**LZHS Advanced Topics in Computer Science Ideas**

| Course | Credit Earned | Approximate time to complete | AP CS A Skills Utilized |
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| UC Berkeley Blockchain Fundamentals (2 course program) <br>● Course 1: Bitcoin and Cryptocurrencies <br>● Course 2: Blockchain technology <br><br>$178.20 for both courses | Blockchain Fundamentals professional certificate w/ edX | 1 Semester <br><br>6 weeks per course; 12 weeks total | Knowledge of computer networks |
| Mobile Apps course through CodeHS w/ React Native | | 1 year | Programming in Java Script (java will suffice), functions, algorithms |
| W3C Front-End Web Developer <br>● CSS Basics <br>● HTML5 and CSS Fundamentals <br>● JavaScript Introduction <br>● HTML5 Coding Essentials and Best Practices <br>● HTML5 Apps and Games <br><br>$499.50 for all 5 courses | Professional Certificate (edX) w/completion of 5 courses | 4-6 weeks per course; 6-10 hours per week, per course | Data types, String processing, iterators,list processing, algorithm development |
| Java and Android Foundation <br>● Introduction to Java Programming <br>● Introduction to Mobile APplication Development Using Android <br><br>$161.10 for 2 courses | Professional Certificate Program (edX) w completion of 2 courses | 1 semester for both courses | This course will emphasize their java skills to move forward with mobile application development. |
| Computing in Python III: Data Structures from Georgia Tech <br><br>Free or $99 for Certificate | edX | 1 semester | Strong base in an object based programming language (java) |
| Microsoft Azure HD Insight Big Data Analyst <br>● Processing Big Data with Hadoop in Azure HDInsight <br>● Implementing Real Time Analytics with Hadoop in Azure HDInsight | xSeries | 1 semester for 3 courses | Strong programming base to independently understand how programming development tools work |

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| ● Implementing Predictive Analytics with Spark in Azure<br><br>$44-99 per course | | | |
| [Udacity Nanodegrees](#) | | | Data types, String processing, iterators,list processing, algorithm development |
| [CS50's Web Programming with Python and JavaScipt from Harvard University](#)<br><br>Free<br>$90 for Verified Certificate | edX; Verified Certificate with payment | 1 semester | Data types, String processing, iterators,list processing, algorithm development |
| [Data Structures Fundamentals from UC San Diego](#)<br><br>Free<br>Verified Certificate for $150 | Verified Certificate available (edX), part of Micro Master's program | 1 semester | Data types, String processing, iterators,list processing, algorithm development |
| "The Elements of Computing Systems" (authors: Noam Nisan, Shimon Shocken)<br>https://www.nand2tetris.org/<br><br>Free<br>Need to email instructors for detailed resources<br>Note: Lane Tech teaches this for 10 years<br>All course software is open source under the GNU General Purpose License, the link to which can be found here:[nand2tetris.org](#) | | 1 semester (Project 1-6) | Boolean logic, algorithm development, strong programming skills |
| [High School Students: Earn College Credit with Online Course for Advanced Study of Data Structures Illinois Tech CS331](#)<br><br>$250 | | Spring 2019<br>*Must register by Nov of school year* | CSA is required: Quote from CS331 information "To be eligible, you must have completed a CS1-equivalent course of the AP CS A course/exam with a 4 or better, and you must enroll in a data structures or |

| | | | independent computer science course at your high school in Spring 2019 that you can take in conjunction with the IIT course." |
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Loyola Python Course
http://anh.cs.luc.edu/handsonPythonTutorial/index.html