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| \ | **Boston Latin School**  Department of Mathematics  2017-18 |

**COURSE**  AP Computer Science A

**teacher**  Dr. Nguyen

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Room: 306

**COURSE DESCRIPTION**

The proposed syllabus is for a year-long course. The course meets for five 45-minute class periods per week. The course includes a number of individual programming projects assigned for one week each. The course is based on numerous problem solving exercises, labs, and case studies, which require students to design and implement Java classes. The course requires 40-50 hours of hands- on work in a computer lab.

**COURSE OBJECTIVES:**

* Understand and apply the main principles of object-oriented software design and programming: classes and objects, constructors, methods, instance and static variables, inheritance, class hierarchies, and polymorphism.
* Learn to code fluently in Java in a well-structured fashion and in good style; learn to pay attention to code clarity and documentation.
* Learn to use Java library packages and classes within the scope of the AP Java subset.
* Understand the concept of an algorithm; implement algorithms in Java using conditional  and iterative control structures and recursion.
* Learn to select appropriate algorithms and data structures to solve a given problem.
* Compare efficiency of alternative solutions to a given problem.
* Learn common searching and sorting algorithms: Sequential Search and Binary Search;  Selection Sort, Insertion Sort, and Mergesort.
* Understand one- and two-dimensional arrays, the List interface, and the ArrayList  class, and use them appropriately in programming projects.
* Acquire skills in designing object-oriented software solutions to problems from various  application areas.
* Discuss ethical and social issues related to the use of computers.
* Prepare for the AP Computer Science A exam; meet all of the curricular requirements  defined by the College Board for this course.

**reading syllabus**

Regular Text: Lecture Notes on Google Classroom.

**GRADING**

Your grades each term will be calculated using a points-based grading system. The student receives points for completed assignments, projects, quizzes and tests and the term grade is determined by the number of points earned out of the number of possible points. The final grade is calculated from the total number of points obtained from the entire year (all terms may not be of equal value)

**Homework**

Homework assignments are given to help students learn the material in the class and to develop good reasoning and problems solving skills. The expectation is that students will do each night’s assigned homework.

*The Homework Policy:*

If a student completes all homework assignments then two percentage points will be added to his or her term average.

If a student completes all but two or fewer homework assignments then the term average is unaffected.

If a student misses more than two homework assignments in a term then he or she will lose one percentage point from the term average for each assignment missed.

**CONDUCT**

Students’ active participation in classroom work and discussions is an integral part of the learning atmosphere in class. Students are responsible for all the work covered in class when they are absent from school. Any work or assessments missed due to EXCUSED absences must be made-up within 3 days of return with a note. Make-ups are the student’s responsibility.

Students are expected to be respectful in their attitude toward one another, the teacher and will behave in accordance with the BLS Student Handbook. You will receive 1 mm for each of the following minor offenses: tardy to class, failure to bring textbook to class, failure to have textbook covered properly, speaking out of turn, etc.

**SUPPLIES**

3 Holed-Punch Binder with Dividers

Computer

**OFFICE HOURS**

7:00-7:30 A.M. by appointment only

Parents please e-mail to make an appointment

Students please see me during class to make an appointment

***Students and Parents:***

*Please read the above information for (course) together, and indicate by your signatures on the reverse of the (color) copy of this syllabus that you understand the purpose, format, and expectations of this course. Please return the (color) copy to me and keep the white copy for your own reference. Please feel free to see, call, or e-mail me with any questions or problems you might have*.

***Student:***

I have read and I understand the course description and classroom expectations for (course name). I also understand that I will be held accountable for the return of my textbook(s) in June.

Student signature Date

Student e-mail

***Parent:***

I have reviewed the course description and classroom expectations for (course) with my son or daughter.

Parent signature Date

Parent e-mail

Parent phone/s \_\_\_\_\_\_\_