

Advanced Information Technology

Schroon Lake Central School

Academic Year 2017-2018

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SYLLABUS and COURSE OUTLINE

“Advanced IT” gives the high school student an introduction to topics that would be covered in greater depth in separate courses at the college level. In fact, that is how this course was designed: by reviewing local community college catalogues for courses. Each topic of study represents a taste of a deeper domain that different IT professionals train for in greater depth. The course begins with some history and a little of the mechanics and mathematics of computing. From there, students explore database construction. 80% of the course will be in some kind of computer programming. For the final project, students will code their own fully-functional web “app”.

Students will come away from this course with basic competencies in computer programming for websites and for software development. This course is ideal for the student who is considering whether a career in IT is the right fit as well as the tinkerer who likes to create and solve problems using code.

COURSE RESOURCES

Students need to use their free account at www.TeachersWebHost.com/room/143 to access all instructional materials.

COURSE CREDIT

“Advanced IT” is a full-year high school elective course for which students may earn 1 credit toward graduation. Credit may be awarded in the area of Computer Science or as an elective in Mathematics.

GENERAL COURSE OUTLINE

- I. Computers and the Internet (10% of time, about 4 weeks)
 - A. Brief History Of Computers And Internet Development
 - B. Networking: Terminology, Industry Protocol Models, Types Of Networks, Network Hardware
 - C. Security And Network Applications
 - D. Social Implications Of Computing
 - E. Careers In It
- II. Data Management & Analysis (10% of time, about 4 weeks)
 - A. Relational Database Concepts
 - B. Create Data Tables, Forms, Reports, Queries.
 - C. Database Design And Structuring
 - D. Obtain Useful Information From The Data
- III. Introduction to Programming: C++ (35% of time, about 14 weeks)
 - A. Simple Data Types, Control Structures, Introduction To Array And String Data, Numerical Computation, Algorithms
 - B. Testing And Debugging.
 - C. Stylistic Concerns Such As Naming Conventions, Code Layout And Documentation
- IV. Introduction to Web Design (45% of time, about 18 weeks)
 - A. HTML and CSS

- B. Client-side scripting with Javascript
- C. Server-side scripting with PHP and MySQL
- V. Final Project: Student’s own Web Application (“app”)

ASSIGNMENTS and ASSESSMENT

The only time a student would be expected to do homework for this class is to complete tasks missed from absences, to work on things for which class time was just not enough, or to study if the study time given in class is not enough. The course is designed such that most work should be completed in class. Except for the first topic which has information elements, most of the course is designed around projects and hands-on practice activities.

THE “CONTINUING ASSIGNMENTS PLAYLIST”

In exchange for having practically no homework, students are expected to not take any free time during class periods and to not waste any time in class. Students who finish the period’s assignment very early are expected to work on their choice of assignment in the “Continuing Assignments Playlist” (see online course). These are tasks in computer IT work and programming that will develop skills we’re working on in class and they do count for credit. Continuing assignments make great opportunities for extra credit.

GRADE

- 55% - “High Order Tasks” - projects, tests, labor-intensive or difficult tasks
- 45% - “Low Order Tasks” - practice exercises, short quizzes

COMPUTER COURSES at SCHROON LAKE CENTRAL SCHOOL

This course, “Advanced IT”, is the highest level course we currently offer in information technology. Other courses in which you may be interested:

Robotics Programming	Productivity Computing
<i>Robots are fast becoming an important part of the world manufacturing economy. Someone is losing his job to a robot. Someone else is getting a job programming them. Get hands on experience in this course programming robots for a variety of challenges.</i>	<i>There are few businesses left that operate without computer productivity software. That is, word processing, spreadsheet, and database. Students who take this course become proficient at a variety of software used across the business world.</i>