Welcome to AICE Biology! This course is designed to help you to pass The AICE AS level Biology test. This is a college level course and as a result you will be expected to study both inside and outside of the classroom. Your first learning opportunity begins over the summer.

If you look at the Cambridge website, they have provided a learner's guide which can be found here:

http://www.cie.org.uk/images/150289-cambridge-learner-guide-for-as-and-a-level-biology.pdf

This guide explains the outline of the test and the syllabus for the class. You may want to look at this guide so that you can see what the test will be like. This guide is for both the AS and A level test, so we will only be covering the AS level material. For example, you will take tests (they call them papers) 1-3. Papers 4 and 5 are for the A level test. We will be covering this all year but you may want to look at the learners guide to get a head start.

The first unit is about cells and using the microscope. In Pre-AICE Biology you learned about cells and their organelles. You need to review the following information over the summer and come back to school ready to be tested. You should be able to:

A) **Recognize** on a diagram the following cell structures and **outline their functions**:

1) cell membrane
2)nucleus, nuclear envelope and nucleolus
3) rough endoplasmic reticulum
4) smooth endoplasmic reticulum
5)Golgi body (Golgi apparatus or Golgi complex)
6) mitochondria
7) ribosomes
8) lysosomes
9)centrioles and microtubules
10) chloroplasts
11) cell wall
12) plasmodesmata
13) large permanent vacuole and tonoplast of plant cells

I suggest that you make flash cards. You will need to know about the organelles all year.

B) Explain the differences between plant and animal cells.

This is the link to our textbook that can be viewed online:
https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.gceguide.xyz/files/e-books/a-level/Cambridge%2520International%2520AS%2520and%2520A%2520Level%2520Biology%2520Coursebook.pdf&ved=0ahUKEwjq75j7iZLSAhWFVyYKHZ2_AJQQFgg-MAc&usg=AFQjCNHCcLva3Sgm9HffPBa7YWTIdDFB_g&sig2=8YmGgmOgeXb9Yixqw439jQ

There are many websites that can help you with this material. Here are a couple of suggestions:
http://www.cellsalive.com/sitemap.htm
https://nevelbiology.wordpress.com/biology-units/unit-cells/

C) Be able to compare and contrast Prokaryotes and Eukaryotes

The following site has two charts at the bottom that summarizes the needed information.

https://14solvbr.wordpress.com/2012/08/29/2-2-3-prokaryotic-and-eukaryotic-cells/

D) **Read** the Cambridge rules for graphing on the following page and complete the graphing assignment on the next page by following the rules.

In summary, be ready to be tested on the organelles of the cells, the differences between plant/animal cells, and prokaryotes/eukaryotes and make the graph.

If you have any questions please email Meghan Diskey at diskeym@pcsb.org.
Have a great summer!

AICE Biology - Line graphs
Line graphs are used to show relationships in data which are not immediately apparent from tables.

Follow these guidelines:
• use at least half the grid provided, do not make the graph too small
• draw the graph in pencil
• the independent variable should be plotted on the *x*-axis
• the dependent variable should be plotted on the *y*-axis
• each axis should be marked with an appropriate scale. The data should be examined critically to establish whether it is necessary to start the scale(s) at zero. If not, you may have a displaced origin for one or both axes, but this must be made obvious by labeling.
• each axis should be scaled using multiples of 1, 2, 5 or 10 for each 20 mm square on the grid. Never use multiples of 3
• each axis should be labelled clearly with the quantity and SI unit(s) or derived (calculated) units as appropriate, e.g. time/s and concentration/g dm–3; the axes labels and units must be the same as those in the table
• plotted points must be clearly marked and easily distinguishable from the grid lines on the graph. Dots in circles (□) or small, neatly drawn crosses (x) should be used; dots on their own should not. If you need to plot three lines, vertical crosses (+) can also be used
• label each line carefully or use a key. Use a pencil for both lines; do **not** use a blue or black pen or different colours

After plotting the points you need to decide if any of them are anomalous. Ask yourself the question 'do they fit the trend?'. But what is the trend? If you think one or more of the results are anomalous, then it is a good idea to ring them. Put a circle on the graph away from the line and put a key to state that the circled point(s) represent anomalous result(s). The next thing to decide is how to present the curve.
• It may be obvious that the points lie on a straight line; for example, the effect of enzyme concentration on the rate of an enzyme-catalysed reaction. If you have a result for the origin (0, 0) then that must be included and you can place a clear plastic ruler on the grid and draw a straight line from the origin
making sure that there is an even number of points on either side of the line. If you do not have a result for the origin, then start the line at the first plotted point. Do **not** continue the line past the last plotted point.
• You should only draw a smooth curve if you know that the intermediate values fall on the curve. You may be expecting the relationship to be a smooth curve and if the points seem to fit on a curve then draw one. Again decide whether the origin is a point and, if not, start at the first plotted point. The curve should go through as many points as possible, but try to make sure there is an even number of points on either side of the line. Do not continue past the last plotted point.
• **In the practical examination you may only have five or six results.** These are likely to be single results rather than means of replicate results. Therefore you cannot be sure of the relationship and should not draw a straight line or a curve as described

above. You should **draw straight lines between the points**. This indicates uncertainty about the results for values of the independent variable between those plotted.
• If a graph shows more than one line or curve, then each should be labelled to show what it represents.

Bar charts, histograms and line graphs should normally have informative titles. **There is no need to give titles in the exam as it is obvious what they are.** In all other circumstances give informative titles.

If you have times in minutes and seconds, never use minutes as the unit on a graph. It is very difficult to use a scale with each small square representing 3 or 6 seconds. **Always plot results in seconds unless the unit for time is whole minutes.**

(c) In a similar investigation, a student investigated how changing the concentration of copper sulfate solution (independent variable) affected the hydrolysis of hydrogen peroxide.

The release of oxygen was measured by counting the bubbles when the oxygen was released through a delivery tube into a test-tube of water.

The results are shown in Table 1.3.

Table 1.3

percentage concentration of copper sulfate solution	rate of catalase activity /number of bubbles released min^{-1}
0.3000	0
0.1500	1
0.0750	2
0.0375	37
0.0000	39

You are required to use a sharp pencil for graphs.

(I) Plot a graph of the data shown in Table 1.3.