**2017-2018 AICE/AP Biology:
Course Outline and Policies**

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**Course Outline:**

Welcome to AICE AS/A2 and AP Biology! By the end of this year, you will both know and understand biology at a much deeper level than was covered in your IGCSE Biology class, though we will review some old concepts. Because this class covers both AS and A2 levels, we will be integrating the two curricula throughout the year in a way that makes sense, rather than covering AS and then A2 Biology separately. In addition to knowing and understanding, you will learn to apply what you learn when encountering new information or solving problems. Finally, you will become well-versed in biological laboratory techniques. Our class has a heavy emphasis on experimental skills and investigations, so look forward to frequent labs that mimic real-world scientific applications. AICE Biology is offered as a two-period block to allow for lengthy labs and enable coverage of what would normally be two years of courses. Given that, AICE Biology should be given the time and preparation of two science classes taken concurrently. Expect to spend at least 5-10 hours each week outside of class time working and studying for this course.

Simply put, biology is the study of life. However, it is important to not just understand and memorize biological concepts. I hope that by the end of this year, you have a true appreciation of the biological sciences and the impressive diversity of life around us. The biological applications covered in this course will expose you to the many opportunities biological research has unlocked, and will hopefully encourage you to pursue or value further biology experiences. As the basis of anatomy and medicine, learning biology can prepare you for future ambitions or careers, or lend a better understanding of your body. All of these facets ensure that our busy year in AICE Biology will be difficult, but very rewarding.

**Course Requirements**

All students enrolled in this course will be required to:

•Take Papers 1 and 2 of the AICE AS-Level Biology Exam (Multiple Choice and AS Structured Questions)

•Take Paper 3 of the AICE AS-Level Biology Exam (Advanced Practical Skills, a laboratory practical exam)

•Take Papers 4 and 5 of AICE A2-Level Biology Exam (A2 Structured Questions and Planning, Analysis and Evaluation section)

•Keep a neat, orderly three-ring binder (3-inch recommended) with all course materials for the duration of the year.

•Sit for the AP Biology exam on Monday, May 14 at 8am.

**AICE Biology Tentative Topic Outline, In Order (subject to change)**

|  |  |  |
| --- | --- | --- |
| Topic | Text page(s) | Approx. Amount of time Spent |
| **Introduction to Biology** | -- | -- |
| **Cell Structure** (cell biology, microscopy, cell organelles plant vs animal cells, prokaryotes and eukaryotes, tissues and organs) | pp. 1-23 | 1 week |
| Biological Molecules (polymers, carbohydrates, lipids, proteins, water, inorganic ions) | pp. 27-49 | 2 weeks |
| Enzymes (activation energy, reactions and reaction rates, inhibitors, immobilizing enzymes) | pp. 53-66 | 1.5 weeks |
| **Cell Membranes and Transport** (Phospholipids, membrane structure, transport across membrane, exchange surfaces, cell signaling) | pp. 72-89 | 1 week |
| **Nucleic Acids and Protein Synthesis** (structure of DNA and RNA, DNA replication, DNA, RNA and protein synthesis, genes and gene mutations) | pp. 110-123 | 2 weeks |
| **The Mitotic Cell Cycle** (chromosomes, mitosis, cancer) | pp. 93-106 | 1 week |
| **Meiosis, Genetics, and Inherited Change** (meiosis, genetics, genotype and phenotype, inheritance, alleles, sex linkage, crosses, χ2 testing, mutations) | pp. 364-393 | 2 weeks |
| Genetic Technology (genetic engineering, cystic fibrosis, gene counseling, gene screening, GMOs, gene therapy) | pp. 462-487 | 2 weeks |
| **Selection and Evolution** (variation, overproduction, natural selection, evolution, artificial selection, the Darwin-Wallace Theory, speciation, HWE) | pp. 397-420 | 2 weeks |
| **Biodiversity, Classification, and Conservation** (ecology, sampling and diversity indices, the 5 kingdoms of life, viruses, biodiversity, conservation) | pp. 423-455 | 2 weeks |
| **Energy and Cellular Respiration** (energy, work, ATP, respiration, mitochondria structure and functions, anaerobic respiration, substrates) | pp. 267-283 | 3 weeks |
| **Photosynthesis** (energy transfer, light energy, light-dependent reactions, light-independent reactions, leaf structure/function, chloroplast structure/function, necessary factors for photosynthesis) | pp. 286-297 | 2 weeks |
| **Transport in multicellular plants** (water transport, translocation, sieve elements and xylem vessels) | pp. 126-153 | 1.5 weeks |
| **Mammalian Transport System and the Mammalian Heart** (cardiovascular system, plasma tissue fluid, lymph, blood, hemoglobin, myoglobin, oxygen transport issues, cardiac cycle, heart beats) | pp. 157-179 | 2 weeks |
| **Gas Exchange and Smoking** (gaseous exchange system, respiratory system, breathing rate and heart rate, tobacco effects, lung and cardiovascular diseases) | pp. 185-195 | 2 weeks |
| **Immunity** (defense against disease, immune system, active and passive immunity, measles) | pp. 222-242 | 1.5 weeks |
| **Infectious Disease** (worldwide importance, cholera, malaria, measles, HIV-AIDS, tuberculosis, antibiotics) | pp. 198-219 | 3-5 days |
| **Human Reproduction** (male and female reproductive systems, gametogenesis, human menstrual cycle, infertility) | pp. 349-351 | 1 week |
| **Homeostasis** (homeostasis, excretion, the kidney, control of blood glucose, urinalysis, plant growth regulators) | pp. 299-325 | 2 weeks |
| **Coordination** (hormones, nervous system, muscle coordination and contraction, control and coordination in plants) | pp. 329-358 | 1 week |
| REVIEW (Last minute wrap-up, reinforcement, final questions) | -- | 1-2 weeks |
| AP Biology Exam  | -- | May 14, 8am |
| AICE Wrap up & Review/AICE Papers 1-5  | -- | TBA |

**AICE Biology Classroom Policies and Procedures:**

Welcome to AICE Biology! This is an extremely challenging, fast-paced course, but I promise it will be enjoyable and worth it. To ensure that we are able to meet our learning goals for this class, I have outlined a few rules, procedures, and my philosophy. Following these will allow us to move through the year smoothly.

**My teaching philosophy**: To me, science is a fascinating and critically important subject. I believe that it is important for all members of a functioning society to understand how basic science works, in particular how the world we live in works. It is also important to understand how we as human beings function and how to best take care of our bodies. For as long as you live, you will be impacted by choices regarding smoking, exercise, and food consumption. Understanding your body can help you live a happier, healthier life. With all of my science classes, I believe in emphasizing practical applications while providing you with the hands-on experience necessary to succeed on your AICE and AP exams. I view myself as a facilitator: I will provide you with chapter question guides, lecture notes, and presentations for all units, but I hope that the majority of your learning occurs in small groups through activities and lab-work. Through the extensive lab work and lab practicals in this course, I hope you learn what it means to be a scientist, and come to appreciate the way science is “done.” As you will soon learn, science is not just a body of knowledge, but a process dependent on constant revision and cooperative work.

**Rules**

My classroom has three general, simple rules that are explained on our first day of class. I only set forth rules that I am willing to follow, and promise to always adhere to these as well.

•**Be respectful of yourself, others, and the environment.** Please take care to treat those
around you with respect. As juniors and seniors, many of you are completing difficult coursework and preparing for college. Behave appropriately, don’t speak when others have the class’s attention, and refrain from using cell phones unless you have DIRECT PERMISSION from me. Cell phones are absolutely not allowed during lecture or lab activities.

•**Be honest.** If you are struggling, let me know. I am here to help you and make sure you learn. I am here most mornings by 7:30am and stay after school daily. If you ever need extra assistance, don’t wait until the night before a test to get it. In addition to this, always abide by the honor code and complete your own work.

•**Try your best.** I have no doubt that everyone in this class wants to succeed. I will always do my best to help you learn, so I expect your best work and effort in return.

**Policies**

1. **Honor Code**: To succeed in this class and truly learn, you must work to complete your own work. *Academic dishonesty* is giving or receiving unduly amounts of help on work to an extent that it is no longer your own. While I encourage students to study and work together, keep in mind that all submitted work should be a representation of what YOU as an individual put forth. For partnered or group lab activities, each member of the group must submit original work. There is a clear difference between copying data, and copying an assignment. On project, group, and laboratory work, any conclusion, analysis, or wrap-up questions MUST be written by you and you alone, in your own words. Calculations and statistical analyses MUST be your own work. *All problem sets or worksheets must be completed on the passed out papers, NOT on loose-leaf or printer paper unless otherwise specified.* Any instances of academic dishonesty will result in a zero for all involved students, parents will be notified, and Mr. Testa will be informed of what happened. Cambridge students caught cheating on assignments or examinations could be put on Cambridge probation, or in extreme cases, removed from the program. Please refer to the Cambridge Honor Code for examples of academic dishonesty.
2. **Personal responsibility:** AICE courses are written at the college level and move at a college pace. This makes them an excellent opportunity for you to prepare for higher education, but at the same time, you will have to work hard to learn and keep up with information. All students are expected to come to class prepared, and are expected to participate in lectures and class discussions. Come to class with questions and all reading guides completed by the date of the lecture. This will make the material MUCH more manageable for you. While I understand that emergencies happen, being absent one day will set you two class periods behind—please do your best to minimize absences.
3. **Labs:** As a college-level course, we will be doing labs weekly, often with multiple lab days in the same week. Some labs will require that you create formal lab write-ups (these will be announced and explained as we progress through the class), while other labs will be more short-form. Lab notes and procedures will be taken in lab notebooks unless otherwise specified. Please bring your notebook and proper shoes to class ***every*** day, as labs will not always be announced in advance. If you do not have your lab notebook on the day of a lab, you cannot earn a participation stamp for that day’s activities.
4. **Materials**: All students need to bring pencils, a calculator, a composition notebook for labs, and blue or black pens ONLY every day in class. You must also keep a three-ring binder with all of your AICE Biology coursework throughout the year. I recommend using a 3-inch binder, and will collect binders every nine weeks. Your binder should have divided tabs with the following sections: guided readings, lecture notes, problem sets and practice papers, labs, and additional work and activities. The first pages in your binder should be this syllabus. I will provide the grading rubric for each nine weeks notebook check prior to each due date. If you would like, you may create two separate notebooks, one per semester.
5. **Late and Make-up Work:** All work is due at the beginning of your class period unless otherwise specified. **I do not accept any late work for any reason.** If you miss a lab or major activity due to emergency or illness and have an excused absence, speak with me privately to arrange making up the work. You will likely have to stay after school for one-several hours. **It is your responsibility to retrieve your makeup work the day you come back.**
6. **Extra Credit:** Extra credit assignments will periodically become available to you. I will allow you to complete enough extra credit to **raise your grade by 3%**. That is to say, if I give 800 points of tests and assignments during the nine weeks, you will be able to complete 24 points of extra credit (though more than this will be available). Extra credit will be varied, with simpler activities being worth fewer points.
7. **Bathroom policy:** You will receive 6 bathroom passes per nine weeks. These are yours to use at your discretion, but please limit bathroom use during lab activities. Any bathroom passes that go unused at the end of the nine weeks may be turned in for 2 points of extra credit each. Please write your name on all of your bathroom passes once you receive them.
8. **Submitting Work:** You may submit due work at the start of the class period during which it’s due (unless otherwise specified), OR you may e-mail me your work by the due time. **Binders and lab notebooks must be submitted in person by the day they are due, NO EXCEPTIONS**. These due dates are posted at least two weeks in advance—turn them in early if you plan on being out. If you are absent on a day work is due and your absence is unexcused, you need to submit it to me via e-mail or receive a zero. Submitted work must be neat and written either on provided Cambridge pages (REQUIRED for problem sets, worksheets with provided space, etc.) or your own paper.Writing needs to be legible and in a dark enough color that I can see it. **If I can’t read it, I won’t grade it.**
9. **Tests and Quizzes:** You are responsible for taking tests and quizzes the day they are given. If you are absent the day of a test or quiz, I reserve the right to give you an alternate, likely all essay version of the exam. If your absence is unexcused, you will earn a zero. All tests and quizzes must be made up within two days of returning from an absence. **It is your responsibility to keep track of this and schedule a make-up exam before or after school.**
10. **Classroom reminders:** Would you like to receive reminders about assignments that are due, special materials to bring in, and test dates? You can follow me on Twitter (@MsPaxsonScience) for updates and interesting science facts. Additionally, you can receive text message reminders through Remind101. To sign up for these alerts, text “@GHSAICEBio” to (352) 415-9524. Enter your first and last name when prompted. I will delete fake names, so don’t bother. Please check with your parents before signing up for text services.
11. **Animals and Vivaria:** I have several animals, plants, and terraria set up in my classroom. Some of these animals may be held, but **only with my express permission.** Please treat my classroom pets with the same respect you would treat your own. Anyone who harasses an animal, opens cages without permission, or intentionally harms any of the animals will be written up with serious consequences, and parents will be called. Classroom animals are a privilege, and only by following careful instructions regarding them can I guarantee their safety.
12. **Dissections and Biological Materials:** Throughout the year, you will be **required** to carry out dissections on various plant and animal tissues. These dissections are important for deeper understanding of how organisms fit together and function, and are an essential part of any high-level biology course. **If you are uncomfortable with dissections, you must provide a letter from your parents explaining why by Friday, August 18, 2017.** Students uncomfortable with wet dissections will be required to complete alternative assignments (likely essay based) at my discretion, or will earn a zero. Additionally, multiple labs throughout the year require use of biological samples, antibiotics, and common allergens. ***If you have any allergies that might impede your lab work, please let me know on your syllabus contract.*** Some allergens used in certain labs include eggs, milk, nut products, and penicillin.

**Grading Policies**

Your grade in this class will be based on a **total point system**. You’re able to calculate your grade at any point by adding up how many points you have earned and by dividing by how many points are possible. You may also check the online gradebook for accurate grades soon after many assignments. While I promise to grade assignments as quickly as possible, I have more than a hundred students I will be assessing regularly. Your learning will be assessed using the following methods:

1. **Tests/Exams** **(75-150 points each, one per unit with some smaller units potentially combined)**: Tests will all be based on past AICE and AP exams. They will comprise of a mixture of multiple choice, free response, essay, and diagram questions.
2. **Labs (20-50 points for formal write-ups, 1-2 each nine weeks, plus 75-200 point lab notebook grade each nine weeks):** You will be required to keep a lab notebook to be graded each nine weeks, and will also have 1-2 formal lab write-ups each nine weeks. This class has a heavy emphasis on lab importance because of its high level and AICE Biology Paper 3. Always follow instructions in the lab for safety reasons. You will be receiving a safety contract outlining all laboratory procedures. Expulsion from a lab for poor safety behavior will result in a zero on that day’s lab activities. Please bring lab notebooks and close-toed shoes to class **every** day, or risk earning a zero on your lab.
3. **Three-ring binders (40-100 points, due at the end of each nine weeks):** I will collect class binders at the end of each nine weeks grading period. Your binder should have divided tabs with sections for guided readings, lecture notes, practice questions and test reviews, labs, and additional work. The first pages in your binder should be this syllabus.
4. **Guided Reading Assignments (20-50 points each, one-three per unit):** I will provide reading questions prior to each unit to complete while reading the textbook. These will be due the first day of lecture on a new topic.
5. **Problem Sets (20-50 points each, one per unit):** I will provide question sets and review questions to help prepare you for each exam. These are due the day of the test, prior to beginning the exam, and must be turned in on the original handouts.
6. **Small, additional assignments:** These will be occasional and varied, and will typically be worth 5-30 class points.

The Alachua County Grading Scale is used for this course. As I offer 3% extra credit, there will be **NO rounding up of grades.** Please do not come to me at the end of the semester and say you are only 0.2% away from a B. The extra credit is to buffer against these situations.

Grading scale:

 A = 90 - 100 C = 70 - 76.99

 B+ = 87 – 89.99 D+ = 67 - 69.99

 B = 80 - 86.99 D = 60 - 66.99

 C+ = 77 - 79.99 F = 0 – 59.99

I am looking forward to an excellent year in AICE/AP Biology! I have a lot of fun labs and activities planned, and cannot wait to get started. Please let me know at any point if you have questions, and parents are always able to contact me by e-mail or by leaving a message with the school. Thank you all in advance for your hard work and positive outlooks for the year ahead!

**After reviewing the syllabus with your parent, please return the following (DUE FRIDAY, AUGUST 18, 2017) for a grade.**

**I have read Ms. Paxson’s syllabus and understand what is expected of me in AICE/AP Biology. I also understand all of Ms. Paxson’s policies and I agree to follow them in her classroom.**

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Student’s Name (Please Print)

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Student’s email address

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Student’s Signature Date

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Parent’s Name (Please Print)

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Parent’s email address / phone number

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Parent’s Signature Date

Medical or allergy concerns as related to AICE Biology? Please include them here: