

2011-12 BIOLOGY BS & BA CHECKLIST - Former Curriculum

Class of 2012 and some members of Class of 2013

Completed Course Number & Title

- BI 200 Molecules & Cells**
- BI 202 Organisms & Populations** (2011-12 substitute: BI 201, Ecology & Evolution)
- BI 304 Cell Biology**
- BI 305 Genetics**
(2011-12 substitutes: BI-315, Intro Genomics; BI-319, Genetics & Genomics; BI-417, Microbial Genetics)
- Lab:** Either BI 204 (Investigations in Molecular Cell Biology) or equivalent BI 310 (MCB lab)/BI 311 (Genetics Lab)
- Additional Electives as described below**

BS Majors: 5-7 electives depending on whether AP credits used in place of BI 200/202

B.S. majors without AP Biology Credits for BI 200/202: 5 biology electives from at least two of the three categories (categories listed on reverse).

AP students who did not take BI 200/202: 7 elective courses and at least one course from each of the three categories (categories listed on reverse)

BA Majors: 6-8 electives depending on whether AP credits used in place of BI 200/202

B.A. majors without AP Biology Credits for BI 200/202: 6 biology electives. Three of these electives must be upper-division biology electives and should be taken from at least two of the three categories. For the remaining three electives, students may select either additional biology electives or they may take electives from the "Approved Biology B.A. Electives."

AP students who did not take BI 200/202: 8 elective courses. Five of these electives must be biology electives and should be taken from all three categories. For the remaining three electives, students may select either additional biology electives or electives from the "Approved Biology B.A. Electives."

CO-REQUISITES

BS Major

Chemistry (15-16 credits):

- General Chemistry 1 & 2 with Labs (CH 109-110; CH 111-112)
- Organic Chemistry 1 with Lab (CH 231-232)
- Organic Chemistry 2 with Lab (CH 233-234) **or**
Biological Chemistry (BI 435) **or** Biochemistry 1 (CH 561)

Quantitative Requirements (4 course equivalents; 6-18 cr.)

- Calculus 1 (MT 100) or AP or equivalent
- Calculus 2 (MT 101) or AP or Biostatistics (BI 230; BI 231)
- Two Additional Courses from the following list:
 - PH 211 Physics 1 (calculus-based) with Lab
 - PH 212 Physics 2 (calculus-based) with Lab
 - BI 230 or BI 231 Biostatistics
(or another departmentally-approved course in statistics)
 - BI 508 Algorithms in Computational Biology *
 - BI 529 Biomolecules: Molecular Driving Forces * +
 - CS 102 Computer Science 2 **
 - MT 101 Calculus 2
 - MT courses numbered 200 or higher +

NOTES:

Biology Majors in the pre-med program take Physics 1 & 2 with Labs and consider adding a statistics course.

*BI 508 and BI 529 cannot be used to satisfy both a quantitative co-req and a biology elective.

**CS 102 requires a pre-req of Computer Science 1 (CS 101), which is not applied to the biology major.

+ Requires Calculus 2.

BA Major

Chemistry (8 credits):

- General Chemistry 1 & 2 with Labs (CH 109-110; CH 111-112)

Quantitative (credits depend on math background):

- Calculus 1 (MT 100) or AP credit

NOTES FOR BS & BA MAJORS

Calculus Placement & Sequencing Notes

Calculus 1 requirement is satisfied by MT 100 or an AP score of 4 or 5 on the AB exam or a score of 3 on the BC exam.

Calculus 1 & 2 can be satisfied by completing MT 101 or an AP score of 4 or 5 on the BC exam.

Calculus 1 & 2 can be taken concurrently with Physics 1 & 2.

Biology majors typically begin and/or complete calculus courses during freshman year.

BIOLOGY ELECTIVES

FALL 2011

SPRING 2012

Category 1 : Molecular Biology, Genetics & Biochemistry

- BI 315 Intro to Genomics (*Cam*)
 - BI 420 Intro to Bioinformatics (*Marth*)
 - BI 429 Medical Biochemistry & Metabolism (*Wyman*)
 - BI 435 Biological Chemistry (*Kirschner*)
 - BI 484 Research in Biochemistry Lab (*O'Connor*)
 - BI 503 Current Topics in Cancer Research (*Seyfried*)
 - BI 528 Biotechnology Research Topics (*R. Dunn*)
 - BI 533 Virus Infections & Cellular Transport (*Moroianu*)
- Category 1 or 2**
- BI 561 Molecular Evolution (*Chuang*)
 - CH 561 Biochemistry 1 (*Roberts*)

- BI 319 Genetics & Genomics (*Muskavitch*)
 - BI 414 Microbiology (*K. Dunn*) - **Category 1 or 2**
 - BI 417 Microbial Genetics (*Meyer*)
 - BI 435 Biological Chemistry (*Wyman*)
 - BI 440 Molecular Biology (*Taghian*)
 - BI 451 Cancer Biology (*Taghian*) – **Category 1 or 2**
 - BI 483 Research in Molecular Biology Lab (*Siegfried-Harris*)
 - BI 487 Research in Molecular Genetics Lab (*Hoffman*)
- BI 503 Current Topics in Cancer Research (*Seyfried*)
 - BI 506 Recombinant DNA Technology (*Hoffman*)
 - BI 529 Biomolecules: Molecular Driving Forces (*Clote*)
 - BI 535 Structural Biochemistry of Neurological Diseases (*Kirschner*)
 - BI 536 Viruses, Genes & Evolution (*Johnson*)
- Category 1, 2 or 3**
- CH 562 Biochemistry 2 (*Weerapana*)
 - GE 440 Global Biogeochemical Cycles (*Papineau*)
- Category 1 or 2**

Category 2: Cellular, Developmental & Organismal Biology

- BI 303 Intro to Physiology (*Burdo*)
 - BI 426 Human Anatomy with Lab (*DiBenedetto*)
 - BI 432 Developmental Biology (*Taghian*)
 - BI 457 Principles of Immunology (*Coleman*)
 - BI 481 Intro to Neuroscience (*Burdo*)
 - BI 482 Research in Cell Biology Lab (*Siegfried-Harris*)
 - BI 509 Vertebrate Cell Biology (*Mullikin-Kilpatrick*)
 - BI 513 Environmental Disruptors of Development (*Hake*)
 - BI 533 Virus Infections & Cellular Transport (*Moroianu*)
- Category 1 or 2**

- BI 303 Intro to Physiology (*DiBenedetto*)
 - BI 414 Microbiology (*K. Dunn*)- **Category 1 or 2**
 - BI 433 Human Physiology with Lab (*Mullikin-Kilpatrick*)
 - BI 451 Cancer Biology (*Taghian*) – **Category 1 or 2**
 - BI 485 Research in Neuroscience Lab (*Burdo*)
 - BI 523 Immunity & Infectious Disease (*Williams*)
 - BI 527 Neurobiology of Disease (*Burdo*)
 - BI 536 Viruses, Genes & Evolution (*Johnson*)
- Category 1, 2 or 3**

Category 3: Ecology & Evolutionary Biology

- BI 407 Ecology of Plants with Lab (*Hitchcock*)
- BI 442 Principles of Ecology (*Wolff*)

- BI 401 Environmental Biology (*Fertuck*)
 - BI 445 Animal Behavior (*Hitchcock*)
 - BI 536 Viruses, Genes & Evolution (*Johnson*)
- Category 1, 2, or 3**
- GE 440 Global Biogeochemical Cycles (*Papineau*)
- Category 1 or 2**

Approved Biology BA Electives

- PL 593 Philosophy of Science
- PS 285 Behavioral Neuroscience
- PS 383 Neurobiological Basis of Learning & Memory
- TH 598 Law, Medicine & Ethics

- PL 541 Philosophy of Health Science: East & West
- PL 583 Philosophy of Biology
- PS 285 Behavioral Neuroscience
- PS 371 Cognitive Neuroscience: Mind & Brain
- PS 380 Neuroscience of Psychopathology
- PS 381 Neurobiology of Social Behavior
- PS 386 Psychopharmacology
- PS 575 Advanced Affective Neuroscience

Biostatistics (*not required for the major, but useful and recommended*)

- BI 231 Biostatistics Honors (*Clote*)
- BI 230 Biostatistics (*McGowan*)

Courses not Offered in 2011-12, but planned for 2012-13

- BI 327 Plant Biology – Category 2
- BI 570 Biology of the Nucleus – Category 1
- BI 517 Human Parasitology – Category 2
- BI 551 Cell Biology of the Nervous System – Category 2