

**EXECUTIVE COMMITTEE
COLLEGE OF NATURAL AND AGRICULTURAL SCIENCES
REPORT TO THE RIVERSIDE DIVISION
MAY 26, 2020**

To be adopted:

Proposed changes to B.S. in Cell, Molecular, and Developmental Biology

PRESENT:

Major Requirements

Some of the following requirements for the Cell, Molecular and Developmental Biology major may also fulfill the College's breadth requirements. Consult with an advisor for course planning. (No Changes)

PROPOSED:

1. Life Sciences core curriculum (72-76 units)

- a) BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
- b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
- c) CHEM 008A, CHEM 008B, CHEM 008C, CHEM 008LA, CHEM 008LB, CHEM 008LC, or CHEM 08HA, CHEM 08HB, CHEM 08HC, CHEM 08HLA, CHEM 08HLB, CHEM 08HLC
- d) PHYS 002A, PHYS 002B, PHYS 02LA, PHYS 02LB, PHYS 002C, PHYS 02LC
- e) MATH 007A or MATH 009A, MATH 007B or MATH 009B
- f) STAT 100A
- g) BCH 100, or BCH 110A and BCH 110B
Students must complete all required

1. Life Sciences core curriculum (72-76 units)

- a) BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
- b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC or CHEM 01HA, CHEM 01HB, CHEM 01HC, CHEM 1HLA, CHEM 1HLB, CHEM 1HLC
- c) CHEM 008A, CHEM 008B, CHEM 008C, CHEM 008LA, CHEM 008LB, CHEM 008LC, or CHEM 08HA, CHEM 08HB, CHEM 08HC, CHEM 08HLA, CHEM 08HLB, CHEM 08HLC
- d) PHYS 002A, PHYS 002B, PHYS 02LA, PHYS 02LB, PHYS 002C, PHYS 02LC, or PHYS 02HA, PHYS 02HB, PHYS 02HLA, PHYS 02HLB, PHYS 02HC, PHYS 02HLC, or PHYS 040A, PHYS 040B, PHYS 040C, or PHYS 040HA, PHYS 040HB, PHYS 040HC
- e) MATH 007A or MATH 009A or MATH 009HA, MATH 007B or MATH 009B or MATH 009HB
- f) STAT 100A
- g) BCH 100, or BCH 110A and BCH 110B, or BCH 110HA and BCH 110HB

Core Curriculum courses with a grade of C- or better and with a cumulative GPA in the courses of at least 2.0. Grades of D or F in two required courses, either separate courses or repetitions of the same course, are grounds for discontinuation from the major.

2. Upper-division requirements (40 units)

a) Major core (16 units) BIOL 102, BIOL 107A, CBNS 101, CBNS 108.

b) Major electives (24 units from the following):

Cellular emphasis. At least one of the following is required: ~~BIOL 113; BIOL 114; BIOL 121/MCBL 121, BIOL 128/~~ CBNS 128; BPSC 135; CBNS ~~116~~; CBNS 120/PSYC 120; CBNS 165.

Molecular emphasis. At least one of the following is required: ~~BCH 180A; BCH 180B; BIOL 107B; BIOL 119; BIOL 124/MCBL 124; BIOL 155/BPSC 155; CBNS 150/ENTX 150.~~

Developmental emphasis. At least one of the following is required: BCH 183; BIOL 123/MCBL 123; BIOL 132/BPSC 132; ~~BIOL 138/BPSC 138; BIOL 168~~; CBNS 121/PSYC 121; CBNS 169

Laboratory course: Two courses in a biological science are required. Courses including at least 3 hours of lab per week are eligible, including combined lecture and lab classes. Eligible classes include ~~BCH 153/BIOL 153/BPSC 153; BIEN 155; BIOL 118; BIOL 121L/MCBL 121L; BIOL 104/BPSC 104; BIOL 132/BPSC 132; BIOL 138/BPSC 138;~~ BIOL 143/BPSC 143; BIOL 161A; CBNS 120L/PSYC 120L; MCBL 125; and others. Students in the Health Science

Students must complete all required Core Curriculum courses with a grade of C- or better and with a cumulative GPA in the courses of at least 2.0. Grades of D or F in two required courses, either separate courses or repetitions of the same course, are grounds for discontinuation from the major.

2. Upper-division requirements (40 units)

a) Major core (16 units) BIOL 102, BIOL 107A or BCH 110C or BCH 110HC, CBNS 101, CBNS 108.

b) Major electives (24 units from the following):

Cellular emphasis. At least one of the following is required: BCH 180G; BIOL 121/MCBL 121, BIOL 128/CBNS 128; BPSC 135; CBNS 106; CBNS 120/PSYC 120; CBNS 165.

Molecular emphasis. At least one of the following is required: BPSC 109/CBNS 109; BCH 180E; BIOL 107B; BIOL 119; BIOL 124/MCBL 124; BIOL 155/BPSC 155; CBNS 150/ENTX 150.

Developmental emphasis. At least one of the following is required: BCH 183/BPSC 183; BIOL 123/MCBL 123; BIOL 132/BPSC 132; BIOL 115; CBNS 121/PSYC 121; CBNS 169

Laboratory course: Two courses in a biological science are required. Courses including at least 3 hours of lab per week are eligible, including combined lecture and lab classes. Eligible classes include BIEN 155; BIOL 118; BIOL 121L/MCBL 121L; BIOL 104/BPSC 104; BIOL 132/BPSC 132; BIOL 143/BPSC 143; BIOL 161A; CBNS 120L/PSYC 120L; MCBL 125; and others. Students in the Health Science

Track may substitute one laboratory course with a course in ethics.

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Note: A maximum of 8 units of 190- 199 courses, including no more than 4 units of 198 courses, may be counted towards the major elective requirement. Three units of BCH 197, BIOL 197, BPSC 197, CBNS 197, ENTM 197, PLPA 197, MCBL 197, NEM 197, BCH 199, BIOL 199, BPSC 199, CBNS 199, ENTM 199, PLPA 199, MCBL199, or NEM 199 may substitute for one of the required laboratory courses.

(No Change)

3. **Depth requirement (16 units).** For B.A. students, this requirement can be fulfilled with additional courses in Humanities and Social Sciences, and Foreign Languages. For the B.S. degree, students are required to take an additional 16 units of course work in natural sciences (including a biological or chemical science) or mathematics. Additional major elective units beyond the ~~32~~ required in 2b may be applied to this requirement.

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4. **Health Science track.** Students wishing to apply to medical, dental or veterinary professional schools must follow the requirements listed above, but are encouraged to select from the following courses. For B.A. students, some of these will fulfill their Humanities and Social Sciences and Foreign Languages requirements. Please consult the faculty adviser.

4. (No Change)

- I. Foreign language: three courses are recommended.
- II. Community service: a maximum of 4 units may be counted towards the 180 unit graduation requirement, using CBNS 198-1 or equivalent.
- III. Ethics: A course is strongly recommended, such as PHIL 009 or PHIL 167.

- I. (No Change)
- II. (No Change)
- III. (No Change)

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| <p>IV. Two upper-division classes in Psychology are recommended, such as CBNS 126/PSYC 126; CBNS 127/PSYC 127; PSYC 129; PSYC 178; or PSYC 179.</p> | <p>IV. (No Change)</p> |
| <p>V. When selecting electives in the natural sciences, students are recommended to include classes in an area of microbiology (e.g. BIOL 157, BIOL 171, ENSC 133/MCBL 133/SWSC 133, ENSC 141/MCBL 141/SWSC 141, BIOL 121/MCBL 121, BIOL 123/MCBL 123/PLPA 123, BIOL 124/MCBL 124, BIOL 134/PLPA 134), and in anatomy, zoology, or physiology (BIOL 151, BIOL 161A, BIOL 175, BIOL 176).</p> | <p>V. When selecting electives in the natural sciences, students are recommended to include classes in an area of microbiology (e.g. BIOL 157, BIOL 171, ENSC 133/MCBL 133/SWSC 133, BIOL 121/MCBL 121, BIOL 123/MCBL 123/PLPA 123, BIOL 124/MCBL 124, BIOL 134/PLPA 134), and in anatomy, zoology, or physiology (BIOL 151, BIOL 161A, BIOL 175, BIOL 176).</p> |

Justification:

1. The Honors versions of the series of CHEM 1A/B/C, MATH 9A/B, PHYS 2A/B/C, BCH 110A/B series are more rigorous than their non-honors counterparts and are hence permissible alternatives. PHYS 040A/B/C and their honors equivalents PHYS 040HA/HB/HC are also permissible replacements for the PHYS 2 series, as while these are for Physics majors, the material covered is equivalent or better.
2. BCH 110C and BCH 110HC each are equivalent to BIOL 107A and should count toward the CMDDB major. BIOL 113, BIOL 114, BIOL 168, and BIOL 138/BPSC 138 have not been offered in many years. BCH 180A is no longer offered. BCH 180F used to be called BCH 180B. CBNS 116 is a course in human neuroanatomy, the course that makes the most sense for a cell biology course is CBNS 106. BPSC 109/CBNS 109 is a new course in the molecular biology emphasis that is recommended for upper-division units. BCH 183 is cross-listed with BPSC 183. BIOL 115 is Human Genetics and has a strong Human Development component and qualifies for the developmental emphasis
3. BCH 153/BIOL 153/BPSC 153, and BIOL 138/BPSC 138 are no longer offered.
4. The requirement in 2b is for 24 units, not 32.
5. ENSC 141/MCBL 141/SWSC 141 is being discontinued effective Fall 2020 and will no longer be offered so it is being removed from the elective list.

Approvals:

Approved by the faculty of the Department of Molecular, Cell and Systems Biology:	November 4, 2019
Approved by the College of Natural and Agricultural Sciences Executive Committee:	January 14, 2020
Approved by the Committee on Educational Policy:	April 10, 2020