Course Name: IB Computer Science HL2 (Accelerated)

Course Number: SCI 7600

Brief Course Overview: IB Computer Science HL teaches students many technical details of computer systems, including PCs and networks and databases. They also learn techniques for constructing software systems for a variety of application areas. Computational thinking and problem solving skills are a central focus in this course. Both standard level (SL) and higher level (HL) students must study a common core (CC) of material and must demonstrate problem-solving skills and mastery of various aspects of computer science by completing a program dossier (PD). In addition, HL students must study additional higher level material (AHL) that fulfills two functions: it extends some topics in the CC, to give greater depth, and at the same time, introduces new topics to provide greater breadth.

The existence of a common core will allow teachers to teach SL and HL students together (where necessary), for at least part of the time. This curriculum model should not

be taken to imply that it is intended that SL and HL students should be taught together. The IBO does not support the joint teaching of students at different levels, which does not provide the greatest educational benefit for either level, but recognizes that it can be a necessity in some schools. Questions that will guide learning throughout the year include: What "computational thinking" skills are necessary for working with computers? How do computers and computer systems work? How do human factors affect what we can and should do with computers? Some “Areas of Knowledge” questions that we will consider are: What are the ethical implications of using computer systems in a globalized world? Are computers infallible? Do computers "think" like humans? Do computers "know" things?

Main Topics of Study:

- Topic 1- System fundamentals
- Topic 2- Computer organization
- Topic 3- Networks
- Topic 6- Resource management
- Topic 7- Control

- Case Study

What are the Enduring Understandings of the course?

Students should be able to:

- Design, implement, and analyze solutions to problems
- Use and implement commonly used algorithms
- Develop and select appropriate algorithms and data structures to solve new problems
- Write solutions fluently in an object-oriented paradigm
- Write, run, test, and debug solutions in the Java programming language, utilizing standard Java library classes and interfaces from the AP Java subset
- Read and understand programs consisting of several classes and interacting objects
- Read and understand a description of the design and development process leading to such a program
- Understand the ethical and social implications of computer use

Pre-requisites Minimum grade requirement in math classes (consider B or above in Algebra II), English language proficiency requirement (Successful completion of ESOL level 3 or higher and recommendation by administration). Students in this course must take the IB Computer Science HL examination. Fee: IB exams cost $ 116 per examination plus registration.

Course Length: Year

Meets NBPS Graduation Requirement? Yes

Included in Bright Futures GPA calculation? Yes

Included in NBPS GPA? Yes

NCAA Core Class? Yes

State University Core Class? Yes