

## CNS BS IN BIOLOGY

### PROPOSED CHANGES TO THE BS IN BIOLOGY IN THE COLLEGE OF NATURAL SCIENCES SECTION IN THE *UNDERGRADUATE CATALOG 2018-2020*

Type of Change<sup>1</sup>  Academic Change  
 Degree Program Change (THECB2 form required)

Proposed classification<sup>3</sup>  Exclusive  General  Major

**1. IF THE ANSWER TO ANY OF THE FOLLOWING QUESTIONS IS YES, THE COLLEGE MUST CONSULT LINDA DICKENS, DIRECTOR OF ACCREDITATION AND ASSESSMENT, TO DETERMINE IF SACSCOC APPROVAL IS REQUIRED.**

- Is this a new degree program? Yes  No
- Is this program being deleted? Yes  No
- Does the program offer courses that will be taught off campus? Yes  No
- Will courses in this program be delivered electronically? Yes  No

**2. EXPLAIN CHANGE TO DEGREE PROGRAM AND GIVE A DETAILED RATIONALE FOR EACH INDIVIDUAL CHANGE:**

Change Common to Options II (Human Biology), V (Cell and Molecular Biology), X (Computational Biology), XI (Biology).

Remove BIO 323L from list of approved labs.

**Reason:** Department of Molecular Biosciences is unsure when course will be offered again. Students who might have taken BIO 323L will be absorbed into the other lab course options.

Change Common to Options II (Human Biology), IV (Microbiology and Infectious Diseases), X (Computational Biology), XI (Biology)

Change BIO 160L to 260L.

**Reason:** The immunology lab was increased from 1 to 2 hours.

Change Common to Options I (Ecology, Evolution, and Behavior), VIII (Teaching), IX (Biology Honors), XI (Biology)

Remove NEU 365R.

**Reason:** Deleted from the course inventory effective Fall 2017.

Option III, Marine and Freshwater Science

Remove the choice of 6 hours from pairs of coursework.

**Reason:** In the 2016-18 catalog, the six-hour course sequences were added to our degree option to guide students into a concentration in topics that we felt were relevant to Marine Science. Unfortunately, the GRG courses turned out to be very popular amongst Option III students and exceedingly difficult to get. This has caused a lot of stress for the students and advising exceptions on our part. Of the GRG courses listed, three courses sometimes have a small number of seats available for non-majors; of these two have lower division prerequisites, and the third most often has no seats available outside the major. Thus, we removed the sequences with these courses.

This left four BIO course sequences. Since some of the BIO courses in the sequences also have low availability, we opted to include them in a list of acceptable upper division courses rather than prescribed sequences. In this way, students don't run the risk of not being able to complete their chosen sequence if

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they can't get into a course. Instead of the previous 12 hours of upper division, it's now 18 hours of upper division, of which a minimum of 12 hours must be in Marine Science.

We relocated GEO 341G, Geomicrobiology, from the six-hour course sequences to the list of acceptable upper division courses. Marine Science majors are not as interested in this class as they are the Geography classes. However, for the occasional student who enrolls, it is appropriate to count the course.

### Option VII, Plant Biology

When requirements were rewritten in the 2016-18 catalog, BIO 374, Plant Anatomy, was inverted as BIO 347, Biology and Genetics of Immune Disorders.

**Reason:** Correcting error.

### Option IX, Biology Honors

Change 6 hours from Fine Arts or Liberal Arts to 6 hours from Fine Arts and Liberal Arts.

**Reason:** In practice, the Dean's Scholars Program allows students to take 6 hours from a single college or a mixture of 6 hours from both colleges. The change will synch catalog copy to advising practice and eliminate the need for petitions.

### Option X, Computational Biology

Remove M 362K from a list of approved courses in requirement 5.

**Reason:** M 362K and SDS 321 are in a duplicate relationship. Students can count only 1 of the courses. In requirement 5, students are instructed to complete either M 362K or SDS 321. In requirement 6, M 362K is in an approved list of choices. Due to the duplicate relationship, students cannot apply M 362K toward requirement 6.

Remove NEU 365R.

**Reason:** Deleted from the course inventory effective Fall 2017.

### Option XII, Genetics and Genomics

Add BIO 320, Cell Biology, to list of required biology courses.

**Reason:** The inclusion of this course was omitted in error when the option was created for the 2016-18 catalog.

Reduce from 12 to 9 hours of additional hours in upper-division biochemistry, biology, chemistry, mathematics, and statistics and data sciences.

**Reason:** Reduction of additional science hours made to accommodate addition of BIO 320 in order to maintain the number of hours in the option and the number of elective hours students may take.

### Special Requirements

Standardize language regarding requirements to graduate with Dean's Scholars degree options.

**Reason:** Since the honors options were added at different times as new BS degrees were created, language began to differentiate between degrees. The Dean's Scholars steering committee voted to establish standard language for all of its options.

### 3. THIS PROPOSAL INVOLVES (Please check all that apply)

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> Courses in other colleges          | <input type="checkbox"/> Courses in proposer's college that are frequently taken by students in other colleges | <input type="checkbox"/> Flags  |
| <input type="checkbox"/> Course in the core curriculum                 | <input type="checkbox"/> Change in course sequencing for an existing program                                   | <input type="checkbox"/> Courses that have to be added to the inventory |
| <input type="checkbox"/> Change in admission requirements (external or | <input type="checkbox"/> Requirements not explicit in the catalog language (e.g., lists of                     |   |

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internal)

acceptable courses maintained by  
department office)

### 4. SCOPE OF PROPOSED CHANGE

- a. Does this proposal impact other colleges/schools? Yes  No   
If yes, then how would you do so?

Option III, Marine and Freshwater Science: The proposal removes 11 GRG courses, which make up an estimated maximum of 20 seats per year distributed among the 11 courses.

Option IX, Biology Honors:

The original legislation stated that Dean's Scholars must choose 6 hours from either the College of Liberal Arts (COLA) or the College of Fine Arts (COFA). In practice, students are allowed to count 6 hours from one of the colleges, or a mixture from the colleges. This change will eliminate the need for petitions in situations where students choose to take a mixture of COLA and COFA coursework. In a constant state, the Dean's Scholars Program has approximately 200 majors.

There is no way to predict how this change will impact the College of Fine Arts and the College of Liberal Arts. Specific courses are not prescribed and the change is to match catalog language to current advising practice. Making an estimate, perhaps 10 seats per year distributed across all courses in both colleges may be impacted. Because the number of seats across both colleges is estimated to be so small, the College of Fine Arts and the College of Liberal Arts were not formally consulted for permission to make this change.

- b. Do you anticipate a net change in the number of students in your college? Yes  No   
If yes, how many more (or fewer) students do you expect?
- c. Do you anticipate a net increase (or decrease) in the number of students from outside of your college taking classes in your college? Yes  No   
If yes, please indicate the number of students and/or class seats involved.
- d. Do you anticipate a net increase (or decrease) in the number of students from your college taking courses in other colleges? Yes  No   
If yes, please indicate the number of students and/or class seats involved.

Option III, Marine Science and Freshwater Biology: The proposal removes 11 GRG courses, which make up an estimated maximum of 20 seats per year distributed among the 11 courses.

**If 4 a, b, c, or d was answered with yes, please answer the following questions. If the proposal has potential budgetary impacts for another college/school, such as requiring new sections or a non-negligible increase in the number of seats offered, at least one contact must be at the college-level.**

How many students do you expect to be impacted? 20

Impacted schools must be contacted and their response(s) included: Department of Geography and the Environment

Person communicated with: Sheryl Luzzadder-Beach, chair

Date of communication: September 12, 2017

Response: If this helps Marine Science students graduate faster and smooths your degree pathway, and you will still send them to GRG courses for electives, I agree.

- e. Does this proposal involve changes to the core curriculum or other basic education requirements (42-hour core, signature courses, flags)? If yes, explain:  
**If yes, undergraduate studies must be informed of the proposed changes and their response included:**  
Person communicated with:  
Date of communication:  
Response:
- f. Will this proposal change the number of hours required for degree completion?



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- b. Behavior and comparative physiology: Biology 322 and 122L, 359K, or 361T
- c. Taxon-based course: Biology 321L, 324 and 124L, 327 and 127L, 340L, 448L, 351, 352, 353F, 453L, 354L, 455L, 463L, 369F, 369L, Marine Science 352D, 354, 354C, 354E
6. Three additional courses or pair of courses chosen from coursework in 5a through 5c and from Biology 438L, 471G, 456L, 359R, 364, 373L, 374 and 174L, 375, 478L, Marine Science 352C, and 354Q
7. One course in cellular, developmental, genetics, microbiology, molecular, or neuroscience: Biology 320, 320L, 325L, 325T, 326R, 328, 331L, 344, 349, 349L, 350M, 366R, ~~Neuroscience 365R~~
8. One laboratory course or pair of courses containing a substantial field component: Biology 321L, 340L, 353F, 453L, 354L, 455L, 456L, 369L, 373L, Marine Science 320 and 120L, 352C, 352D, 354, 354C, 354E. A laboratory course or pair of courses may also count toward requirements 5 through 7
9. One additional laboratory course: Biology 320L, 321L, 124L, 127L, 325L, 331L, 438L, 340L, 448L, 349L, 353F, 453L, 354L, 455L, 456L, 369L, 373L, 174L, 478L, Marine Science 120L, 352C, 352D, 354, 354C, 354E, 354Q. One-hour laboratory courses may require credit for or registration in a complementary lecture course. A laboratory course may also count toward requirements 5 through 7. A course counted toward requirement 8 may not also count toward requirement 9.
10. One course chosen from the following: Chemistry 320M, Computer Science 303E or 313E, Geological Sciences 401 or 303, Statistics and Data Sciences 332 or 348
11. Enough additional coursework to make a total of 120 semester hours

### Option II: Human Biology

5. Chemistry 320M, 320N, 220C
6. Biochemistry 369 or 339F
7. Biology 346
8. Three hours from genetics, genomics, and computational biology: Biochemistry 339N, Biology 321G, 325T, 327E, 327G, 354C, 366, 366R, 471, Statistics and Data Sciences 348
9. Six hours from cellular, developmental, and molecular biology: Biochemistry 339J, 339M, 364F, Biology 320, 326R, 330, 335, 336, 339, 339M, 344, 347 or 360K, 349, 350M, 360M, 361
10. Three hours from ecology, environment, and health: Biology 326R, 327D, 329, 330, 361, 364, Nutrition 306 or 312
11. Four hours from physiology and anatomy: Biology 446L, 365S and 165U, 478L
12. One additional laboratory course from: Biology 320L, 122L, ~~323L~~, 124L, 128L, 129L, 325L, 328D, 230L, 331L, 340L, 446L, 448L, 349L, 353F, 453L, 354L, 455L, 456L, ~~460L~~ 260L, 361L, 463L, 165U, 369F, 369L, 371L, 373L, 174L, 478L, Marine Science 120L, 152L. One-hour laboratory courses may require credit for or registration in a complementary lecture course.
13. Enough additional coursework to make a total of 120 semester hours

### Option III: Marine and Freshwater Science

5. Chemistry 320M
6. Biology 326R and 373
7. Marine Science 101, 310, 320, and 120L
8. ~~42~~ 18 hours of coursework, including 12 hours in Marine Science, chosen from: Biology 320, 321L, 328, 344, 354L, 357, 361T, 364, 364E, 366, 375, Geological Sciences 341G, Marine Science 440, 348 (Topic 1: *Training Cruise(s)*), 352, 352C, 352D, 352E, 152L, 152S, 252S, 152T, 252T, 353, 354, 354C, 354E, 354J, 354Q, 354T, 354U, 355C, 356, 357, 367K, 170, 270, 370. Six hours in Marine Science must be completed at the Marine Science Institute in Port Aransas, Texas.
9. ~~Six hours of related courses chosen from one of the following options:~~
  - a. ~~Biology 320 and 344~~
  - b. ~~Biology 328 and 361T~~
  - c. ~~Biology 357 and 375~~

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- ~~d. Biology 364 and 366 or Geological Sciences 341G~~
- ~~e. Geography 301C or 301K and 333K~~
- ~~f. Geography 301C and 356 or 356F~~
- ~~g. Geography 306C and 334, 339, or 356~~
- ~~h. Geography 310C and 360G or 335N~~

~~40.~~ 9. Enough additional coursework to make a total of 120 semester hours

### Option IV: Microbiology and Infectious Diseases

- 5. Biochemistry 369 or 339F, and Chemistry 320M
- 6. Biology 326R, 330, 339, 339M, 360K, 361, 366
- 7. Two upper-division biology laboratory courses chosen from: Biology 230L, 260L, ~~460L~~, and 361L. Biology 377-FRI/377/379H may be used for one of the laboratory courses if approved in advance by the microbiology faculty adviser.
- 8. 15 additional hours in upper-division biochemistry, biology, and chemistry
- 9. Enough additional coursework to make a total of 120 semester hours

### Option V: Cell and Molecular Biology

- 5. Biochemistry 369 or 339F, and Chemistry 320M
- 6. Biology 320, 326R, 349, and 344 or 350M
- 7. Two laboratory courses chosen from: Biology 320L, ~~323L~~, 325L, 331L, 349L
- 8. One additional upper-division laboratory course in biology. Biology 377-FRI/377/379H may be used if approved in advance by the cell and molecular biology faculty adviser.
- 9. 18 additional hours in upper-division biochemistry, biology, and chemistry
- 10. Enough additional coursework to make a total of 120 semester hours

### Option VII: Plant Biology

- 5. Biology 328, 373, and 322 and 122L, 324 and 124L, or 463L
- 6. Two additional upper-division laboratory courses; Biology 377-FRI/377/379H may be used for one of the laboratory courses if approved in advance by the plant biology faculty adviser.
- 7. One of the following sequences:
  - 1. Plant molecular biology: Biochemistry 369 or 339F, Biology 320 and 350M, and Chemistry 320M
  - 2. Plant environmental biology: Biology 357, ~~347~~ 374, and 375
- 8. 18 additional hours in upper-division biochemistry, biology, chemistry, and marine science
- 9. Enough additional coursework to make a total of 120 semester hours

### Option VIII: Teaching

This Option is designed to fulfill the course requirements for certification as a middle grades or secondary school science teacher in Texas; the student chooses either composite science certification with biology as the primary teaching field or life science certification. However, completion of the course requirements does not guarantee the student's certification. Information about additional certification requirements is available from the UTeach-Natural Sciences academic adviser.

- 5. Chemistry 320M, 320N, and 220C or 320M and Biochemistry 369
- 6. Biology courses:
  - a. Biology 320, 226L, 326R, and either 324 and 124L, 322 and 122L, or 328 and 128L

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- b. At least three semester hours chosen from the following courses in physiology, neurobiology, and behavior: Biology 438L, Biology 359K, 359R, 361T, 365S, 367C, ~~Neuroscience 365R~~
- c. At least three semester hours chosen from: Biology 340L, 448L, 453L, 455L, 456L, 463L, 364, 369L, 373, Marine Science 352D, 354, 354C
7. One of the following research methods courses: Biology 328D, 337 (Topic 2: *Research Methods: UTeach*), Chemistry 368 (Topic 1: *Research Methods: UTeach*), Physics 341 (Topic 7: *Research Methods: UTeach*)
8. History 329U or Philosophy 329U
9. One of the following:
  - a. For composite science certification: Biochemistry 369 (to be counted as upper-division biology hours) and six semester hours of coursework in geological sciences. Courses intended for nonscience majors may not be counted toward this requirement. The remaining composite certification content requirements are met by the chemistry, physics, and science courses used to fulfill requirements 3c, 3d, 3ei, and 5.
  - b. For life science certification: Biology 373, and three additional semester hours of biology chosen from the courses listed in requirement 6b and 6c
10. 18 semester hours of professional development coursework consisting of:
  - a. Curriculum and Instruction 651S
  - b. Curriculum and Instruction 365C or UTeach-Natural Sciences 350
  - c. Curriculum and Instruction 365D or UTeach-Natural Sciences 355
  - d. Curriculum and Instruction 365E or UTeach-Natural Sciences 360
  - e. UTeach-Natural Sciences 101, 110, and 170
11. Students seeking middle grades certification must complete the following courses: Educational Psychology 363M (Topic 3: *Adolescent Development*), or Psychology 301 and 304; and Curriculum and Instruction 339E
12. Enough additional coursework to make a total of 126 semester hours

### Option IX: Biology Honors

5. Breadth requirement: An honors mathematics course; Biology 315H and 325H; Chemistry 301H and 302H; and an additional three-hour honors-designated course from a department in College of Natural Sciences. Credit earned by examination may not be counted toward this requirement.
6. An eight-semester-hour sequence of coursework in physics chosen from the following:
  1. Physics 301, 101L, 316, and 116L;
  2. Physics 317K, 117M, 317L, and 117N; or
  3. Physics 303K, 103M, 303L, and 103N
7. Biology 206L or 208L and Chemistry 204
8. Complete 24 hours chosen from any of the following courses:
  1. Biology 370
  2. Cellular, developmental, and molecular biology: Biochemistry 369 or 339F, 339J, 339M, 364F, Biology 320, 326R, 330, 335, 336, 339, 339M, 344, 347 or 360K, 349, 350M, 360M, 361
  3. Genetics and genomics: Biochemistry 339N, Biology 321G, 325T, 327E, 327G, 354C, 366, 366R, 471, Statistics and Data Sciences 348
  4. Physiology, neuroscience, and behavior: Biology 328, 438L, 359K, 359R, 361T, 367C, 365S, 374, Marine Science 355C, ~~Neuroscience 365R~~
  5. Ecology, evolution, and biodiversity: Biology 322, 324, 346, 351, 357, 364, 471G, 373, 375, Marine Science 320, 352C, 352D, 352E, 353, 354, 354C, 354E, 354Q, 356, 357
9. Three upper-division laboratory courses in biology; Biology 377 or 379H may be used as only one of the three required upper-division laboratory courses. Courses used to fulfill this requirement may also be counted toward requirement 8.
10. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors adviser
11. A section of Rhetoric and Writing 309S that is restricted to students in the Dean's Scholars Honors Program
12. Two semesters of Biology 379H
13. 15 additional semester hours of coursework approved by the departmental honors adviser



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14. Six semester hours of coursework ~~in~~ from the College of Liberal Arts ~~or~~ and the College of Fine Arts
15. Enough additional coursework to make a total of 120 semester hours

### Option X: Computational Biology

5. Statistics and Data Sciences 329C or Mathematics 340L or 341; Mathematics 362K or Statistics and Data Sciences 321; and Statistics and Data Sciences 348
6. Two courses from: Computer Science 303E, 313E, 323E, 323H, 324E, 326E, 327E, 329E, Mathematics 408D, 358K, ~~362K~~, 378K, Statistics and Data Sciences 322, 323, 329D, 332, 335, 352, 353, 358, 374C, 374D, 374E.
7. Two courses from genetics, genomics, and computational biology: Biochemistry 339N, Biology 321G, 325T, 327E, 327G, 354C, 366, 366R, 471
8. Six hours chosen from any of the following courses:
  1. Cellular, development, and molecular biology: Biochemistry 369 or 339F, 339J, 339M, 364F, Biology 320, 326R, 330, 335, 336, 339, 339M, 344, 347 or 360K, 349, 350M, 360M, 361
  2. Physiology, neuroscience, and behavior: Biology 328, 438L, 359K, 359R, 361T, 367C, 365S, 374, Marine Science 355C, ~~Neuroscience 365R~~
  3. Ecology, evolution, and biodiversity: Biology 322, 324, 346, 351, 357, 364, 471G, 373, 375, Marine Science 320, 352C, 352D, 352E, 353, 354, 354C, 354E, 354Q, 356, 357
9. One additional laboratory course chosen from: Biology 320L, 122L, ~~323L~~, 124L, 128L, 129L, 325L, 328D, 230L, 331L, 340L, 446L, 448L, 349L, 353F, 453L, 354L, 455L, 456L, ~~460L~~ 260L, 361L, 463L, 165U, 369F, 369L, 371L, 373L, 174L, 478L, Marine Science 120L, 152L
10. Nine hours of additional upper-division biochemistry, biology, chemistry, marine science, mathematics, physics, and statistics and data sciences
11. Enough additional coursework to make a total of 120 semester hours

### Option XI: Biology

5. Two courses from cellular, developmental, and molecular biology: Biochemistry 369 or 339F, 339J, 339M, 364F, Biology 320, 326R, 330, 335, 336, 339, 339M, 344, 347 or 360K, 349, 350M, 360M, 361
6. Two courses from genetics, genomics, and computational biology: Biochemistry 339N, Biology 321G, 325T, 327E, 327G, 354C, 366, 366R, 471, Statistics and Data Sciences 348
7. Two courses from physiology, neurobiology, and behavior: Biology 328, 438L, 359K, 359R, 361T, 367C, 365S, 374, Marine Science 355C, ~~Neuroscience 365R~~
8. Two courses from ecology, evolution, and biodiversity: Biology 322, 324, 346, 351, 357, 364, 471G, 373, 375, Marine Science 320, 352C, 352D, 352E, 353, 354, 354C, 354E, 354Q, 356, 357
9. Two additional laboratory courses: Biology 320L, 122L, ~~323L~~, 124L, 128L, 129L, 325L, 328D, 230L, 331L, 340L, 446L, 448L, 349L, 353F, 453L, 354L, 455L, 456L, ~~460L~~ 260L, 361L, 463L, 165U, 369F, 369L, 371L, 373L, 174L, 478L, Marine Science 120L, 152L. One-hour laboratory courses may required credit for or registration in a complementary lecture course.
10. 12 additional hours in upper-division biochemistry, biology, chemistry, marine science, mathematics, statistics and data sciences, and physics
11. Enough additional coursework to make a total of 120 semester hours.

### Option XII: Genetics and Genomics

5. Biochemistry 369 or 339F
6. Biology 320, 325T, 349, 344, and 325L
7. Chemistry 320M
8. Three hours from: Biochemistry 339N, Biology 321G, Statistics and Data Sciences 348
9. Six hours from: Biology 326R, 327E, 327G, 354C, 366, 366R



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10. Biology 320L or 349L
11. ~~42~~ 9 additional hours in upper-division biochemistry, biology, chemistry, mathematics, and statistics and data sciences
12. Enough additional coursework to make a total of 120 semester hours

### Special Requirements

Students in all Options must fulfill both the University's General Requirements for graduation and the college requirements. They must also earn a grade of at least C- in each mathematics and science course required for the degree, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in *General Information*.

To graduate and be recommended for certification, students who follow the teaching Option must have a University grade point average of at least 2.50. They must earn a grade of at least C- in the supporting course in requirement 8, and in each of the professional development courses listed in requirement 10 and must pass the final teaching portfolio review; those seeking middle grades certification must also earn a grade of at least C- in each of the courses listed in requirement 11. For information about the portfolio review and additional teacher certification requirements, students should consult the UTeach-Natural Sciences academic adviser.

To graduate under the ~~honors~~ Option IX, students must remain in good standing in the Dean's Scholars Honors Program, must submit an honors thesis approved by the departmental honors adviser, and must present their research in an approved public forum, such as the college's annual Undergraduate Research Forum. More information about the Undergraduate Research Forum is available at <https://cns.utexas.edu/>.

### Order and Choice of Work

[no change]

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1 See <https://facultycouncil.utexas.edu/degree-program-changes> for detailed explanations.

2 Submit required Texas Higher Education Coordinating Board forms to the provost's office.

3 **EXCLUSIVE:** of *exclusive* application and of primary interest only to a single college or school ("no protest" period is *seven calendar days*); **GENERAL:** of *general* interest to more than one college or school (but not for submission to the General Faculty) ("no protest" period is *fourteen calendar days*); **MAJOR:** *major* legislation must be submitted to the General Faculty for adoption ("no protest" period is *fourteen calendar days*).