

## Should I take Earth Systems or Biology in 9<sup>th</sup> grade?

Here are a few important points to consider to help you make the decision that will be best for you.

### **What is the minimum science requirement to be accepted as a college freshman directly out of High School at our local universities?**

Students must have at least 3 years of science (2 of which MUST be Biology, Chemistry, or Physics – the Utah State office of Education is currently working to change the Earth Systems curriculum so it will be added to this list of accepted science classes.) Local universities (BYU, U of U, and Utah St.) do not give students with honors classes extra consideration during the application process into college. Local universities have this policy because there is no national, or statewide requirement established for what constitutes an “honors” course. Because there is no way to measure the scale of difficulty of an “honors” course, the universities have no way to measure how easy or hard the class really was. The only science courses that receive extra consideration for college acceptance are Advanced Placement (AP) courses (AP Biology, AP Chemistry, AP Environmental Science, AP Physics, and similar IB classes – None of which are currently offered in middle school.)

### **What criteria do local universities look at to determine who is admitted to their schools?**

There are two factors that affect the likelihood of a student’s acceptance into a local university directly out of high school more than any other. These are:

- Student cumulative GPA – (from grades 9-12 in all subjects)
- Student composite ACT score – **VERY IMPORTANT NOTE**: The ACT is a national standardized college placement exam that is broken down into four topics, each of which is a quarter of the overall score (The four topics are Language, Reading, Math, and Science). To help better understand the ACT Science requirements, here is a quote from a prominent ACT preparation website – *“The science section contains 40 questions and must be completed in 35 minutes. **In order to succeed in this section, candidates will need to have taken Earth science, physical science, and biology. This test seeks to measure the candidate’s ability to apply scientific reasoning skills. Content will be presented in the following formats: data representation, as for instance graphs and tables (38% of the exam); research summaries (45%); and conflicting viewpoints (17%).”***
  - **This means that students that skip Earth Systems to take Biology in the 9<sup>th</sup> grade will need to learn the skipped material on their own time to score well**

**in this section. The skipped material includes astronomy, plate tectonics, as well as Earth's hydrosphere, atmosphere, and energy distribution.**

Students who skip Earth Systems to take Biology are also on a track to take more difficult science courses in High School (**BOTH** Physics and Chemistry) because Earth Systems will not be available in High School. Because Biology students are on a path to more difficult science in the future, 9<sup>th</sup> Grade Biology helps to prepare students for those more difficult science classes in High School. Biology students are expected to be self-starters, to be more organized, and to be capable of completing a greater quantity of work with a higher degree of quality. For example:

- Earth Systems students have several projects during the school year that they work on in class (with limited requirements for work at home)
- Biology Students will be working on a science fair project for several months (about 95% of the project is done outside of class and may require up to 4 meetings with me outside of school hours). There will also be an accelerated amount of information, vocabulary, and concepts that they will be required to know. Students should expect detailed exams for each unit and a faster pace of study.

Students who enroll in Biology and are not able to meet the academic workload, **will not** have the opportunity to transfer to an Earth Systems class, because we are learning completely different concepts and partial credit cannot be transferred over between classes.

Students who are particularly interested in science, plan on working towards a college degree in a scientific field, and who enjoy a challenging workload with a high level of inquiry are encouraged to sign up for honors biology. Students who enjoy history or language arts over science, or do not anticipate studying advanced science courses in high school or college, or who would rather focus their efforts on advanced courses in language arts, social science, mathematics, or on extracurricular activities may find it to their advantage to sign up for Earth Systems. It is not recommended that a student take all three classes (Biology, AP Human Geography, and Honor Language Arts) especially if involved in many extra curricular activities because they will find it hard to have time to accomplish all three classes well enough to earn A's in all three (See paragraph 2 about the importance of GPA for college acceptance).

### **Earth Systems Course Description**

*Prerequisite – None*

From the Utah State Office of Education Core Curriculum, Earth Systems is described as: *“Life and physical science content are integrated in a curriculum with two primary goals: (1) students will value and use science as a process of obtaining knowledge based on observable evidence,*

*and (2) students' curiosity will be sustained as they develop the abilities associated with scientific inquiry. This course builds upon students' experience with integrated science in grades seven and eight and is the springboard course for success in biology, chemistry, geology, and physics."*

In the Earth Systems course, students spend their year working with concepts such as: the development of the universe and solar system, environmental effects on ecosystems (including the importance of how Earth is unique in the solar system, plate tectonics, the water cycle and its effects on other Earth systems (looking specifically at the role of oceans), the atmosphere and its effects on other Earth systems, and solar energy and its effects on other Earth systems.

### **Biology Course Description**

*\*\*\*Prerequisite – Student must be concurrently enrolled in 9<sup>th</sup> grade – Secondary Math IH or Algebra II (this requirement is not for Biology but to make sure students are at the appropriate math levels in High School for Chemistry and Physics)*

From the Utah State Office of Education Core Curriculum, Biology is described as having three major concepts for the focus of instruction: *“(1) the structures in all living things occur as a result of necessary functions. (2) Interactions of organisms in an environment are determined by the biotic and abiotic components of the environment. (3) Evolution of species occurs over time and is related to the environment in which the species live.”*

In the Biology course, students spend their year working with the five main areas of biological (life) science: Ecology, Cells, Genetics, Organ Systems, and Evolution.