

Biology Core (BIOSC)	Cr	Grade	Notes
0150 Foundations Bio 1 (UHC0715)	3		
0160 Foundations Bio 2 (UHC0716)	3		
0350 Genetics	3		
1000* Biochemistry	3		

\* or 1810 & 1820 for 6 credits including 3 elective credits

Computer Science Core (CS)	Cr	Grade	Notes
0011% Intro to Computing for Scientists (Python)	4		
0401 Intermed Computer Program	4		
0441 Discrete Structures	3		
0445 Data Structures	3		
1501 Algorithm Implementation	3		
1656 Introduction to Data Science	3		

% or equivalent or placement assessment exemption

Computational Biology Core (BIOSC)	Cr	Grade	Notes
1540 Computational Biology	3		
1542 Computational Genomics OR 1544 Simulation and Modeling	3		
#1640 CompBio Research OR CS 1640 CompBio Software Design	3		
1630 Sr Seminar Comp Bio (WRIT)	2		
(Comp Bio Elect*)	3-4		

# DSAS students take BIOSC 1640; SCI students take CS 1640

\* see back for a list of approved Comp Bio elective courses

CO-REQUISITES for major (Chem, Math, Stat):

Chemistry (CHEM)	Cr	Grade	Notes
0110 General Chemistry 1	4		
0120 General Chemistry 2	4		
0310 Organic Chemistry 1	3		
Math & Statistics	Cr	Grade	Notes
MATH 0220 Calculus I	4		
STAT 1000 Applied Statistics	4		

**\*\*DSAS Gen Eds: Admitted Before FALL 2018\*\***

**Foundational Skills Requirements**

Wrkshp Comp \_\_\_\_\_ Sem in Comp \_\_\_\_\_

Writ #1 \_\_\_\_\_ Writ #2 (BIOSC 1770) \_\_\_\_\_

Algebra \_\_\_\_\_ Formal Reas. \_\_\_\_\_

**General Education Requirements**

Literature \_\_\_\_\_

The Arts \_\_\_\_\_

2nd Lit/Arts or CEX \_\_\_\_\_

Philosophy \_\_\_\_\_

Social Science \_\_\_\_\_

Historical Change \_\_\_\_\_

Natural Sciences Fulfilled by Major

2nd Language \_\_\_\_\_

Int'l Foreign Culture 1 \_\_\_\_\_

Int'l Foreign Culture 2 \_\_\_\_\_

Int'l Foreign Culture 3 \_\_\_\_\_

Non-Western Culture \_\_\_\_\_

Any Non-Western Culture course fills 2 Disciplinary Approach requirements - itself and one other.

**Notes about Grades:**

You must earn a grade of 'C' or better in your 42-47 credits of core major courses for the COMP BIO major.

You must average a 2.000 GPA in your co-req courses (chem, math, stat). See back for additional details and a list of exceptions.

If a C- or lower is earned in the Comp Bio elective course for the major but is not repeated, the course will not be counted toward the major, but will be used to calculate the overall GPA.

Only **ONE** BIOSC/CS Core class may be taken with the Satisfactory/No Credit (S/NC) grade option.

Date	Co-req. GPA	Core GPA (BIOSC + CS)

Need 120 credits TOTAL for any Bachelor's Degree

**Pre-requisites and Core courses:**

<u>Course</u>	<u>Term Offered</u>	<u>Pre-Req</u>
BIOSC 0350 Genetics	F, Sp, Sum	BIOSC 0160; CHEM 0120
*BIOSC 1000 Biochemistry	F, Sp, Sum	BIOSC 0160; CHEM 0310
*BIOSC 1810 Macromolecular Structure & Function	F	BIOSC 0160; CHEM 0320
CS 0011 Programming for Scientists (Python)	F, Sp	None
CS 0401 Intermediate Computer Programming	F, Sp, Sum	High school Python or CS 0011
CS 0441 Discrete Structures	F, Sp, Sum	MATH 0220
CS 0445 Data Structures	F, Sp, Sum	CS 0401
CS 1501 Algorithm Implementations	F, Sp, Sum	CS 0441, CS 0445
CS 1656 Introduction to Data Science	F, Sp	CS 1501
BIOSC 1540 Computational Biology	F	BIOSC 0160
BIOSC 1542 Computational Genomics	Sp even	BIOSC 1540; CS 0011 or 0008; CS 0401
BIOSC 1544 Simulation and Modeling	Sp odd	BIOSC 1540; CS 0011 or 0008; CS 0401
BIOSC 1640 Computational Biology Research	Sp	BIOSC 1540; CS 1501
CS 1640 Computational Biology Software Design	F, Sp	BIOSC 1540 or CS 1501
BIOSC 1630 Computational Biology Seminar (WRIT)	F	BIOSC 1540

\*take either BIOC 1000 OR BIOC 1810+1820

**Approved Computational Biology electives:**

<u>Course</u>	<u>Credits</u>	<u>Term Offered</u>	<u>Pre-Req</u>
§BIOSC 0351 Genetics Lab	1	Sp	BIOSC 006X
BIOSC 0370 Ecology	3	F, Sp	BIOSC 0160
§BIOSC 1005 Introduction to Biochemistry Lab	1	F, Sp	BIOSC 1000; BIOC 006X
BIOSC 1130 Evolution	3	Sp	BIOSC 0350
§BIOSC 1285 Genomics Lab	1	Sp	BIOSC 0350; BIOC 006X
BIOSC 1320 Population Biology	3	F	BIOSC 0370
BIOSC 1500 Cell Biology	3	F	BIOSC 1000 or 1810
BIOSC 1520 Developmental Biology	3	Sp	BIOSC 0350
BIOSC 1545 Mathematics of Biology	3	F	BIOSC 0160; MATH 0220
BIOSC 1760 Immunology	3	Sp	BIOSC 0350
BIOSC 1820 Metabolic Pathways and Regulation	3	Sp	BIOSC 1810
BIOSC 1850 Microbiology	3	F, Sp, Sum	BIOSC 0160; CHEM 0120
BIOSC 1940 Molecular Biology	3	F	BIOSC 0350, 1000
CHEM 0250 Analytical Chemistry	3	F, Sp, Sum	CHEM 0120
CHEM 0320 Organic Chemistry 2	3	F, Sp, Sum	CHEM 0120
CHEM 1460 Intro to Modern Computational Sci	3	Sp	None
CHEM 1830 Synthetic Biology	3	Sp	None
CS 1502 Formal Methods in Computer Science	3	F, Sp, Sum	CS 0441, 0445
CS 1520 Programming Languages for Web Apps	3	F, Sp, Sum	CS 0445
CS 1555 Database Management Systems	3	F, Sp, Sum	CS 1501
CS 1566 Introduction to Computer Graphics	3	F	CS 0447; MATH 0280
CS 1675 Introduction to Machine Learning	3	Sp	CS 1501; STAT 1000
MATH 0230 Analytical Geometry and Calculus 2	4	F, Sp, Sum	MATH 0220
MATH 0280 Intro to Matrices and Linear Algebra	3	F, Sp, Sum	MATH 0220
NROSCI 1000 Introduction to Neuroscience	3	F, Sp, Sum	BIOSC 0160; CHEM 0120
PHYS 0174 Basic Physics, Science & Engineering 1	4	F, Sp, Sum	MATH 0220
STAT 1221 Applied Regression	3	Sp	STAT 1000 Min Grade B-

§Need 005X, 006X, and one upper division lab to count as a Computational Biology elective.

**Grade and GPA Requirements:**

a) Your corequisite GPA (chem, math, stat) must average to 2.000 or better. [Thus, a grade lower than C in Math, Chemistry or Statistics can be used if the co-req GPA still averages to 2.000. See **exceptions** below.]

- **Exceptions:**

- Students must earn a grade of C (not C-) or better in CHEM 0110 and CHEM 0120 for the major.
- If a chem, math, stat class is a pre-requisite with a grade minimum for a higher level class.

Questions should be directed to DSAS ([bioadv@pitt.edu](mailto:bioadv@pitt.edu)) or SCI ([sciadv@pitt.edu](mailto:sciadv@pitt.edu))