NATIVITY B.V.M. HIGH SCHOOL
ADVANCED PLACEMENT BIOLOGY SYLLABUS

Teacher: Mr. Jason C. Jones
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COURSE DESCRIPTION:

AP Biology is a rigorous and demanding course, which is the equivalent of an introductory college biology course. Content will be covered in more depth and greater expectations will be placed on interpretation and analysis of information than previous biology courses. In addition, statistical analysis of data and modeling of concepts will be expected. A significant amount of learning must be completed at home to allow time for discussion, labs, and inquiry during scheduled class time. AP Biology will develop students' analytical and critical thinking skills, technical writing skills, and scientific literacy to prepare them for a college science curriculum and the AP Biology exam. The AP Biology curriculum encompasses 4 "Big Ideas", with essential knowledge and process skills that support each one. These "Big Ideas" include: Big Idea 1: Evolution – the process of evolution drives the diversity and unity of life; Big Idea 2: Cellular Processes (Energy and Communication) – Biological systems utilize free energy and molecular building blocks to grow; Big Idea 3: Genetics and Information Transfer – living systems store, retrieve, transmit, and respond to information essential to life processes; Big Idea 4: Interactions – Biological systems interact and these systems and their interactions possess complex properties.

Pre-Requisite: Students should have taken and passed the following courses with the average indicated or higher: advanced biology (85%) or biology (91%). Students should have also taken algebra 1 and chemistry or be taking these classes concurrently with AP biology. Approval of science teacher or science department chairperson is required.

Required Materials Always come to class prepared and ready to learn.

- 3-Ring Binder (Lecture/Lab)
- Pencil
- Black/Blue Ink pen
- Non-graphing Scientific Calculator
- Computer or Electronic Device w/Internet Access
- Google+ Account/Google Email
- Colored Pencils (Optional)
- Paper: Loose leaf and Graphing
- Sharpie (Black)
- Highlighter
- Folder
- Composition Bound Graphing notebook

- Lecture Text: Mader and Windelspecht 12th edition Biology (2016)
- Lab Text 1: *AP Biology Investigative Labs: An Inquiry-Based Approach,* as well as other laboratory investigations essential for furthering the understanding of concepts.
- AP Biology Practice Workbook TBA

Grading Procedures, Policies, and Student Progress

All work completed in this class will be graded on a weighted basis. The grade earned for each marking period will result from the following weighted categories:
(A) 100-93 (B) 92-86 (C) 85-78 (D) 77-70 (F) 69-0

Know your grade! Log onto the MMS Portal to view your average and assignments.

Quarter averages are determined in the following manner:

Major Assessments (Tests/Projects/Research Papers)	55%
Laboratory Exercises/Activities	30%
Minor Assessments (Quizzes/Assigned Class Work/Homework Assignments)	15%
	100%
**Semester Exam*	*20% of semester average*

*More information related to majors, labs, and minors will be provided verbally to the students in class as we discuss the policies and procedures.

Assessments: A combination of formative and summative assessments will be used to monitor student progress and cumulate a quarter grade. These assessments will include, but not be limited to, AP formatted unit tests, lab investigative reports and analyses, homework problems and review questions, chapter quizzes, independent student work, hands-on activities and simulations, collaborative work, scientific journal reviews, class discussions, peer teaching, literacy activities, etc.

Academic Honesty Policy (Cheating, Plagiarism, and Copying Another's Work): See policy written in student handbook. Please see policy below if the teacher determines you were cheating on a major test more than once:

- 1st Offense: See "Academic Honesty Policy" in student handbook.
- 2nd Offense: See 1ST Offense; Student automatically fails the quarter with an average of 65% or lower, if quarter grade reflects a lower score. A failing grade will be issued no matter the length of time between the 1st and 2nd offense.
- 3rd Offense: See 2nd Offense; Student automatically fails the semester/course with an average of 65% or lower, if the cumulative average reflects a lower score. Please know that summer school credit recovery may be necessary if a failure results for the year.

*THE TEACHER STRICTLY ENFORCES THIS POLICY!

Assignments: All assigned work is due at its specified date/time. Incomplete homework procedure:

- 1 day late will result in 25% point deduction from total value.
- 2 days late will result in 50% point deduction from total value.
- 3 days late will result in 75% point deduction from total value.
- 4 or more days late, work WILL NOT be accepted.

Absent from Class: The student is responsible for all missed work when absent from class. This includes notes, any assigned class/homework work, and scheduling a make-up date for tests, labs, and quizzes. Assignments due on day of your absence(s) is/are due at the beginning of class the day you return unless otherwise specified by the teacher. Please see assignments above for point deductions. Since a week's notice is given for announced tests, you are not excluded from taking the test if missing a review day. Make-up work cannot be completed during our scheduled class time. Please make necessary arrangements with the teacher. Any missed labs must be made up immediately upon return. In some cases, an alternative laboratory assignment may be given due to the nature of the lab.

Tutoring/Study Sessions: Never hesitate to see me for extra help! Class study sessions are highly encouraged before tests. Both tutoring and study sessions can be made by appointment with the Mr. Jones as needed.

Student Expectations:

Always think…C.A.F.E. **C**ooperation, **A**ttendance, **F**aith, & **E**ffort.

- Give **RESPECT!**
- Be **POSITIVE!**
- Think **SAFETY!**
- Be **PROMPT!**
- Be **PREPARED!**
- Actively **PARTICIPATE!**
- Always **LISTEN!**
- Be **LEARNING!**

BE YOUR BEST by SHOWING ME YOUR BEST YOU!

Mr. Jones reserves the right to alter the syllabus for this class should it be necessary.

Nativity BVM Student Handbook The policies and procedures stated in the Student Handbook of Nativity BVM High School apply to this class. Failure to abide to these policies may result in behavioral and/or academic disciplinary actions.

Tardiness: Tardiness will be handled as per the school's policy. A tardy will be counted any time a student arrives to class after the bell has rung without a written note from a teacher/staff member excusing your lateness.

Discipline Plan A 4-step discipline plan will be followed for any student who fails to abide to the policies and procedures of this course.

1) **1st Offense**-verbal warning to student
2) **2nd Offense**-student-teacher meeting; behavioral analysis paper completed
3) **3rd Offense**-Referral sent to the dean of students for disciplinary action.
4) **4th Offense**-Referral to dean of students for disciplinary action; parent-teacher-student conference scheduled

*Please note that any serious wrongdoing will automatically result in 3rd or 4th Offense.

Field Trip Statement: Students will be required to occasionally perform class assignments/tasks outside the school building or on designated field trips. All school and classroom policies and procedures are applicable when participating in all field trips. You agree to release and discharge the Diocese of Allentown, its officers, agents, and employees exercising reasonable care within their scope of employment, from liability growing out of personal injuries and property damage resulting or occurring during the above mentioned activity, or in transit from said activity.

Electronic Devices Policy Students must receive permission from Mr. Jones for use of personal electronic devices (i.e. cell phones, computers, iPods, iPads, Nooks, translators, etc.) during class time. In the event personal electronic devices are to be used in class for academic purposes, the student must abide by the school's acceptable use policy and school rules regarding technology. Failure to use your personal electronic device for its intended academic purpose and/or follow the rules and regulations regarding technology and Internet use will result in disciplinary action and loss of technology privileges.

Remind Message Signup: To receive class update messages: Text to: 81010 Message: @cee31b

Connect Ed Login Information: Used for Online Assignments; Tests; LearnSmart Labs

User Name:_____

Password:_____

Google+/Gmail: Used for Communication, Discussions, Document Sharing, and Collaboration

User Name:_____

Password:_____

MMS Parent/Student Portal: Used to track your grade and see missing/incomplete assignments.

Class Webpage: Used for accessing links, videos, YouTube video lectures, documents, etc.

http://websites.pdesas.org/mrjones_science/default.aspx

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AP Biology Exam Information: 60% multiple choice and 40% free response questions. You will be required to complete 100 multiple- choice questions in 80 minutes and another 90 minutes to respond to 4 free response questions.

The exam will be administered on MONDAY, MAY 8, 2017 at 8:00 A.M. and include content from the following big ideas with enduring understandings, science practices, and 13 required investigative inquiry-based labs.

Success in AP Biology: AP Biology is a very challenging college-level course that is to prepare you for the end-of-the-year exam. Frequent absenteeism is frowned upon since attendance is crucial to passing. In class, you must stay focused and put forth a consistent and conscientious effort throughout the entire year. You are responsible for keeping up with the assigned material with the fast pace of this class; procrastinating will only bury you in more and more work and put you in academic danger. In my class, you must to demonstrate a high level of organization and a willingness to utilize advanced study skills. Students must also be willing to ask lots of questions and readily participate in all class activities.

Big Ideas with Enduring Understandings:

1. **Big Idea 1**: The process of evolution drives the diversity and unity of life.
    a. 1A: Change in genetic makeup of a population over time is evolution.
    b. 1B: Organisms are linked by lines of descent from common ancestry.
    c. 1C: Life continues to evolve within a changing environment.
    d. 1D: The origin of living systems is explained by natural processes.
2. **Big Idea 2**: Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis.
    a. 2A: Growth, reproduction and maintenance of the organization of the living systems requires free energy and matter.
    b. 2B: Growth, reproduction and dynamic homeostasis require that cells create and maintain internal environments that are different from their external environments.
    c. 2C: Organisms use feedback mechanisms to regulate growth and reproduction, and to maintain dynamic homeostasis.
    d. 2D: Growth and dynamic homeostasis of a biological system are influenced by changes in the system's environment.
    e. 2E: Many biological processes involved in growth, reproduction and dynamic homeostasis include temporal regulation and coordination.
3. **Big Idea 3**: Living systems store, retrieve, transmit and respond to information essential to life processes.
    a. 3A: Heritable information provides for continuity of life.
    b. 3B: Expression of genetic information involves cellular and molecular mechanisms.
    c. 3C: The processing of genetic information is imperfect and is a source of genetic variation.
    d. 3D: Cells communicate by generating transmitting and receiving chemical signals.
    e. 3E: Transmission of information results in changes within and between biological systems.
4. **Big Idea 4**: Biological systems interact, and these systems and their interactions possess complex properties.
    a. 4A: Interactions within biological systems lead to complex properties.
    b. 4B: Competition and cooperation are important aspects of biological systems.
    c. 4C: Naturally occurring diversity among and between components within biological systems affects interactions with the environment.

Essential Science Practices for AP Biology:

1. Using representations and models to communicate scientific phenomena and solve scientific problems.
    a. **Create, Describe, Refine, Re-Express**
2. Using mathematics appropriately to analyze scientific data and explain scientific phenomena.
    a. ***Justify Apply Estimate***
3. Engaging in scientific questions to extend thinking or to guide investigations.
    a. ***Pose Refine Evaluate***
4. Planning and implementing data collection strategies appropriate to a particular scientific question.
    a. ***Justify Design Collect Evaluate***
5. Performing data analysis and evaluation of evidence.
    a. ***Analyze Refine Evaluate***
6. Working with scientific explanations and theories.
    a. ***Justify Construct Articulate Predict Evaluate***
7. Connecting and relating knowledge across various scales, concepts, and representations in and across domains.
    a. **Connect Generalize Extrapolate**

AP Biology's Investigative Inquiry-Based Labs:

Labs:	Investigation Title	Submission for Grading	Science Practices
1	Artificial Selection	Written Lab Report	1-7
2	Mathematical Modeling; Hardy-Weinberg	Written Lab Report	1-7
3	Comparing DNA Sequences to Understanding Evolutionary Relationships with BLAST	Written Lab Report. Students summarize and evaluate scientific evidence supporting biological evolution. Students create a simple cladogram from provided data set.	1, 2, 5, 7
4	Diffusion and Osmosis	Written Lab Report; Graphed Data	1-7
5	Photosynthesis	Written Lab Report; Graphs; Discussion	1-7
6	Cellular Respiration	Written Lab Report; Presentation on lab results	1-7
7	Cell Division: Mitosis and Meiosis	Written Lab Report; Using colored beads, students' groups give visual simulation of the events of mitosis and meiosis	1, 7
8	Biotechnology: Bacterial Transformation	Written Lab Report; Oral Presentation	2, 4, 5, 7
9	Biotechnology: Restriction Enzyme Analysis	Written Lab Report; Oral Presentation	2, 4, 5, 7
10	Energy Dynamics	Written Lab Report	1, 2, 6, 7
11	Transpiration	Lab Questions and analysis	2, 4, 5, 7
12	Animal Behavior (*Drosophila*)	Written Lab Report; Class discussion of the different types of insect mating behaviors	3, 4, 5, 6
13	Enzyme Catalysis	Written Lab Report. Students make a chart using collected data to show effects of temperature and pH on enzyme activity. Groups of students share and discuss their data.	1-7

Students must visit the course webpage frequently to view the daily lecture/laboratory schedule. You are responsible for knowing what we are doing in class and items that are due on a particular day.

AP Biology Chapter Content Overview:

Each chapter has:

- Associated laboratory exercises to reinforce the lecture material through a hands-on learning experience.
- Guided Collaborative Learning Activities - complete, flexible exercises ready to incorporate into your course. Includes assignable pre- and post activity exercises as well as a robust instructor resource guide. Each Guided Activity contains the following components:
    - Instructor support - outlines the goals for the activity and provides valuable teaching tips.
    - Scenario - the case study or situation that the exercise will be based on
    - Pre-Activity - assignable worksheet to prepare students for the exercise. (optional)
    - Activity - in-class exercises that will guide student discussions and allow for recording of collaborative answers.
    - Post-Activity - assignable worksheet to follow up on the in-class exercise. (optional)
    - PowerPoint - slides to help the instructor introduce the activity in class.
- Minute Papers to engage students in critical thinking.
- Concept mapping activities that can be individual or group work.
- McGraw-Hill's CONNECT Biology will serve as an online learning tool.

Free Response Questions (FRQs) Writing Prompts

Essay writing on the AP Biology exam is very different than on English or history exams. You get no points for style, only for content. The essay portion of the exam is the second part of the test. You will be given four essay questions which you will have 10 minutes to read and organize your thoughts. After the reading period, you will have 90 minutes to write your responses. If you divide by four, you will realize that you have 22.5 minutes on average for each response. As a result, you will have to use your time wisely. I suggest the following strategy:

During the reading period:

1. You will be allowed to outline, but not write, during the reading period. This is to give you time to prepare your thoughts and avoid rambling essays
2. Prepare a graphic organizer/outline identifying what the question is asking. This will help you keep your answer on-topic when you begin to write.

When writing:

1. Do NOT write an introductory paragraph or a concluding paragraph. This is a waste of time. Although it is good writing, you will earn no points for good writing—sad but true.
2. Dissect the question into its component questions. How many separate pieces of information is the author asking for and what are they?
3. Write logically using your graphic organizer as a reference. If the question asks for one example, choose your best example and fully explain it. Readers are trained to grade the first example given. Therefore, if the question asks for one example and your first example only earns one point, it doesn't matter that your second would earn two. The rationale behind this is that it prevents students from benefiting from "mind dumping", where the student writes anything that might possibly be related in an effort to earn points.
4. Avoid contradicting yourself. Although readers look for places to give points, contradictory statements can negate earned points.
5. Avoid fluff… in the words of Sergeant Joe Friday 'just the facts, ma'am'. AP readers don't care about fancy writing and metaphors; they want to know that you know the information.