

11th Grade SMCS House Questions by Subject

Research Design/ Research Project

What is Research Design?

Research Design is a course taken in the fall of the junior year for all SMCS students. Through a series of interdisciplinary mini-projects, students gain hands-on experience in developmental, historical and analytical research. Students explore ethics in research and analyze research papers and oral presentations.

What is the Research Project?

Research Project consists of two semesters (semester A and semester B). Not all students elect to do the Research Project component. The students who do elect to follow the Research Project path will have an additional sticker on their magnet certificate recognizing that they have gone above the basic requirements for a SMCSH certificate. Likewise in their college teacher recommendations the teachers will be able to discuss the research commitment that the student has made. Research Project A is taken during the second semester of the junior year. Research Project B is the first semester of the senior year. Students conduct research projects based on an approved proposal, which starts in Research Design (fall of the junior year). Students may elect to work outside of the school facility. Some students will elect to stay on site. Requirements include the completion of a journal, project display, oral presentation and final paper. Students begin their projects in the spring of their junior year (semester A) and then continue into the fall of their senior year (semester B).

When do the students decide what their research project is?

Students will begin to make decisions about their research project in Research Design, taken fall of the junior year.

Does the research project involve an internship outside of the school?

The research project can be done at an internship site or it may be conducted at PHS.

What is the summer commitment?

It really depends on the project and whether or not the student is working with an institution. NIH for example is a full 8 hour day 8 week commitment.

Is the Research Project an elective?

It is the choice of the student to take the research route or to follow through with just the SMCSH electives (5 semesters required). Students are strongly encouraged to choose the research route.

How many students usually participate in this class at Blair?

About 70% choose to take the research route.

Computer Science

What are the options for an 11th grade student at PHS who wants to continue a computer science emphasis?

Students intending to continue in Computer Science should enroll in Analysis of Algorithms and Computer Graphics in grade 11. Note: all courses are single semester courses.

After finishing Algorithms and Data Structures (includes all topics of AP Programming 2), Analysis of Algorithms will prepare students for the Computer Science AB AP exam. Students will take the exam in May following the fall course. Review sessions will be offered to assure success.

Prerequisite: Algorithms and Data Structures B (10th grade)

Analysis of Algorithms Networking Advanced Application Software



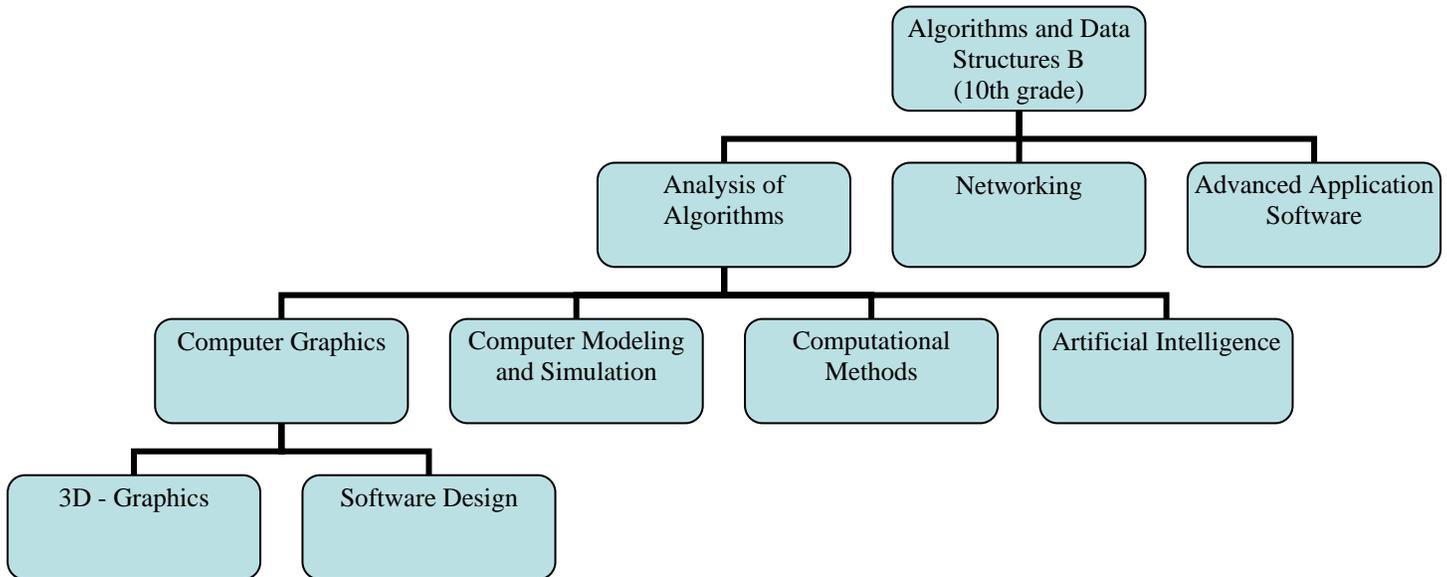
Prerequisite: Analysis of Algorithms

Computer Graphics Computer Modeling and Simulation Computational Methods Artificial Intelligence



Prerequisite: Computer Graphics

3D-Graphics
Software Design



Not all courses will be offered each year.

I am assuming that they do not need to take AP Computer Programming 1 as a pre-requisite for AP computer Programming 2 since they will have completed Algorithms and Data Structures – is this true?

As mentioned above AP Computer Programming 2 is not an option, the material has already been covered.

What is Analysis of Algorithms?

Analysis of Algorithms is roughly equivalent to AP Programming 3 (not offered at PHS currently). This class prepares the students for the AB Exam. We will be setting ourselves up to easily finish these topics in a single semester by completing all of the Programming 2 curriculum plus more. We do not recommend the AP A exam for SMCS students because it is not accepted for college credit as often.

If the Analysis of Algorithms class is taken during the 1st semester, how will the students be prepared to take the AP exam in May? I believe Mr. Estep told the students he would review for the AP exam during the Computer Graphics class but what if the students do not take Computer Graphics?

We will hold additional review sessions outside of the normal class time.

If the students take the Analysis of Algorithms class 1st semester, is the only option Computer Graphics for 2nd semester?

The only Computer Science option is Computer Graphics. Please see the course description for Computer Graphics – it is not just pretty pictures.

If the students only wanted to take Analysis of Algorithms and not Computer Graphics, what would the student do 2nd semester?

It is important to recognize that it is impossible at this point to promise exactly what class will be offered the same period as the Analysis of Algorithms for the second semester of next year. I can promise you that there will be electives available.

Will other Magnet Computer Science classes be offered for the 12th grade year that are not currently offered?

Yes, other electives will be offered.

If so, will those courses require either AP Computer Programming 2 or Analysis of Algorithms?

The additional Computer Science electives would require Analysis of Algorithms.

I am afraid that some students may decide to skip computer science this year because they are not interested in Computer Graphics and then next year a course will be offered that they are interested in but they will not have the requirements they need.

Analysis of Algorithms is a prerequisite for all SMCS Computer Science electives. If a student does not take any CS in their junior year, they would need to start with Analysis of Algorithms.

Will Mr. Estep be teaching all three classes: AP Computer Science Programming 2, Analysis of Algorithms, and Computer Graphics?

Staffing is not finalized, but Mr. Estep may be teaching those courses.

Math

On the Registration Card, it lists Magnet Pre-Calc C and Magnet Functions B together. It appears going off of the course numbers that Magnet Pre-Calc C is 1st semester and Magnet Functions B is 2nd semester.

You are correct.

It is my understanding from conversations with PHS last year and from Blair that Magnet Functions is a 2 semester course that covers the same material as in Magnet Precalc A/B/C/D at PHS and Magnet Precalc A/B/C at Blair. (Pooleville elected to add an extra semester of Precalc so as not to rush through the material.)

There is no Magnet Precal D. What was referred to as Magnet Precal D, for a while, is Magnet Functions B. Because there is no true course code for Magnet Precal D (it takes 3 years to have a course approved) we are using a variant of the course code for Magnet Functions B. However, these are to separate and different courses. The true Magnet Functions course is two semesters and covers all of Alg 2 and Precal in one year, It is for 9th grade by invitation only. The Magnet Functions B that follows the Magnet Precal A/B/C sequence will provide time to cover all of the material needed to be ready for Analysis 1 or Calc BC.

What are the current students who are taking Magnet Precalc C taking next semester?

[Magnet Functions B.](#)

Is Analysis 1 A/B the next step after Magnet Functions B? On the registration card, it says this course is by recommendation. Are magnet students automatically recommended?

No, students may only enter based on the recommendation of the previous math teacher. One class is not considered above the other. Analysis 1 includes all of the topics of AP Calc BC but with a more complete treatment and an added emphasis on mathematical proof. We recommend the top students from Magnet Precalc C/Functions B and the ninth graders in Magnet Functions B to enroll in Analysis 1.

FYI - The Poolesville Program Booklet that is given to prospective students lists Analysis 2 A/B separate from Multivariable Calculus. From everything I have researched, Analysis 2 is the same thing as Multivariable Calculus and Differential Equations. They are not two separate offerings.

There are two separate course listings for Multivariable Calculus and Analysis 2. You are correct that they cover the similar topics. The difference comes in the way the subjects are taught and the selected peer group that the students operate within. Analysis 2 is a beefed up version of Multi-variable/ Differential Equations.

Science –

What are the possible course for 11th grade students:

[Intro to Physical Chemistry](#)

[Analytical Chemistry](#)

[Cellular Physiology](#)

[Marine Biology](#)

[Optics](#)

[Materials Science](#)

[AP Biology](#)

[AP Chemistry](#)

[AP Physics](#)

Mrs. Redman presented the option of doing Intro to Physical Chemistry 1st semester and Analytical Chemistry 2nd semester. What is the difference between AP Chemistry and these 2 classes? [The topics are the same but the semester courses are taught at a faster rate. A student taking Physical Chemistry and Analytical Chemistry should be able to take the AP exam while only expending 1.0 credit. The AP Chemistry route is a double period.](#)

Which would be recommended for magnet students who are interested in chemistry?

[It is truly a choice by the student. There may not be as many lab activities due to the time constraints when students take Physical and Analytical Chemistry.](#)

Mrs. Redman replied with the following:

AP Chemistry is a double period course for an entire year. This takes up a great deal of space in a student's schedule. Therefore, I asked them to put intro to physical chemistry and analytical chemistry out as possible course offerings. These classes form two parts of a whole. One class is first semester, and the other class is second semester. Since they are single periods, it is half of the time of AP Chemistry. We will study many of the same topics as AP Chemistry. Because of the time crunch, I will give the students a summer assignment so that they start the year understanding stoichiometry and chemical nomenclature. Both topics have been a part of their freshman course. Then we will proceed to work quickly through the topics.

Obviously, AP Chemistry is a more relaxed way to reach the objectives.

We will spend more time in that class going over problems and reviewing for the AP. I will need to put more responsibility onto the shoulders of the physical chem / analytical chem students. In short, if I were a student, I would prefer AP. However, if I wanted to carve some room in my schedule for a fun class, I might take the one period version.

Based on Mrs. Redman's answer, I am assuming that the AP Chemistry exam will be taken at the end of these two courses. [Yes.](#)

Other scheduling questions

There is a requirement for 5 semester SMCS electives during junior and senior year. If a student takes for example, AP Chemistry where it is a double period for an entire year, does this count as 4 of the 5 electives?
Yes.

If a student wanted to take Computer Science as well as an AP science class next year, they would have to postpone the PE and Fine Arts Requirements to senior year (assuming they take health over the summer.) What would a college think if the student was taking these easy classes during their senior year? Is it better to put the PE class in 11th grade and either take a non double period science or drop computer science so that senior year they will only have one non- academic class and have a schedule that is more challenging? (Who would think that 8 periods would not be enough 😊!)

For the sanity of the student, I would split it over two years. Colleges know that the Fine Arts and PE are required for high school graduation.