RESEARCH COURSES:

5001 – 5003W Research I and II
Minimum of 9 hours conference and independent work; 3 credits each term

Independent laboratory research under the supervision of a Brooklyn College faculty member. (Not open to students who are enrolled in 5010-5013).

Prerequisite of 5001: Biol 1001 and 1002 and permission of the sponsoring faculty member and department chairperson.
Prerequisite of 5002: Biol 5001 and permission of the sponsoring faculty member and department chairperson.
Prerequisite of 5003W: Biol 1001 and 1002, and Eng 1012 and permission of the sponsoring faculty member and department chairperson.

HONORS RESEARCH COURSES:

Students with superior records and the recommendation of a department faculty member may apply to the chairperson for permission to register for courses described below. Students may not register for more than six credits in honors courses in the department in one term:

5010 – 5014W Independent Research I, II, III, IV
Minimum of 9 hours conference and independent work; 3 credits each term

Independent laboratory research under the supervision of a Brooklyn College faculty member. Weekly conference. Thesis or report.
Prerequisite of 5010: Biol 1001, 1002, 5001, and completion of at least two advanced Biology Department electives with a grade of A or B in each; and permission of the instructor and the chairperson.
Prerequisite of 5011: Biol 5010 and permission of the instructor and the chairperson.
Prerequisite of 5012: Biol 5011 and permission of the instructor and the chairperson.
Prerequisite of 5013: Biol 5012 and permission of the instructor and the chairperson.
Prerequisite of 5014W: Biol 5013 and Eng 1012 and permission of the instructor and the chairperson.

5020 Special Topics
Minimum of 9 hours recitation, conference and independent work; 3 credits each term

Intensive reading in, and group discussion of, a special field. Students should consult department bulletin boards for current offerings. A term report or examination may be required.
Prerequisite: Biol 1001 and 1002, and completion of an approved program of advanced Biology Department courses and permission of the chairperson.

ELECTIVES COURSES:

In addition to the elective courses listed inside this handout, please see Bulletin for more details on the following additional Biology electives:

2020 Neurobiology 3 credits
3020 Behavioral Neuroendocrinology 3 credits
3030W Scientific Writing (Writing Intensive) 3 credits
4025 Molecular Phytogenetics & Evolution 3 credits
5020 Special Topics 3 credits
Chem 4581 Biochemistry II Lecture 3 credits

NOTE: Not all electives are offered every semester.

DECLARING YOUR MAJOR

When *should you declare your major?*

Although you may declare your major at any time, it is usually advisable to wait until you accumulate at least 40 credits. You must declare your major before the end of the semester in which the combination of credits earned and credits for which you are currently registered total 61 or greater.

How *do you declare your major?*

Major should be declared online and will be approved by the Deputy Chair. When you have declared your major, you will meet with your assigned Biology Faculty adviser – whose name, office hours and contact info you will find posted outside of the Biology Department main office in 221 NE. You should bring with you a current copy of your transcript and a completed Major Worksheet (available in the lobby of the Biology Department, 221NE).

Department of Biology
Brooklyn College
221 NE
(718) 951-5396

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BIOLOGY DEPARTMENT

COURSE DESCRIPTIONS FOR BIOLOGY MAJORS

Department of Biology
Brooklyn College

Dr. Peter Lipke, Chairman
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Dr. Theodore Muth, Deputy Chair
TMuth@brooklyn.cuny.edu

BIOLOGY DEPT. REQUIRED COURSES:

1001 General Biology 1
Hours: 3 Lecture, 3 Lab; 4.5 credits
Systems, ecological and evolutionary Biol. Integration of plant and animal form and function with biological concepts and theories of evolution, genetics, development, homeostasis, ecology-biodiversity, bioenergetics and bio-informatics. (Not open to students who have completed, with a grade of C- or higher, the following course or courses: Biol *1080 [3], or both Biol 1072 [29] and Biol *1071 [34.1]). STEM variant course - Satisfies Pathways Required Core Life and Physical Sciences or Flexible Core Scientific World requirement.
Prerequisite or co-requisite: Math 1006 or Chemistry 1100 or 1050 or 1040

1002 General Biology 2
Hours: 3 Lecture, 3 Lab; 4.5 credits
Cellular and molecular Biol. Specific molecular process occurring in and around cells of evolutionarily diverse organisms. Biological concepts and theories of evolution, genetics, development, homeostasis, ecology-biodiversity, bioenergetics and bio-informatics. (Not open to students who have completed with a grade of C- or higher, the following course or courses: both Biol *2073 [17] and 2074 [17.1], or 1081 [4].). STEM variant course - Satisfies Pathways Required Core Life and Physical Sciences or Flexible Core Scientific World requirement.
Prerequisite: Biol 1001 with a grade of C- or higher.

3003 General Microbiology
3 hours; 3 credits
MicroBiol as a science, structure and function of microbes, microbial interrelationships, microbial metabolism, mechanisms of recombination, and microbes as agents of disease.
Prerequisite: Biol 1001 and 1002.

3004 General Microbiology Laboratory
4 hours; 2 credits
Techniques for isolation, cultivation, characterization of bacteria and the use of microbes as experimental organisms.
Prerequisite: Biol 1001 and 1002.
Prerequisite or co-requisite: Biol 3003.

3006/3007W Evolution
3 hours; 3 credits
Introduction to some major ideas and models of evolution; emphasis on genetic mechanisms, natural selection, and other processes in explaining structures and functions of individuals and populations; current ideas to account for the biodiversification of life on earth.
Prerequisites: Biol 1001, 1002 and 3011 (and Eng 1012 for 3007W).

3011 Genetics
3 hours; 3 credits
Principles and problems of heredity, including gene transmission, mutation, recombination and function. (Not open to students who have completed Biol 2080.) *Prerequisite*: Biol 1001, 1002 and 3003.

ELECTIVE COURSES:

The following information provides a brief overview of some of Biology's electives. Please check bulletin for all courses. **PLEASE NOTE: Not all electives are offered every semester.**

2001 Organismic Biology II, Zoology
2 hours; 2 credits
Key concepts in the structure and development of animals with special reference to those species used as models in contemporary developmental biology.
Prerequisite: Biol 1001 and 1002.

2002/2002W Animal Form and Function Laboratory
4 hours; 2 credits (3 credits for 2002W)
Dissection and examination of the structure and development of animals. *Prerequisite:* Biol 1001 and 1002
Co-requisite: Biol 2001 to be taken concurrently.

2010 Cell and Molecular Biology
3 hours; 3 credits
Introduction to the biology of the cell with emphasis on molecular aspects of biology ultrastructures, molecular composition, functions of the cell. Emphasis on cellular energetic, information storage and transfer, protein synthesis, growth, reproduction, and functional integration of cellular organelles and inclusions.
Prerequisites: Biol 1001 and 1002, and Chem 2100.

3083 Principles of Ecology
3 hours lecture, 3 credits
Introduction to the principles of ecology; biology of populations, communities, and ecosystems; basic issues of biodiversity.
Prerequisites: Biol 1001 and 1002; or permission of the instructor.

4010W Macromolecular Structure & Bioinformatics
3 hours; 3 credits
The fundamentals of biological macromolecular structures; an introduction to the computational tools important in determining their biological functions. (This course is the same as Computer and Information Science 2810W [10.33].) Writing-Intensive Course.
Prerequisite: Biol 1001 and 1002, and Eng 1012, and permission of the instructor.

4011 Molecular Biology of Development
3 hours lecture; 3 credits
Experimental and biochemical analysis of development of echinoderm, molluscan, and amphibian embryos. Biochemical analysis is primarily related to the replication, transcription, and translation of nucleic acids. Analysis of experimental design and interpretation of work in current literature with emphasis on experimental designs for future work.
Prerequisite: Biol 1001 and 1002.

4012 Medical Microbiology
3 hours; 3 credits
Microbes as disease agents. Examination of host-microbe interactions, the immune response, nature and mechanisms of infectious diseases, chemotherapy, drug resistance, and epidemiology.
Prerequisite: Biol 1001, 1002 and 3003.

4013 Principles of Immunology
3 hours; 3 credits
The immune system; immunity; innate and adaptive immunity; antigen presentation; cellular and humoral immunity; tolerance; immune system disorders.
Prerequisite: Biol 1001, 1002, and 3003.

BIOL 4024W Cancer Biology
3 hours, 3 credits
How a tumor cell is formed and progresses. The roles of inherent tumor-suppressor genes in killing cancer cells. Students will get an opportunity to learn molecular mechanisms of a cancer cell and develop an interest in basic or therapeutic cancer research. Writing-intensive course.
Prerequisites and/or co-requisites: English 1012; Biology 1001 and 1002, and Biology 2010 or 3011.

BIOL 4026 Global Bacterial, Protozoan and Viral killers
3 hours; 3 credits
Global public health threats, global infectious diseases, tuberculosis, malaria and AIDS epidemics, and Mycobacterium tuberculosis, Plasmodium falciparum, and HIV biology.
Prerequisite: Biology 1001, 1002, and 3003.

BIOL 4027 The Human Microbiome
3 hours; 3 credits
Human microbiome, holobiont, microbial pathogens, synbiotics, probiotics and prebiotics, drug metabolism and personalized medicine.
Prerequisite: Biology 1001, 1002, and 3003 or permission of instructor.

PLEASE CHECK BULLETIN FOR ALL COURSES.
NOTE: Not all electives are offered every semester.