

# Honors Biology Course Syllabus

Teacher: Mr. Engstrom

Room C339 / Office C338

Voice mail: (651) 683-6969 box 3327 / (h) 952 423-5089 / (c) 952 250-7592

Email: [kevin.engstrom@district196.org](mailto:kevin.engstrom@district196.org) or [kevin.engstrom@charter.net](mailto:kevin.engstrom@charter.net)

School web page: <http://www.district196.org/evhs/people/EngstrkcWeb>

Home web page: <http://web.mac.com/kevin.engstrom>

**Curriculum** (I shoot for these timelines but they are subject to frequent change)

## Quarter 1

- Introduction to the study of the biological sciences (15 days) – ch 1
  - Study the Nature of Science and of biology,
  - Study the Characteristics of Life
- Ecology (15 days) – ch 3-6
  - Study the Biosphere, Ecosystems, Communities & Populations
  - Study the Human interactions within the Biosphere
- Biochemistry (15 days) – ch 2 & 38.1
  - Study the chemistry of carbon, aqueous systems, and chemical reactions
  - Study the structure & function of carbohydrates, lipids, nucleic acids, proteins, & enzymes

## Quarter 2

- Cell Structure & Function (10 days) – ch 7
  - Study of cell structure & function of living things & Study passive, active, & bulk transport
- Respiration & Photosynthesis (10 days) ch 8 & 9
  - Study photosynthesis & cellular respiration as representative biological processes & cycles
- Cell Division & Cancer (10 days) ch 10
  - Study mitosis & cytokinesis of eukaryotic organisms w/respect to growth & repair
  - Study asexual reproduction of unicellular organisms
  - Study normal (stem cells) and abnormal cellular division (cancer)
- Genetics, Sexual Reproduction, Chromosome Theory, & DNA (15 days) ch 11 & 12
  - Study Mendelian genetics (Mendel's laws, meiosis, probability, & Punnett squares and pedigrees)
  - Study Modern Genetics (chromosome theory, polygenic traits, linkage maps, multiple alleles, incomplete dominance)
  - Study the structure & function of DNA (chromosome structure, mutations, DNA Replication, RNA, protein synthesis)

## Quarter 3

- DNA, Human Heredity, Biotechnology & Genomics (15 days) ch 13 & 14
  - Study Genetic Engineering (biotechnology, gel electrophoresis, PCR, Transgenic organisms, cloning)
  - Study the Human Genome (human heredity, sex determination, human DNA & mutations, HGP, gene therapy)
- Evolutionary Theory & Classification of Life on Earth (15 days) ch 15 - 18
  - Study Darwin & evidence, mechanisms, & explanations of change both past & present ideas
  - Study hypotheses regarding chemical evolution & origins of life
  - Study Classification/Cladistics/Systematics - the 6 kingdoms and 3 domains of life
- Brief study of Viruses, Bacteria, Protists, & Fungi (15 days) ch 19 – 21
  - Structure, reproduction, pathology, & classification of viruses, bacteria, protists, and fungi

## Quarter 4

- Brief study of Plants (10 days) ch 21 - 25
  - Study of plant characteristics, structures, & basic reproduction
  - Study of 4 major plant groups from an evolutionary perspective (bryophytes, pterophytes, gymnosperm, angiosperm)
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- Invertebrate & Vertebrate Animals (12 days) ch 26 - 34
  - Animal reproduction & development
  - Common & distinct characteristics of the major invertebrate phyla
  - Common & distinct characteristics of the major vertebrate organisms in chordate phylum & human evolution
- Pig Anatomy (a study of mammalian & human body systems) (13 days) ch 35 - 40
  - Human anatomy & physiology by comparative anatomy of a fetal pig's major systems

## Grades & Scale

Grades are a snapshot view of how well you have performed over time in a certain course compared to the expectations of the course and its instructor. Ideally they reflect what you know and are congruent with how hard you have worked to achieve the grade. A criterion-based system consists of assessing the proficiency of performance as compared to a standard. The grade is independent of how others perform and therefore, it is conceivable that everyone could attain the highest level of proficiency. I will use this type of system to make several snapshots (quizzes, homework, tests, and projects) of your performance over time. At the end of each quarter (and periodically along the way), I will take a snapshot of your average level of proficiency in several areas and develop it for you to keep record of it in what is known as your **GRADE!**

I have two primary goals that I try to reach every day. First, I strongly desire to help you learn biology in an effective, appropriate, and rigorous manner. Secondly, I want to empower you to work hard and be responsible so you will be able to achieve the desired level of proficiency necessary for you to attain your desired grade. Typically a person who earns a C or D in the testing component but puts together excellent projects and completes 100% on homework can earn a C+/B-. To earn higher grades, you will need to score higher on tests and quizzes. Low test &/or quiz scores indicate you need help with assessment preparation. Low homework scores indicate your daily organization and preparation needs improvement. I expect everyone can earn 100% on homework (see "x-out" for exceptions) but past experience tells me to expect less than 1/3 of my students will earn an A average on tests & quizzes. Learning is a unique and subjective endeavor whereby a single letter grade often fails to capture the nuances of its acquisition. I hope you earn the grade you want but, honestly, I am more hopeful that you **learn**. I will not be successful in my goals without your cooperation. Parents, I would guess a minimum of ½ hour per night of homework, 7 days a week reading, researching, writing, and reviewing would be a minimum. Getting in for help early and often is highly recommended.

Weighted Grade (distributed into two categories): I suggest you understand and can calculate weighted grades. (grade keeper)  
**ASSESSMENTS (70%)** (chapter, unit & final tests; large project assessments; large formal lab write-ups; and short announced & unannounced reading and lab quizzes that cover the recent/future week's material)  
**PREPARATION (30%)** (small lab write-ups, daily class work, most homework assignments, and review worksheets)

Although you should **always** be ready with your assignments, please know that **NOT** every assignment or activity will be graded and **NOT** all items assigned will be corrected for points. The need to give you direct & immediate feedback on an assignment might outweigh the need to grade & return it later. I might suggest or demonstrate a strategy for playing with the ideas of the course that might not be conducive to grading but it is an effective tool to help you learn. I will empower you to make choices in those cases, as you decide what you need to do to be successful in this course. Often, the homework will be assessed as being complete, incomplete, or missing but it must be done accurately, neatly and with your own efforts or I reserve the right to give you a zero or late score. There might be **quality points** involved with homework, which are accuracy points. Frequently, you will be responsible for the accuracy of the content. However, all work done in class is done with a purpose and that is for you to have the opportunity to learn about or experience some concept. Failure to do your homework well will likely lead to poor test scores. Therefore, if you ever feel like you did not understand some preparation activity and you needed a better or longer explanation for a particular answer to a question, you must do something to get that help. Please ask questions during class and if time does not permit a sufficient explanation, then please arrange a time with me to meet so you can get an answer that meets your needs. I assume that when you read the text, take notes, and successfully do the classroom activities in a timely fashion, that you will achieve the desired acquisition of knowledge. If that does not happen for you, then you must work harder or smarter to learn the material and I will work with you to help you be successful. We all learn at different rates and in different ways so find the best way for you to learn and continue to hammer away at it until you have successfully learned the information to the level you are capable of doing. This course attempts to push you to a level of understanding that is more conceptual and analytical than you might have had before in a science class and it is designed to challenge you. Neither the grade nor the comprehension of material in this course is designed to come to you without significant effort on your part so please embrace the challenge!!!

<u>Grade</u>		<u>Percent (%)</u>	<u>Grade</u>		<u>Percent (%)</u>	<u>Grade</u>		<u>Percent (%)</u>
A-	=	90 - 92	A	=	93 - 100	B+	=	87 - 89
B-	=	80 - 82	B	=	83 - 86	C+	=	77 - 79
C-	=	70 - 72	C	=	73 - 76	D+	=	67 - 69
D-	=	60 - 62	D	=	63 - 66			
			F	=	below 60			

Minuses and pluses are the bottom and top 3% within each 10 % range. NO rounding occurs so 89.99% = B+ while 90.00 = A-.

**Extra credit:** Since I offer 2 **X-out** opportunities and **bonus points**, I will **not** typically be offering extra credit. If extra credit is offered, it will be offered and done during the quarter to stretch you and not at the end of the quarter to save you.

## Class Rules & Regulations: Engstrom's Honors Biology Classroom policies

#1-15 are behavioral &/or procedural guidelines that you must know. I really have just one behavioral rule (#1).

#2-15 are just nauseatingly thorough discussions of my responses should you decide not to follow rule #1.

1. **Honor yourself and others: Expect and Give Respect** – make it be a two-way street between all persons during class.
2. Out of respect for my colleagues, your peers, and the school property, **we will observe and obey all other Eastview norms of behavior**. NO food, pop, headphones, IPOD/MP3 players, PDAs, or cell phones will be allowed in class unless they are allowed by me. Drinking water from fountains or bottles is permitted.
3. **Any behavior you have that prevents me from teaching or someone else from learning is inappropriate**. It is rare that I have significant classroom problems, because I mostly have wonderful, serious learners. Typically, I need only make eye contact with you, come in close proximity to you, or call out your name - **take the hint**. If you are persistent **or** oblivious, then I often restate my directions generically or specifically to you. If a pattern persists and/or I am unsuccessful in making it clear you need to change your behavior, I will either talk to you after class or send you out in the hall to remove the distraction (you) from the rest of us. I will talk to your parents if the pattern of behavior continues or escalates. I will possibly assign you a detention consequence whereby you will be cleaning my room for ½ hour after school. Finally, if you force it, I will get the administration involved and you will be assigned some consequence along with a permanent note in your school record.
4. **You will become eligible for a tardy when you are not in your seat when the final bell rings** and class begins. If you were tardy and I have already taken attendance and marked you absent, it becomes your responsibility to help me switch the absence to a tardy. Failure to do so may cause you to serve the consequences of an *unexcused absence*. Warning bell = 1 minute warning. I will be the judge of whether you are tardy and I will be looking to see if you are in your seat prior to the bell ringing. Help me catch you being a positive role model of preparation.
5. **A respectful person** would come to class on time, be ready to learn, and be ready to allow others to learn by having his/her books, assignments, notebook, and pencil on the desk by the time the bell rings. While I'm taking attendance, you have a great opportunity to review yesterday's material or work on the day's initial activity – **QUIETLY!**
6. Please complete all of your work in a timely fashion. **You** are responsible for collecting materials **missed while absent** and for handing homework in **within 2 days** of any assigned work you missed due to an absence. If the assignment is due on the day you are absent, then you will be expected to hand it in the **next day** you are in school. ID a classmate who will collect materials for you when you are absent – I call this person your **“study buddy”**.
7. **Please write “ABSENT” and list the absent dates** at the top of the homework paper **and the date you turned it in** when turning in your excused late work for credit. If you fail to do so, you will likely receive only **50%** credit for the assignment. This is **IMPORTANT** for you **AND** me. Do not fail this responsibility.
8. **Extra credit**: Since I offer 2 **X-out** opportunities and **bonus points**, I will **NOT** typically be offering extra credit. If extra credit is offered, it will be offered and done during the quarter to stretch you and not at the end of the quarter to save you.
  - a) You will be allowed to **OMIT one** homework category item and **one** quiz (except if only 1) at the end of each quarter. However, tests & projects are **NOT** eligible for this omission opportunity. If you do poorly on one assignment and/or one quiz, then you can **“X-out”** one item from each category. You then become responsible for choosing and telling me which **“X-outs”** you want removed. This **X-out** process will occur at the end of the quarter. If you miss handing in homework on time, you can hand it in late for up to **50 %** credit provided it is turned in **well done, neat, and complete** and by the time I hand out the unit test. If it is done poorly, your **“M”** (missing) score will turn into a zero (M and 0 are equivalent). You **can't X-out** missing, zero, or cheating (c) assignments.
  - b) If you hand in **ALL** of your work and take **ALL** of your quizzes, then you are eligible for a **REWARD**. The reward is available only to those of you who don't use your **X-outs**. For each **X-out** you don't use, you earn **2 points** toward your **Assessment** grade total for a maximum of **4 “X-Out” points** each quarter. You will **NOT** be eligible for the reward (X-out points) if you **cheat (c)** or have any **M's** or **zeros** by the **EOQ**.

9. Unexcused work will be accepted for up to **50% credit** when turned in past the due date. You will get up to **50% credit** if you write **LATE** on the top, front of the assignment and turn it in on or before the day we test that unit's material. **Any late assignment turned in for credit must be complete and done neatly and accurately or you will not receive any or all credit.**
10. Sometimes, a student will ask me to accept late work for full credit and he/she usually has a sad and often compelling tale of woe. Sometimes the eyes well-up or tears flow. However, expect that "**NO, I'm sorry**" is the answer to the question "Can I turn it in now for full credit?" I will try to manage exceptions in a fair and judicious manner. Please share with me, your dilemma/story if you feel it might warrant an exception. I suggest if you have **incomplete work** when the **due date** arises, that you consider handing in what you have on time for partial credit unless you have **less than 50%** done. Then, I would keep it, complete it, and turn it in late. Work turned in after the unit is over but by a firm deadline near the end of the quarter will receive 1 point. While not much, it will allow you to avoid an **M** or **ZERO** and you will get to use the **X-OUT**. X-outs are NOT a right but rather an opportunity.
11. **Bonus Points** are points earned for completing assignments NOT required of everyone. In a sense, it is like they are extra credit. They are designed to help you learn and so many of you will not only choose to do them because you get points but also because you realize it helps you learn the material. Often the bonus points are going to be offered for completing the chapter study guides. These study guides are an excellent post-reading strategy to help you assess whether you have understood what you have read. You will certainly be able to check your answers when you are finished with the study guide so please use any available class time to use my answer keys to check your work. You won't be handing in the bonus point work until the test day but you can check the assignments prior to that time as long as it is convenient for both you and I. Before or after school are great times to check your work. You can also use the study guides as sources of questions to ask during class as we go over topics for which you need further explanation. Ideally, you will have 5 or more opportunities to earn bonus points throughout each quarter. Each bonus point assignment fully completed and done with high quality will be able to raise your final quarter grade by 0.10%. (I reserve the right to offer greater value to a particular bonus point activity if I feel it is warranted.) The maximum total accumulation of Bonus Points for a quarter will be 0.50%. Therefore, if you earn a final grade of 92.50% and earn the maximum bonus points, you would end up with 93% and an A. These bonus point activities need to be accomplished along the way and will NOT be allowed to be completed at the end of the quarter because you have now determined you need them to raise your grade.
12. To use the **bathroom/drinking fountain pass** (an object (ant) or colored paper pass), just pick it up on the way out and don't ask. I know you need to go and you have the right to perform bodily functions without asking. (Guys don't need a pass to walk across the hall). Any habitual/daily pass use will result in the loss of this privilege. For all other building movement, please get a blank colored pass from my teacher desk, fill it out completely and then place it on my desk for a signature w/o interrupting me. I will sign it ASAP and then you can pick it up and leave. **For an emergency nurse visit, you should stop me immediately and I will help you with a pass &/or escort.** NO locker or counselor passes initiated by you are allowed. **DO NOT** leave the room for a drink or bathroom break during the **first or last 5-10 minutes** of class if I am giving instructions or we are reviewing. You will be held accountable.
13. **Academic integrity and honesty is very important to me** and it should be to you. The only thing you carry around with you is your reputation. Don't tarnish it over something so trivial as a single assignment or test. Although the grade at the time may seem important, it will likely pale in comparison to your act of dishonesty should you decide to go down that unfortunate pathway. Self-esteem is earned as you go through life and accomplish things of which you can be proud. Falsely achieving anything leaves a hollow feeling while fiercely working to succeed, regardless of the outcome, leaves a sense of pride that can never be taken away from you.
14. **Education is a chance for you to learn and make mistakes.** If you make a mistake in judgement in the area of academic integrity and honesty, I will ask you to own up to the mistake in judgment by writing a letter of apology to yourself as an act of contrition so that you can move on. You will have me, your counselor, and your parents read and sign the letter. The letter may go in your file. In addition, the consequences will fit the severity of the infraction and would likely mean you would lose all credit for the assignment, quiz or test. You **CANNOT** use an **X-out** for this. Academic dishonesty typically occurs when someone copies someone else's work on an assignment, lab, quiz, test, project, or paper and then expects credit for it. I consider the infraction to include a consequence for the person who is copying as well as the person who allowed it to happen. There is a difference between "working together" and "copying". In the first case you learned the material, in the second case; you showed **NO** respect for yourself, your classmate, the course, or me. **Passing someone else's work off as your own is just simply wrong.**
15. On test/quiz day, you will need to put your cell phone (etc...) on the **corner of the desk** and leave it there untouched until the end of the period. Any violation of this rule will result in a zero on the test or quiz. **No texting is allowed.**

# How will we learn?

Dear parent(s), guardian(s), and Honors Biology student:

Honors Biology is a course that emphasizes the learning of both the content and process of science. In May, there will be a state-wide MCA-II science assessment that tests student knowledge in these two areas.

Biology is one way of knowing. It is a fairly new science that is actually a collection of many facts and theories developed from once-separate studied sciences such as Natural History, Cytology, Zoology, Botany, Anatomy, and Physiology. Today, biology is an umbrella term to encompass a broad area of study founded and unified early in the twentieth century on three basic theories developed since the mid 1800s and coalescing at the turn of the 20<sup>th</sup> Century: **Cell Theory** (1838 / 1858), **Chromosome Theory** (1860 / 1903), and **Evolutionary Theory** (1859). Today, the study of biology spans a very wide spectrum of research specialties and touches a great number of allied fields of study such as the obvious ones like genetics, medicine, and ecology and the more obscure areas such as neurocytology, phytopharmacology, proteomics and genomics, epigenetics, exercise physiology, agronomy, and paleo and exobiology. Each of these fields has hundreds or thousands of researchers world-wide and the amount of new research published in peer-reviewed journals each year is staggering and ever-accelerating. Although there are a myriad of specialties and sub-specialties that have and continue to develop as the biological knowledge base expands, typically, biology, in any form, is viewed through the lens of **Evolutionary Theory** which is the overarching and binding set of ideas that unify and explain all other biological discoveries, theories, and ideas. The Modern Synthesis (where knowledge of how cells transmit DNA and how changes in DNA in populations causes speciation) unites the 3 big theories (& a multitude of other smaller yet vitally important ones) and therefore, **Evolutionary Theory** will pervade our course yet it will often seem transparent. Students will be expected and encouraged to understand this theory as a framework for understanding biology in the same way a chemistry student would need to have working knowledge of the atomic theory. Students will not be asked to “believe” in evolution nor will they be asked to accept it on faith. Rather, they will need to develop an understanding of how biologists today use evolution and other theories as tools to gain an appreciation for the connections between the accumulating strands of knowledge they will be exposed to in this course.

We will explore living systems and their similarities that we discover in the microscopic world of cells and submicroscopic world of biochemistry. We will explore various groups or species of organisms and observe their unique differences. Often, our goal will be to search for patterns of generality and uniformity of structure and function found within and between these different types of organisms and biological systems. Maybe more important will be our examination of the interdependence all life has on this planet in the macroscopic worlds of ecology and population genetics.

We will use labs, lectures, discussions, video clips, internet resources, and the text as tools to explore and understand current, future, and past ideas in the field of biology. You will need to play with ideas and develop your own set of strategies that best help you learn. Sometimes you will be asked to do what everyone else is doing and the options will be few. Periodically, you will be offered opportunities to choose, shape, or create your own learning activities. Even though I fully recognize the power to motivate that choice provides, lessons will not always be differentiated. Therefore, I will remain hopeful that you will fully engage in each learning opportunity offered to you.

We will attempt to stretch your biological knowledge base by emphasizing tools of literacy that will help you analyze and synthesize information. The text book is a foundation that you must read. It would be best for you to read ahead early and often and therefore, I recommend you observe unit calendars daily. To maximize your learning opportunities, you must become engaged in all classroom and homework activities. You will need to understand the vocabulary of the course which can be challenging. We will use vocabulary, reading, and writing strategies to help you with this learning. If you are struggling, even a little bit, please come in for a quick bit of help. Sometimes, it only takes 1 answered question to open the knowledge flood gates and help you organize the information. Learning is a very personal activity and you will need to make sense of this biology material in your own unique way. I will be busy trying to help you with the learning but I will need you to be working hard at accessing me and my class so you can achieve and learn to the level you desire.

By the way, there are two teachers who teach Honors Biology. While we teach the same concepts and offer nearly identical lab experiences, our strategies of instruction tend to vary based on our unique strengths and weaknesses as teachers. We communicate regularly and together, we have developed a guaranteed and viable curriculum that offers all Honors Biology students the same kinds of learning opportunities. However, there will be differences in the sequence and duration of some units and we will frequently use different exams or collect and grade different assignments. Students who are struggling, often look for excuses instead of solutions to improving their academic standing. If for any reason, your son or daughter expresses academic concerns with respect to my class, please **bring that to my attention with a phone call or email**. You, your child, myself, and a counselor will meet and examine the problems your child is having in my class. As a general rule, we don't switch teachers as the first step in fixing an academic concern. I will first work with your child to maximize his or her learning success. I would expect you to encourage your child to come in and get extra help and to complete all the class and homework in a timely fashion. There will be bumps in the road as your child experiences cognitive conflict while he or she grows in her biological education. The course is meant to be challenging and this will often make learners uncomfortable. Please remind your child that part of the educational experience is learning to be successful while overcoming adversity. A serious mismatch of teacher to student will be honestly examined. Most likely, your child will have to adapt to his assigned teachers. This is a good life lesson although it may occasionally seem painful in the short term. My concern is not with my ego but rather with your child's welfare. My way is NOT the only way to learn and be successful so please help me to help your child by monitoring his/her ability to be successful in my class.

I would expect that all issues you and your child are having with respect to biology (including grades) will first be discussed between the parent(s) and child before I receive a call or email from mom or dad. Once it has been discussed at home, please feel free to engage me in the process. I have included many ways for you to contact me which are located on the front of the syllabus.

Good Luck and I hope your child has a rewarding and enriching experience this year in Honors Biology.

Thank you,

Kevin Engstrom