

# Science Research Course Syllabus 23-24

## COURSE DESCRIPTION:

Science Research is a three year science elective beginning sophomore year that offers a student the opportunity to explore and research a topic of interest in science and technology. While the class meets every day, and students meet individually with their teachers frequently, the majority of the work is conducted independently.

Students choose a science topic they want to research, but are expected to pursue it enthusiastically and in a professional manner. Students are responsible for finding a mentor in their field, but will have the assistance of the science research teacher. The student will work closely with a mentor to develop and complete authentic science research of their own. Some of the work is expected to be completed during the summers following sophomore and junior years. Their work culminates in the writing of a final research paper in the fall of their senior year. Students are required to present their work at numerous scientific competitions and symposia during their junior and senior year.

## COLLEGE CREDIT:

Cornwall High School's Science Research program is affiliated with the State University of New York at Albany which offers up to 12 college credits for work completed in this Science Research course. There are presently more than 110 schools in New York, New Jersey, and Connecticut that use this program to involve students as legitimate members of the research community. Credit is as follows:

CAS 109 - Intermediate Science Research (2 credits, July - August) – Juniors

CAS 110 - Intermediate Methods of Research (4 credits, September - June) – Juniors

CAS 209 - Advanced Science Research (2 credits, July - August) – Seniors

CAS 210 - Advanced Methods of Research (4 credits, September - June) - Seniors

## THREE-YEAR TIMELINE

The following is three-year timeline of what is expected of a student in the science research program:

### FRESHMAN SUMMER:

During the summer before their Sophomore year, students will complete a summer assignment tasking them with reading several of a combination of scientific journal or media articles related to their possible topics of interest. The goal of this assignment is to discover what sort of topics students will be interested in researching, thoroughly enough that at the start of their sophomore year they have not only some possible research questions to focus on, but will also have material to present as soon as the year begins.

### **SOPHOMORE YEAR:**

- Choose a topic to pursue.
- Read professional scientific articles and academic texts on the topic.
- Narrow the topic to a specific area to research.
- Contact experts in the field of research.
- Establish a rapport with one or more professionals, leading to a student/mentor relationship.
- Attend at least one conference/symposium outside of the district.
- Make PowerPoint/poster presentations of scientific papers during class time and at the end-of-year science symposium. Participate in Science Research Symposium.

### **SOPHOMORE SUMMER:**

College credit is available at this point for students who have successfully completed the first year of the program as outlined above and have obtained a mentor. During the summer, students begin to explore research techniques with the guidance of their mentor. Students also remain in contact with their teachers via email.

### **JUNIOR YEAR:**

- Meet/communicate with mentor regularly.
- Begin data collection and redefine their hypotheses if necessary.
- Make oral presentations of scientific papers and their preliminary results.
- Present preliminary results at the end-of-year science symposium.
- IF ready with results and conclusion, showcase completed research by submitting papers and presenting their research at numerous local and national scientific competitions.
- Present their preliminary work at the end-of-year science symposium.

### **JUNIOR SUMMER:**

A large portion of the junior summer is expected to be dedicated to science research. It is during this summer that most students complete data collection and begin the analysis of data under the direction of the mentor. Students continue to maintain contact with their teachers and write a preliminary draft of the research paper.

### **SENIOR YEAR:**

- Write formal, publishable papers of their research by late September.
- Prepare lectures and poster presentations.
- Showcase completed research by submitting papers and presenting their research at numerous local and national scientific competitions.
- Act as advisors for sophomores entering the course.
- Present their final work at the end-of-year science symposium.

## Mr. Mayer's Manifest of Manners

1. Come Prepared and Aware - Take a seat before the bell rings and look at the front board; there will usually be directions at the start of class!
  2. Respect - Respect the space and time of your classmates and I. Questions are always welcome in my classroom, so nobody should feel ashamed for asking them.
  3. Phones **Away**, Earbuds **Out** - CCSD's Code of Conduct contains a cell phone policy of "off and away". As the policy emphasizes, students' cell phones need to be off and away so that we are offering an optimal educational atmosphere for learning. Students should not be retrieving their cell phones to take to the bathroom with them or to wander the halls. Students who do not adhere to this policy may be subject to discipline.
  4. Absence and Lateness - Where many materials will be available online on the Google Classroom, it is your responsibility to arrive to class on time, every day. Absence and lateness *will* have an impact on your learning and your grades.
  5. Name on Work - If your name isn't on the work you hand in, I won't know it's yours.
  6. Questions - If you have extra questions outside of class email me at [smayer@cornwallschools.com](mailto:smayer@cornwallschools.com). Remember to sign up for the Google Classroom!
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## Expectations and Grading Policy for Science Research

### I. Materials:

- **Composition Notebook** - This will serve as a time log for students to log any time they spend on their research, and log the purpose of what that time was spent doing.
- **Binder** - A large binder to keep notes, materials, forms, and records for the course.

### II. Technology:

- **Chromebook** - This should be charged, functional, and in class each day, as most research, reading, and writing will involve using the internet and your standard issue chromebook.
- **Google Classroom** - materials, assignments, forms, notes, and reminders will be posted regularly on the google classroom.

**Codes for 23-24:**      Year 2 students - **4nb44zt** | Year 1 - mmzay2v

III. **Assignments:** Assignments will be few and far between, but require a lot of planning, preparation, and consistent effort. It is suggested that if you have trouble with procrastination, motivation, planning, or organization, that you reach out sooner rather than later.

IV. **Biweekly Assessments:** Every 10 school days, you and I will have a one-on-one conference. These assessments are the backbone of the course's skill development and project work. The goals of these assessments are as follows:

- (Prior to the meeting) Record the accomplishments of the previous 10 school days.
- Justify completed and incomplete goals from previous assessment.
- Evaluate course/project progress overall.
- Decide next objective(s) to focus on.
- Set goals for the next 10 school days.
- Plan *specifically* how these goals will be accomplished, predicting the time each task will take to complete.

V. **Grading System:**

- Each individual meets once every two weeks one on one with the instructor. Each meeting is graded according to a student grading rubric. The final average is computed as follows:
- **Quarter Grades:**
  - Bi-Weekly Goals = 65%
  - Assignments = 35%
- **Final Exam:**
  - Participation in the CCHS Symposium = 20% [worth 5th quarter grade]

It is the expectation that students will address questions or concerns about their grade with the teacher directly. Grades will be available on schooltool at 5 and 10 weeks each quarter.

Student (print): \_\_\_\_\_

Period: \_\_\_\_\_

Parent/Guardian (print): \_\_\_\_\_

Parent/Guardian (signature): \_\_\_\_\_

Date: \_\_\_\_\_