

**Executive Committee
College of Natural and Agricultural Science**

**Report to Riverside Division
December 6, 2016**

To be adopted:

Proposed changes to the undergraduate major requirements in Biochemistry.

PRESENT:

Major Requirements

The major requirements and the emphasis requirements are the same for the B.A. and the B.S. degree in Biochemistry. Choose one emphasis. All upper-division courses presume completion of the life sciences core curriculum.

Continuation in the major requires that the student maintains cumulative and upper division/science GPAs of 2.00 or higher, a GPA of 2.00 or higher in each academic quarter, and makes adequate progress in the major with no more than 16 units of repeated courses. Adequate progress in the major is defined as (a) earning no grade lower than a "C-" in any required lower division mathematics or science course, STAT 100A, ~~CHEM 112A, CHEM 112B, CHEM 112C~~, or any upper division BCH course, and (b) completing MATH 9B and CHEM 1A by the end of the Fall Quarter of the second year of residence and BCH 110A, BCH 110B, and BCH 110C by the end of the third year of residence. Freshmen must also complete BCH 95 with a grade of "S" during their first year of residence. Freshmen in the Medical Science Emphasis must also complete BCH 96 with a grade of "S" during their first year of residence. A student who does not meet these adequate progress standards will be discontinued from the major. In addition, a student who receives a grade of "D+" or lower in any two of the courses in (A) on the first attempt, or in any one of these courses in each of two attempts, will be discontinued from the major. Students who receive a grade lower than "B-" in BIOL 5A or ~~CHEM 112A~~ are strongly encouraged to complete BCH 100 during their second year of residence to better prepare themselves for BCH 110A, BCH 110B, and BCH 110C.

PROPOSED:

Major Requirements

The major requirements and the emphasis requirements are the same for the B.A. and the B.S. degree in Biochemistry. Choose one emphasis. All upper-division courses presume completion of the life sciences core curriculum.

Continuation in the major requires that the student maintains cumulative and upper division/science GPAs of 2.00 or higher, a GPA of 2.00 or higher in each academic quarter, and makes adequate progress in the major with no more than 16 units of repeated courses. Adequate progress in the major is defined as (a) earning no grade lower than a "C-" in any required lower division mathematics or science course, STAT 100A, CHEM 12A, CHEM 12B, CHEM 12C, or any upper division BCH course, and (b) completing MATH 9B and CHEM 1A by the end of the Fall Quarter of the second year of residence and BCH 110A, BCH 110B, and BCH 110C by the end of the third year of residence. Freshmen must also complete BCH 95 with a grade of "S" during their first year of residence. Freshmen in the Medical Science Emphasis must also complete BCH 96 with a grade of "S" during their first year of residence. A student who does not meet these adequate progress standards will be discontinued from the major. In addition, a student who receives a grade of "D+" or lower in any two of the courses in (A) on the first attempt, or in any one of these courses in each of two attempts, will be discontinued from the major. Students who receive a grade lower than "B-" in BIOL 5A or CHEM 12A are strongly encouraged to complete BCH 100 during their second year of residence to better prepare themselves for BCH 110A, BCH 110B, and BCH 110C.

Biology Emphasis

1. Lower-division requirements (~~56-57~~ units)

- a) BCH 095 or equivalent
- b) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C
- c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
- d) ~~MATH 008B~~ or MATH 009A, MATH 009B, MATH 046
- e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

2. Statistics requirement (5 units): STAT 100A

3. Upper-division requirements (~~59-65~~ units)

- a) BCH 101, BCH 110A, BCH 110B, BCH 110C, BCH 162, BCH 184
- b) At least 7 units from BCH 111, BCH 120, BCH 153/BIOL 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212
- c) BIOL 102
- d) CHEM 109 or CHEM 110A; ~~CHEM 112A, CHEM 112B, CHEM 112C~~
- e) Choose three biological science courses from the following:

(1) BCH 111, BCH 120, BCH 153/BIOL 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212

(2) BIOL 105, BIOL 108, BIOL 114, BIOL 117, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, BIOL 123/MCBL 123/PLPA 123, BIOL 124/MCBL 124, BIOL 128/CBNS 128, BIOL 151, BIOL 155/BPSC 155, BIOL 157, BIOL 159/NEM

Biology Emphasis

1. Lower-division requirements (68 units)

- a) BCH 095 or equivalent
- b) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C
- c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC; CHEM 12A, CHEM 12B, CHEM 12C
- d) MATH 009A, MATH 009B, MATH 046
- e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

2. Statistics requirement (5 units): STAT 100A

3. Upper-division requirements (47-53 units)

- a) BCH 101, BCH 110A, BCH 110B, BCH 110C, BCH 162, BCH 184
- b) At least 7 units from BCH 111, BCH 120, BCH 153/BIOL 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212
- c) BIOL 102
- d) CHEM 109 or CHEM 110A
- e) Choose three biological science courses from the following:

(1) BCH 111, BCH 120, BCH 153/BIOL 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212

(2) BIOL 105, BIOL 108, BIOL 114, BIOL 117, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, BIOL 123/MCBL 123/PLPA 123, BIOL 124/MCBL 124, BIOL 128/CBNS 128, BIOL 151, BIOL 155/BPSC 155, BIOL 157, BIOL 159/NEM

159, BIOL 160, BIOL 161A, BIOL 161B, BIOL 171, BIOL 171L, BIOL 173/ENTM 173, BIOL 175

(3) BIOL 104/BPSC 104, BIOL 132/BPSC 132, BIOL 143/BPSC 143, BIOL 148/BPSC 148, BIOL 155/BPSC 155, BPSC 135

(4) BIOL 100/ENTM 100, BIOL 173/ENTM 173, ENTM 128

(5) CBNS 101, CBNS 106, CBNS 116, CBNS 120/PSYC 120, CBNS 120L/PSYC 120L, CBNS 124/PSYC 124, CBNS 125/PSYC 125, CBNS 150/ENTX 150, CBNS 169

(6) ENSC 100

(7) ENTX 101, CBNS 150/ENTX 150

4. BCH 190 or BCH 197 are available as elective courses. Enrollment requires upper division standing and written permission of the supervising faculty member. No more than 9 units of courses numbered 190-199 may be counted towards the major.

Chemistry Emphasis

1. Lower-division requirements (~~61-62~~ units)

a) BCH 095 or equivalent

b) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C

c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 005

d) ~~MATH 008B~~ or MATH 009A, MATH 009B, MATH 046

e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

2. Statistics requirement (5 units): STAT 100A

159, BIOL 160, BIOL 161A, BIOL 161B, BIOL 171, BIOL 171L, BIOL 173/ENTM 173, BIOL 175

(3) BIOL 104/BPSC 104, BIOL 132/BPSC 132, BIOL 143/BPSC 143, BIOL 148/BPSC 148, BIOL 155/BPSC 155, BPSC 135

(4) BIOL 100/ENTM 100, BIOL 173/ENTM 173, ENTM 128

(5) CBNS 101, CBNS 106, CBNS 116, CBNS 120/PSYC 120, CBNS 120L/PSYC 120L, CBNS 124/PSYC 124, CBNS 125/PSYC 125, CBNS 150/ENTX 150, CBNS 169

(6) ENSC 100

(7) ENTX 101, CBNS 150/ENTX 150

4. BCH 190 or BCH 197 are available as elective courses. Enrollment requires upper division standing and written permission of the supervising faculty member. No more than 9 units of courses numbered 190-199 may be counted towards the major.

Chemistry Emphasis

1. Lower-division requirements (73 units)

a) BCH 095 or equivalent

b) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C

c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 005; CHEM 112A, CHEM 112B, CHEM 112C

d) MATH 009A, MATH 009B, MATH 046

e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

2. Statistics requirement (5 units): STAT 100A

3. Upper-division requirements (~~58-59~~ units)

- a) BCH 101, BCH 110A, BCH 110B, BCH 110C, BCH 162, BCH 184
- b) At least 7 units from BCH 111, BCH 120, BCH 153/BIOL 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212
- c) BIOL 102
- d) CHEM 109 or CHEM 110A; ~~CHEM 112A, CHEM 112B, CHEM 112C~~
- e) Two courses from CHEM 110B, CHEM 113, CHEM 125, CHEM 150A, CHEM 150B, CHEM 166 (Other graduate courses may be substituted by students with a GPA of 3.00 or better with permission of the instructor and the faculty advisor.)

4. BCH 190 or BCH 197 are available as elective courses. Enrollment requires written permission of the supervising faculty member. No more than 9 units of courses numbered 190-199 may be counted towards the major.

Medical Sciences Emphasis

1. Lower-division requirements (~~54-55~~ units)

- a) BCH 095 or equivalent
- b) BCH 096, BCH 098-I
- c) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C
- d) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
- e) ~~MATH 008B~~ or MATH 009A, MATH 009B
- f) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

3. Upper-division requirements (46-47 units)

- a) BCH 101, BCH 110A, BCH 110B, BCH 110C, BCH 162, BCH 184
- b) At least 7 units from BCH 111, BCH 120, BCH 153/BIOL 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212
- c) BIOL 102
- d) CHEM 109 or CHEM 110A
- e) Two courses from CHEM 110B, CHEM 113, CHEM 125, CHEM 150A, CHEM 150B, CHEM 166 (Other graduate courses may be substituted by students with a GPA of 3.00 or better with permission of the instructor and the faculty advisor.)

4. BCH 190 or BCH 197 are available as elective courses. Enrollment requires written permission of the supervising faculty member. No more than 9 units of courses numbered 190-199 may be counted towards the major.

Medical Sciences Emphasis

1. Lower-division requirements (66 units)

- a) BCH 095 or equivalent
- b) BCH 096, BCH 098-I
- c) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C
- d) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC; CHEM 12A, CHEM 12B, CHEM 12C
- e) MATH 009A, MATH 009B
- f) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

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| <p>2. Statistics requirement (5 units): STAT 100A</p> <p>3. Upper-division requirements (59 units)</p> <p>a) BCH 101, BCH 110A, BCH 110B, BCH 110C, BCH 120, BCH 162, BCH 184</p> <p>b) BIOL 102</p> <p>c) CHEM 109 or CHEM 110A; CHEM 112A, CHEM 112B, CHEM 112C</p> <p>d) CBNS 101</p> <p>e) At least 8 units from BCH 183/BPSC 183, BIOL 121, BIOL 161A, BIOL 161B, BIOL 171, CBNS 106, CBNS 150/ENTX 150.</p> | <p>2. Statistics requirement (5 units): STAT 100A</p> <p>3. Upper-division requirements (<u>48</u> units)</p> <p>a) BCH 101, BCH 110A, BCH 110B, BCH 110C, BCH 120, BCH 162, BCH 184</p> <p>b) BIOL 102</p> <p>c) CHEM 109 or CHEM 110A</p> <p>d) CBNS 101</p> <p>e) At least 8 units from BCH 183/BPSC 183, BIOL 121, BIOL 161A, BIOL 161B, BIOL 171, CBNS 106, CBNS 150/ENTX 150.</p> |
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Graduate and upper-division courses can be substituted with permission of the instructor and the faculty advisor. Graduate courses require a GPA of 3.0 or greater in the sciences. Students should be aware that CHEM 005 is often a requirement for admission to professional schools.

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Justification:

The Mathematics Department has proposed, and the CNAS Executive Committee has approved, a proposal for the creation of a new pre-calculus sequence consisting of MATH 006A and MATH 006B. This is an effort to improve the success rate of students who test into MATH 008A and go on to Calculus. MATH 008A and 008B is a sequence intended to serve the under-prepared student to get into Freshman Calculus MATH 009B quickly.

The Department of Chemistry has renumbered our regular organic chemistry courses from an Upper Division to a Lower Division series.

Current Numbering System: Organic Chemistry CHEM 112A, CHEM 112B, CHEM 112C.

NEW Numbering System: Organic Chemistry CHEM 12A, CHEM 12B, CHEM 12C.

*Also correcting unit error from existing catalog: the catalog upper division requirements for the Medical Sciences Emphasis of this major originally adds-up to 60 units (not 59). Therefore, the change to remove the CHEM ABC series within that emphasis should be 48 and not 47.

Approvals:

Approved by the faculty of the Department of Biochemistry:	May 18, 2016
Approved by the Executive Committee College of Natural and Agricultural Sciences:	May 19, 2016
Approved by the Committee on Educational Policy:	June 10, 2016
Approved by Executive Council in lieu of the Division:	June 20, 2016