Vaccines are weakened forms of pathogen or a protein from the pathogen’s surface.
57. The nervous system and endocrine system allow cells within multicellular organisms to communicate and

coordinate their actions.
58. Hormones are specific chemical messenger molecules that travel through the blood and attach to receptor

proteins on the surface of target cells.
59. The hormone insulin is secreted from the pancreas and lowers the glucose level in the blood.
60. Hormonal feedback mechanisms maintain homeostasis in the human body.
61. The kidneys regulate urine composition and water balance in the blood by filtering and reabsorbing

molecules.
62. Stomates/Guard cells maintain homeostasis in leaves by regulating gas exchange and water loss.
63. Chlorophyll molecules in chloroplasts capture light energy from the sun to power the process of

photosynthesis.
64. Carbon dioxide gas is consumed in photosynthesis, while excess oxygen gas is produced in photosynthesis.
65. Glucose is the first stable product of photosynthesis and serves as a food source within cells.
66. Cellular Respiration is the process of producing ATP energy from glucose and oxygen in mitochondria.
67. Carbon dioxide is the waste gas produced in cellular respiration and excreted through the lungs.
68. All organisms carry on respiration to breakdown glucose and produce ATP energy molecules.

69. Photosynthesis and respiration are responsible for the stable levels of oxygen and carbon dioxide in the

Earth’s atmosphere.
70. Energy is transferred from one organism to another within a food web.
71. Decomposers are responsible for recycling materials when they breakdown organic molecules from dead

organisms.
72. Food chains always begin with a producer, progress with a series of consumers, and end with decomposers.
73. Only 10% of the energy progresses from one level of the food chain to the next level because energy is

used in metabolism.
74. Plants hold most of the energy in the ecosystem and are at the base of an ecosystem’s energy pyramid.
75. If the population of one organism in a food web increases or decreases, it will affect all the other organisms

in the food web with which it is linked.
76. In a host-parasite symbiotic relationship, one organism is harmed while the other benefits.
77. Stable ecosystems have a complex food web and high biodiversity.
78. Biomes are the regions of the Earth with similar climatic conditions, plants, and animals.
79. Climax communities develop in ecosystems over thousands of years through the process of ecological

succession.
80. Water ecosystems: pond and lakes into marshes, into swamps, into dry land.
81. Land ecosystems: rock into soil by lichens acid secretions, into mosses, into grasses, into shrubs, into

conifers and then into deciduous forests (leafy trees), called a climax community: the most mature kind

of community.
82. Ecosystems containing climax communities will remain stable unless a natural disaster or pollution

disrupts them.
83. The human population on Earth has exponentially increased in the past 60 years due to a decrease in

disease.
84. An increase in human population has caused a depletion of the world finite (limited) resources and an

increase in environmental damage.
85. Pollution by humans has disrupted the balance in many ecosystems and subsequently has endangered

many species.
86. Acid rain is a major environmental problem caused by factory emissions containing nitrogen and sulfur.
87. Chemical pesticides and wastes that enter into the **environment** affect wildlife and may cause a decrease

in biodiversity.
88. Destruction of the ozone layer by pollution (CFC”S) results in more ultraviolet rays reaching the surface.
89. Increased levels of greenhouse gases (CO2 and methane CH4) in the troposphere have led to global

warming.
90. Importing species from other ecosystems into an area may cause an imbalance in the food web and

environmental destruction.
91. When a population’s size is too large, competition for resources increases between members of the species.
92. The carrying capacity is the maximum number of individuals that can survive on the resources that are

present in an area.
93. Biological controls are better than chemical controls for regulating the size of populations.
94. Chemical pesticides permanently damage the **environment**, but only provide a short-term solution to

insect population problems.
95. The problem is what is being investigated and is written in question form.
96. The hypothesis is a testable possible solution about the answer to the problem and is a statement written

in a sentence.
97. A conclusion is determined from data in an experiment and is stated as a complete sentence.
98. An inference is an idea that is supported by the conclusion (hence the data) in an experiment.
99. An experiment must be completed several times before results are considered valid.
100. The dependent variable is the numerical data obtained during the experiment; the measured variable.
101. The independent variable is the factor being tested that will influence the dependent variable.

102. Every experiment must have a control.
103. Conditions in an experiment must be exactly the same for all test tubes or test subjects. Only the single

variable condition being investigated should differ.
104. Always use multiple set-ups art each condition and average the results to obtain valid data. Each setup

must contain an organism of the same species and exactly the same conditions.
105. Open the diaphragm of the microscope to adjust the brightness and only use the fine adjusting knob

when focusing using high power magnification.
106. Wet mount slides must be prepared to view live specimens under a microscope.
107. Benedicts Solution is an indicator for Glucose. It will change color from blue to brown or orange

when heat is added and glucose is present

108. Iodine (Lugol’s solution) is an indicator for starch (polysaccharide).
109. Wide range pH paper can be used to determine the acidity or basicity of a solution.
110. Data tables are used for organizing scientific data.
111. Use a line graph when there are two sets of numerical data. (The independent variable is placed on the

X-axis)
112. A double line graph plot two sets of data on the same set of axis’s. The two line need to be identified

by surrounding the points with different geographic structures such as a circle and a triangle.

You need to identify each by creating a key.

113. Be sure the axes are labeled and start at zero and are divided into evenly spaced intervals.