Wichita East High School IB Program

Exam Group Four Overview: Experimental Sciences (SL/HL classes)

IB Biology SL **Instructor: Randy McMinn**

The SL curriculum is an intensive examination of the core program required of all IB Biology students around the world. It emphasizes cells, biochemistry, human anatomy and physiology, genetics, evolution, and ecology. Students will spend 25% of class time on labs. Lab grades contribute towards the IB Biology test score.

Prerequisite: Pre-IB Biology **Recommended: Pre-IB Chemistry**

IB Biology HL **Instructor: Alisa Abuzeineh**

Biology HL is a college-level course designed to deepen students' understanding of more complex biological topics. Students will further explore concepts introduced in the Biology SL course such as genetics, photosynthesis and cellular respiration, evolution, and ecology. Additionally, they will learn new topics such as antibody production and vaccines, the kidney, animal movement and reproduction, and plant biology.

Prerequisite: IB Biology SL **Strongly recommended: Pre-IB Chemistry**

IB Chemistry SL **Instructor: Peter Reimers**

IB requirements include a core curriculum in chemistry, two topics that are in related chemistry areas and forty hours of laboratory work including a group project. The core curriculum includes stoichiometry, atomic theory, periodicity, bonding, states of matter, energetics, kinetics, equilibrium, acids and bases, oxidation and reduction, and organic chemistry. The related topics include medicines and drugs, human biochemistry, environmental chemistry, chemistry industries, fuels and energy and further organic chemistry. Each student will keep a portfolio of investigations that will be evaluated as the internal assessment. The class will continue to develop investigative skills as students prepare for the SL exam or continue working toward the HL exam. Students enrolling in Chemistry SL should have strong Algebra 2 skills.

Prerequisite: Pre-IB Chemistry

IB Chemistry HL **Instructor: Peter Reimers**

Chemistry HL is a college-level course. Students cover the SL curriculum in a more sophisticated manner and to a deeper degree. SL core curriculum and additional topics are further examined and extended. Each student will keep a portfolio of investigations that will be evaluated as the internal assessment. To succeed in the course, students should have received an A or B in Chemistry SL and should have strong Algebra 2 skills.

Prerequisite: IB Chemistry SL

IB Computer Science SL **Instructor: Czar Sebastian**

This course builds upon Java and prepares students for the SL exam. Emphasis is on variables, write line statements, three different loops, procedures, functions, arrays, records, sets, algorithms, and the logic needed to write programs. Students prepare a dossier as part of their IB examination requirement.

Prerequisites: Students need skills in word-processing, database management, spreadsheets, and Algebra 2. Students must also have completed Programming 1 and Programming 2.

IB Physics SL **Instructor: Joe Hutchinson**

Physics Standard Level (SL) is a college level course comparable to AP Physics. A good background in Algebra 2 is a necessity. Topics in the IB required curriculum includes measurement, mechanics, thermal physics, properties of matter, waves, electricity and magnetism, atomic and nuclear physics, and astrophysics. Additionally, the physics of industrial power production and the connection to climate change is the final topic covered in the spring. A collaborative project with biology, chemistry and computer science is required of all students. The course includes fourteen experimental labs including one that is designed by the students individually that is focused on a "real world" activity of the students' choosing. Examinations are tailored after previous IB examinations in order to prepare students for IB formatting and expectations.

Prerequisite: Pre-IB Physics

IB Physics HL **Instructor: Joe Hutchinson**

Students moving into Physics Higher Level (HL) should have had success in Physics SL. The topics of the HL course are similar to those of the SL course, though they will be studied in considerably greater detail with some additional sub-topics. The individual experimental project described in the SL course description continues into this year with additional opportunities to dive deeper into the subject of the student's choosing. Students can expect twenty-five labs over the course of the SL/HL sequence. Students completing the HL course and entering physical science fields, including engineering, in college can confidently expect to be better prepared than the average first year college student.

Prerequisite: IB Physics SL

IB SL Sports, Exercise, and Health Science **Instructor: Joe Hutchinson**

The IB DP course in sports, exercise, and health science standard level (SL) involves the study of the science that underpins physical performance. The course incorporates the traditional disciplines of anatomy and physiology, biomechanics, psychology, and nutrition while combining biological science with aspects of chemistry and physics. Students cover a range of topics and carry out practical (experimental) investigations in both laboratory and field settings. This provides an opportunity to acquire the knowledge and understanding necessary to apply scientific principles and critically analyze human performance. Where relevant, the course will address issues of international dimensions and ethics by considering sport, exercise, and health relative to the individual in a global context. Most universities now offer majors in exercise or sports science so this course would be one that would benefit high school students preparing for college.

Prerequisites: PIB Biology and either PIB physics or PIB chemistry