

COURSE SEQUENCE AND SELECTION GUIDE

SCIENCE DEPARTMENT

BARD HIGH SCHOOL EARLY COLLEGE QUEENS

The Science Department offers students at BHSECQ a wide range of courses in the fields of Physics, Chemistry, and Biology.

WHY TAKE COURSES IN SCIENCE?

The question really is: why wouldn't one take science? Science is the way we understand our place in the world. To be an informed citizen, one needs to understand some of the fundamental ways that our world operates. Science helps us to make accurate predictions about our health, our environment, and the larger universe. Science provides us with the foundation to investigate and explain previous events and make predictions about the future.

NY STATE REGENTS DIPLOMA AND BARD A.A. DEGREE REQUIREMENTS

Four core courses are in the high school program. At least two semesters of laboratory Science courses are required in the first year of the college program.

HIGH SCHOOL PROGRAM

- Introduction to Science or Introduction to Computer Science in the 9th grade (1 semester)
- Biology*, Chemistry, and Physics (1 semester each) in the 9th and 10th grades.

**Students must pass at least one corresponding Regents Examination.*

COLLEGE PROGRAM

- Laboratory Science (2 courses, 4 credits each; each laboratory science course meets for 6 periods per week). After the first year, it is recommended that students continue with Science taking 2 courses in their final year.

COLLEGE SCIENCE COURSES

The Science Department offers a variety of courses based on the expertise of the faculty. In Physics and Chemistry the courses are structured as two-semester sequences. In Biology, students may combine two one-semester courses in which they have particular interest.

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| ❖ Physics with Calculus I & II | ❖ Infectious Disease |
| ❖ General Chemistry I & II | ❖ Organismal Biology |
| ❖ Chemistry of Food & Cooking | ❖ Cancer Biology |
| ❖ Materials Science/Polymer Chemistry | ❖ Genetics |
| ❖ Organic Chemistry I & II | ❖ Evolution and Ecology |
| ❖ Cell Biology | |

Additional non-laboratory elective courses are: Neuroscience, Non-infectious Disease, and Adolescent Health Research (3 credits each).

THEMATIC COURSE GUIDE

The course sequences listed below can help students identify disciplinary and thematic links across the Science curriculum. Not all courses are offered all semesters.

By Intended Major or Field of Study

<p>Physics Major¹</p> <ul style="list-style-type: none"> ▪ Physics with Calculus I² & II ▪ General Chemistry I & II 	<p>Pre-Health professions (Note: this is not a major)</p> <p>For admission to medical schools, undergraduate students are typically encouraged to take 4 semesters of chemistry, 2 semesters of biology, 1 semester of statistics, 1 semester of sociology, 1 semester of biochemistry, and 1 semester of psychology. To get started on these requirements, interested students can take:</p> <ul style="list-style-type: none"> ▪ General Chemistry I & II ▪ Organic Chemistry I⁴ & II ▪ Physics with Calculus I & II ▪ Cell Biology
<p>Engineering Major³</p> <ul style="list-style-type: none"> ☞ Physics with Calculus I & II ☞ General Chemistry I & II ☞ Materials Science/Polymer Chemistry 	<p>Biology Major</p> <ul style="list-style-type: none"> ▪ General Chemistry I & II ▪ Cell Biology ▪ Organismal Biology ▪ Organic Chemistry I⁴ & II ▪ Evolution and Ecology ▪ Genetics
<p>Chemistry Major</p> <ul style="list-style-type: none"> ▪ General Chemistry I & II ▪ Organic Chemistry I⁴ & II ▪ Physics with Calculus I & II ▪ Materials Science/Polymer Chemistry 	<p>Non-Science Major, Interested in a Broad Science Background</p> <ul style="list-style-type: none"> ☞ Chemistry of Food & Cooking ☞ Infectious Disease ☞ Neuroscience ☞ Cell Biology ☞ Cancer Biology ☞ Non-Infectious Disease ☞ Adolescent Health Research

¹ In addition to these Science courses, students who are interested in majoring in physics should also take Differential Equations and Linear Algebra in the Math department.

² Pre- or corequisite of Calculus I (depending on the instructor).

³ In addition to these Science courses, students who are interested in the Bard 3+2 Engineering Program should take Calculus I and II, Linear Algebra, Vector Calculus, and Introduction to Computer Science in the Math department. Successful completion of the program will lead to a BA from Bard College and a BS from Columbia University. For more information see: <http://www.bard.edu/academics/programs/3+2engineering/>

⁴ Prerequisite of a C or better in General Chemistry I and General Chemistry II or the permission of the instructor.