To be Adopted:

Proposed Changes in Course Requirements for the B.S. Degree in Biological Sciences

### Biology Track

1. Upper-division requirements [at least 36 units from the following, including two courses with laboratory or field component (indicated by *)]
   
   **a) Molecular/Cellular (minimum of one course from each category)**
   
   - (1) BCH 100 or BCH 110A-BCH 110B
   - (2) BIOL 102 or BIOL 115
   - (3) BIOL 107A or BCH 110C, CBNS 111 or BIOL 113 or BIOL 114, BIOL 128/CBNS 128, BPSC 155/BIOL 155

   **b) Functional Biology of Organisms (minimum of two courses with lecture component)**
   

   **c) Ecology/Evolution/Systematics/Behavior (minimum of two courses)**
   
   - BIOL 105, BIO 108, BIO 117 or ENTM 127/BIO 127, BIO 118*, BIO 160, BIO 160L*, BIO 163*, BPSC 185/BCH 185, ENTM 112/BPSC 112/BIO 112

   **d) Additional Elective Courses**
   
   - BIOL 107B, BIO 109*, BIO 110, BIO 168, BIO 185 (E-Z), BIO 191, ENTX 150/CBNS 150

2. Statistics/Computer Science requirement (two courses)
   
   - CS 010, CS 012, CS 014, CS 061, CS 120A/ESE 120A, CS 143/ESE 143, STAT 100A, STAT 100B, STAT 120A, STAT 120B

3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52. Eight of these units may be from a declared minor in one of the science colleges, or additional lower-division science requirements for the teaching credential (advisor's approval required).

### Cell, Molecular, and Developmental Biology Track

1. Upper-division requirements [must include at least one
a) Required courses
   (1) BCH 110A-BCH 110B (recommended) or BCH 100
   (2) BIOL 102 or BIOL 115, BIOL 107A or BCH 110C, CBNS 111 or BIOL 114 or BPSC 135, BIOL 167* or BIOL 168 or CBNS 169*

b) Additional requirements (a minimum of 20 units from the following list)
   BCH 102*, BCH 120/BMSC 120, BCH 162*, BCH 183, BCH 184, BIOL 107B, BIOL 109*, BIOL 110, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 121L/MCBL 121L*, BIOL 128/CBNS 128, BIOL 167* or CBNS 169* [whichever was not used to satisfy 1.a) above], BIOL 185G, BIOL 191, BPSC 143/BIOL 143*, BPSC 148, BPSC 153/BCH 153/BIOL 153*, BPSC 155/BIOL 155, BPSC 185/BCH 185, CBNS 106, CBNS 116, CBNS 120/PSYC 120, CBNS 120L/PSYC 120L*, CBNS 125/PSYC 125, CHE 124, CHE 124L*, CHE 140*, ENTX 101, ENTX 150/CBNS 150, HNPG 024

2. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52. Must include at least 8 units not listed above.

Entomology Track
1. Upper-division required courses
   a) BCH 100
   b) BIOL 102, BIOL 151
   c) BPSC 104/BIOL 104
   d) ENTM 100/BIOL 100, ENTM 112/BIOL 112/BPSC 112, ENTM 127/BIOL 127, ENTM 173/BIOL 173

2. Additional upper-division requirements (at least 6 units from the following)
   ENTM 109, ENTM 114, ENTM 124, ENTM 126, ENTM 126L, ENTM 128, ENTM 129, ENTM 129L, ENTM 132, ENTM 133, ENTM 162/BIOL 162, ENTM 190, ENTM 197 [no more than three units of ENTM 190 and ENTM 197 (in combination) may be taken toward fulfilling this requirement]

3. Related areas (at least 7 units from the following)
   a) Agriculture
      BPSC 143/BIOL 143, BPSC 150, BPSC 158, BPSC 166, ENSC 100, ENSC 131, NEM 120, NEM 159/BIOI 159, PLPA 120/BIOL 120/MCBL 120, PLPA 134/BIOL 134, PLPA 134L/BIOI 134L
   b) Evolution, Ecology, Behavior, Genetics
      BIOL 105, BIOL 108, BIOL 118, BIOL 157, BIOL 160, BPSC 144, BPSC 146, BPSC 148, GEO 167, GEO 168A, GEO 168B
   c) Cell, Molecular, and Organismal Biology
      BIOL 107A, BIOL 107B, BIOL 109, BIOL 113, BIOL 114, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 121L/MCBL 121L, BIOL 175, BIOL 175L, BIOL 176, BIOL 176L, CBNS 111

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laboratory course (indicated by *) from either category

a) Required courses
   (1) BCH 110A-BCH 110B (recommended) or BCH 100
   (2) BIOL 102 or BIOL 115, BIOL 107A or BCH 110C, CBNS 111 or BIOL 114 or BPSC 135, BIOL 167* or BIOL 168 or CBNS 169*

b) Additional requirements (a minimum of 20 units from the following list)
   BCH 102*, BCH 120/BMSC 120, BCH 162*, BCH 183, BCH 184, BIOL 107B, BIOL 109*, BIOL 110, BIOL 119*, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 121L/MCBL 121L*, BIOL 128/CBNS 128, BIOL 167* or CBNS 169* [whichever was not used to satisfy 1.a) above], BIOL 185G, BIOL 191, BPSC 143/BIOL 143*, BPSC 148, BPSC 153/BCH 153/BIOL 153*, BPSC 155/BIOL 155, BPSC 185/BCH 185, CBNS 106, CBNS 116, CBNS 120/PSYC 120, CBNS 120L/PSYC 120L*, CBNS 125/PSYC 125, CHE 124, CHE 124L*, CHE 140*, ENTX 101, ENTX 150/CBNS 150, HNPG 024

2. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52. Must include at least 8 units not listed above.

Entomology Track
1. Upper-division required courses
   a) BCH 100
   b) BIOL 102, BIOL 151
   c) BPSC 104/BIOL 104
   d) ENTM 100/BIOL 100, ENTM 112/BIOL 112/BPSC 112, ENTM 127/BIOL 127, ENTM 173/BIOL 173

2. Additional upper-division requirements (at least 6 units from the following)
   ENTM 109, ENTM 114, ENTM 124, ENTM 126, ENTM 126L, ENTM 128, ENTM 129, ENTM 129L, ENTM 132, ENTM 133, ENTM 162/BIOL 162, ENTM 190, ENTM 197 [no more than three units of ENTM 190 and ENTM 197 (in combination) may be taken toward fulfilling this requirement]

3. Related areas (at least 7 units from the following)
   a) Agriculture
      BPSC 143/BIOL 143, BPSC 150, BPSC 158, BPSC 166, ENSC 100, ENSC 131, NEM 120, NEM 159/BIOI 159, PLPA 120/BIOL 120/MCBL 120, PLPA 134/BIOL 134, PLPA 134L/BIOI 134L
   b) Evolution, Ecology, Behavior, Genetics
      BIOL 105, BIOL 108, BIOL 118, BIOL 157, BIOL 160, BPSC 144, BPSC 146, BPSC 148, GEO 167, GEO 168A, GEO 168B
   c) Cell, Molecular, and Organismal Biology
      BIOL 107A, BIOL 107B, BIOL 109, BIOL 113, BIOL 114, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 121L/MCBL 121L, BIOL 174, BIOL 175, BIOL 175L, BIOL 176,
4. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Evolution and Ecology Track
1. Upper-division requirements [at least 36 units from the following, including one course with laboratory or field component (indicated by *)]
   a) Required courses
      (1) BCH 100
      (2) BIOL 102
      (3) At least three courses from BIOL 105, BIOL 108, BIOL 117, BIOL 160, ENTM 112/BIOL 112. Courses not used to meet this requirement can be applied to additional requirements.
   b) Additional requirements (at least one course from each of the following areas)
      (1) Biological Diversity
         BIOL 151*, BIOL 157*, ENTM 100/BIOL 100*, ENTM 114*, PLPA 134/BIOL 134, PLPA 134L/BIOL 134L*
      (2) Functional Biology and Behavior
         BIOL 160, BIOL 160L*, BIOL 161A*, BIOL 161B*, BIOL 175, BIOL 175L*, BIOL 176, BIOL 176L*, BIOL 177, BPSC 138/BIOL 138*, ENTM 162/BIOL 162
      (3) Ecology and Evolution
   2. Statistics requirement (minimum of one course)
      STAT 100A, STAT 100B, STAT 120A, STAT 120B
   3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Microbiology Track
1. Upper-division core requirements
   a) BCH 110A-BCH 110B, BCH 110C or BIOL 107A
   b) BIOL 102 or BIOL 115, BIOL 121A/MCBL 121A, BIOL 121L/MCBL 121L, BIOL 157
   c) PLPA 123/BIOL 123/MCBL 123, PLPA 134/BIOL 134, PLPA 134L/BIOL 134L*
   2. Additional upper-division requirements (at least three courses from the following)
      BIOL 107B, BIOL 109, BIOL 113, BIOL 114, BIOL 121B/MCBL 121B, BIOL 128/CBNS 128, CBNS 444, ENSC 141, ENSC 155, MCBL 122/BIO 122, NEM 159/BIOL 159, PLPA 120/BIOL 120/MCBL 120, SWSC 111
   3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Biol 176L, BIOL 178, CBNS 101
4. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Evolution and Ecology Track
1. Upper-division requirements [at least 36 units from the following, including one course with laboratory or field component (indicated by *)]
   a) Required courses
      (1) BCH 100
      (2) BIOL 102
      (3) At least three courses from BIOL 105, BIOL 108, BIOL 117, BIOL 160, ENTM 112/BIOL 112. Courses not used to meet this requirement can be applied to additional requirements.
   b) Additional requirements (at least one course from each of the following areas)
      (1) Biological Diversity
         BIOL 151*, BIOL 157*, ENTM 100/BIOL 100*, ENTM 114*, PLPA 134/BIOL 134, PLPA 134L/BIOL 134L*
      (2) Functional Biology and Behavior
      (3) Ecology and Evolution
   2. Statistics requirement (minimum of one course)
      STAT 100A, STAT 100B, STAT 120A, STAT 120B
   3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Microbiology Track
1. Upper-division core requirements
   a) BCH 110A-BCH 110B, BCH 110C or BIOL 107A
   b) BIOL 102 or BIOL 115, BIOL 121A/MCBL 121A, BIOL 121L/MCBL 121L, BIOL 157
   c) PLPA 123/BIOL 123/MCBL 123, PLPA 134/BIOL 134, PLPA 134L/BIOL 134L*
   2. Additional upper-division requirements (at least three courses from the following)
      BIOL 107B, BIOL 109, BIOL 113, BIOL 114, BIOL 121B/MCBL 121B, BIOL 128/CBNS 128, CBNS 444, ENSC 141, ENSC 155, MCBL 122/BIO 122, NEM 159/BIOL 159, PLPA 120/BIOL 120/MCBL 120, SWSC 111
   3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.
JUSTIFICATION:

Biology Track

The Note is included to explain that BIOL 174 may not be used to satisfy two requirements.
CBNS 111 was renumbered to CBNS 101 effective Winter 2002.
BIOL 119, BIOL 174, BIOL 178 are new courses (Fall 2001 effective dates) added to appropriate topic categories of the track. BIOL 174 has both an ecological and physiological/organismal component so is included as an option in items 1.b) and 1.c).

- BIOL 119, Functional and Evolutionary Bioinformatics, 4 units (lecture, 3 hours; laboratory, 3 hours)
- BIOL 174, Ecological and Evolutionary Physiology, 3 units (lecture, 3 hours)
- BIOL 178, Hormones and Behavior, 3 units (lecture, 3 hours)

Cell, Molecular, and Developmental Biology Track

CBNS 111 was renumbered to CBNS 101 effective Winter 2002.
BIOL 119, Functional and Evolutionary Bioinformatics, is an appropriate addition to the list of electives.

Entomology Track

BIOL 174, Ecological and Evolutionary Physiology, and BIOL 178, Hormones and Behavior, fit into the Cell, Molecular and Organismal Biology category.
CBNS 111 was renumbered to CBNS 101 effective Winter 2002.

Evolution and Ecology Track

BIOL 174, Ecological and Evolutionary Physiology, and BIOL 178, Hormones and Behavior, are suitable additions to the Functional Biology and Behavior category.

Microbiology Track

PLPA 134L/BIOL 134L has not been offered during the last three years. It is deleted as an upper-division core requirement, and inserted in the additional upper-division requirements section as an elective course.

EFFECTIVE: Fall 2002

Approved by the Committee in Charge, Biological Sciences Major: March 22, 2002
Approved by the Committee in Charge, Biology Track: February 14, 2002
Approved by the Committee in Charge, Cell, Molecular, and Developmental Biology Track: February 13, 2002
Approved by the Committee in Charge, Entomology Track: March 21, 2002
Approved by the Committee in Charge, Evolution and Ecology Track: February 20, 2002
Approved by the Committee in Charge, Microbiology Track: March 8, 2002

Reviewed and Approved by CNAS Executive Committee 4/03/02

Approved by Committee on Educational Policy: 4/19/02