

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

To be adopted:

Proposed changes to the undergraduate program B.A. and B.S. in Mathematics

PRESENT:

Major Requirements for the Bachelor of Arts and Bachelor of Science in Mathematics

To fulfill the Natural Sciences requirement, the Department of Mathematics requires the following:

1. One of the year sequences
 - a) BIOL 002, BIOL 003, BIOL 005C
 - b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC,
 - c) PHYS 040A, PHYS 040B, PHYS 040C
2. Either one course in the physical sciences listed above if (a) above is completed or one course in the biological sciences if (b) or (c) above is completed

The major requirements for the B.A. and B.S. degrees in Mathematics are as follows:

For the Bachelor of Arts

1. Lower-division requirements: MATH 007A or MATH 009A or ~~MATH 009HA~~, MATH 007B or MATH 009B or ~~MATH 009HB~~, MATH 010A, MATH 010B, MATH 031, MATH 046
2. Four (4) units of either ~~CS 010~~ or one upper-division course in Statistics
3. A minimum of 36 units of upper-division mathematics, excluding courses in the MATH 190–199 series

For the Bachelor of Science

Lower-division requirements for all programs are MATH 007A or MATH 009A or ~~MATH 009HA~~, MATH 007B or MATH 009B or ~~MATH 009HB~~, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046, ~~CS 010~~ (~~CS 012~~ is recommended).

PROPOSED:

Major Requirements for the Bachelor of Arts and Bachelor of Science in Mathematics

To fulfill the Natural Sciences requirement, the Department of Mathematics requires the following:

1. No Change
 - a) No Change
 - b) No Change
 - c) No Change
2. No Change

For the Bachelor of Arts

1. Lower-division requirements: MATH 007A or MATH 009A or MATH 09HA, MATH 007B or MATH 009B or MATH 09HB, MATH 010A, MATH 010B, MATH 031, MATH 046
2. Four (4) units of either CS 010A or one upper-division course in Statistics
3. No Change

For the Bachelor of Science

Lower-division requirements for all programs are MATH 007A or MATH 009A or MATH 09HA, MATH 007B or MATH 009B or MATH 09HB, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046, CS 010A (CS 010B is recommended).

1. Pure Mathematics program (56 units)

- a) Thirty-six (36) units of upper-division mathematics to include at least 24 units from MATH 131, MATH 132, MATH 145A, MATH 145B, MATH 151A, MATH 151B, MATH 151C, MATH 171, MATH 172
- b) At least three courses from (a) above must be from MATH 145A, MATH 145B, MATH 151A, MATH 151B, MATH 151C
- c) Courses in the MATH 190–199 series are excluded
- d) Sixteen (16) additional units of upper division mathematics, upper-division computer science, or other related courses approved by the undergraduate advisor (For students who wish to pursue graduate work, courses in complex variables, differential equations, and probability may be particularly useful.)

2. Applied Mathematics programs

MATH 131, MATH 135A and MATH 135B, or MATH 149A and MATH 149B. MATH 146A, MATH 146B, MATH 146C and the courses in one of the following options:

a) General Applied Mathematics option

- (1) MATH 150A or MATH 151A
- (2) MATH 168
- (3) Students will select 16 units from MATH 120, MATH 121, MATH 126, MATH 141, MATH 147, MATH 148, MATH 149A, MATH 149B, ~~MATH 149C~~, MATH 150B, MATH 151B, MATH 165A, MATH 165B

b) Biology option

- (1) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C
- (2) MATH 149A
- (3) Two courses from MATH 120, MATH 121, ~~MATH 135A~~, MATH 135B, MATH 149B, ~~MATH 149C~~
- (4) BIOL 102, BIOL 105, BIOL 108
- (5) Four (4) additional units of upper-division biology

c) Chemistry option

- (1) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC

1. Pure Mathematics program (56 units)

- a) No Change
- b) No Change
- c) No Change
- d) No Change

2. Applied Mathematics programs

No Change

a) General Applied Mathematics option

- (1) No Change
- (2) No Change
- (3) Students will select 16 units from MATH 120, MATH 121, MATH 126, MATH 141, MATH 147, MATH 148, MATH 149A, MATH 149B, MATH 150B, MATH 151B, MATH 165A, MATH 165B

b) Biology option

- (1) No Change
- (2) No Change
- (3) Two courses from MATH 120, MATH 121, MATH 135A, MATH 135B, MATH 149B
- (4) No Change
- (5) No Change

c) Chemistry option

- (1) No Change

- (2) PHYS 040A, PHYS 040B, PHYS 040C
- (3) Three courses from MATH 120, MATH 135A, MATH 135B, ~~MATH 149A~~, MATH 149B, ~~MATH 149C~~, MATH 165A, MATH 165B
- (4) CHEM 110A, CHEM 110B, CHEM 111, CHEM 113
- (5) Four (4) additional units of upper-division chemistry

d) Economics option

- (1) MATH 120, MATH 121, MATH 149A, MATH 149B
- (2) Four upper-division economics courses at ~~least 20 units~~ to consist of ~~ECON 102A and four courses to be chosen from ECON 102B, ECON 103A, ECON 103B, ECON 107, ECON 108, ECON 110, ECON 134/ BUS 106, ECON 135, ECON 143A/ENSC 143A, ECON 143B/ENSC 143B, ECON 143C/ENSC 143C, ECON 156, ECON 206~~

e) Environmental Sciences option

- (1) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
- (2) ECON 006/ENSC 006
- (3) GEO 001 is recommended
- (4) MATH 149A
- (5) Two courses from MATH 120, MATH 121, MATH 135A, MATH 135B, MATH 149B, ~~MATH 149C~~, CS 177, STAT 155
- (6) ENSC 100/~~SWSC 100~~, ENSC 101, ENSC 102
- (7) Four (4) additional units of upper-division environmental sciences

f) Physics option

- (1) MATH 135A, MATH 165A
- (2) Either MATH 120 or MATH 171
- (3) PHYS 130A, PHYS 130B
- (4) Either PHYS 135A, PHYS 135B, PHYS 136 or PHYS 156A, PHYS 156B

3. Computational Mathematics program

- a) MATH 011/CS 011, MATH 131, MATH 120, MATH 132, MATH 135A, MATH 135B

- (2) No Change
- (3) Three courses from MATH 120, MATH 135A, MATH 135B, MATH 149A, MATH 149B, MATH 165A, MATH 165B
- (4) No Change
- (5) No Change

d) Economics option

- (1) No Change
- (2) Four upper division Economics courses (17-20 units) including:
 - (a) ECON 104A
 - (b) Three courses to be chosen from ECON 104B, ECON 104C, ECON 105A, ECON 105B, ECON 107, ECON 108, ECON 110, ECON 112, ECON 117/PHIL 119, ECON 129, ECON 134/BUS 106, ECON 135, ECON 136, ECON 153, ECON 160/BUS 160, ECON 171/BUS 171, ECON 178/BUS 178.

e) Environmental Sciences option

- (1) No Change
- (2) No Change
- (3) No Change
- (4) No Change
- (5) Two courses from MATH 120, MATH 121, MATH 135A, MATH 135B, MATH 149B, CS 177, STAT 155
- (6) ENSC 100, ENSC 101, ENSC 102
- (7) No Change

f) Physics option

- (1) No Change
- (2) No Change
- (3) No Change
- (4) No Change

3. Computational Mathematics program

- a) No Change

- b) ~~CS 012, CS 014~~, CS 141, CS 150
- c) One additional CS course to be chosen from the list of approved technical elective courses.
- d) Sixteen (16) units of technical electives to be chosen from
 - (1) CS 111, MATH 121, MATH 126, MATH 146A, MATH 146B, MATH 146C, MATH 149A, MATH 149B, ~~MATH 149C~~, MATH 171
 - (2) CS 130, CS 166, CS 170, CS 177

- b) CS 010B, CS 010C, CS 141, CS 150
- c) No Change
- d) No Change
 - (1) CS 111, MATH 121, MATH 126, MATH 146A, MATH 146B, MATH 146C, MATH 149A, MATH 149B, MATH 171
 - (2) No Change

Justification:

CS 010, 012, and 014 are currently being renumbered as CS 010A, CS 010B, and CS 010C, respectively. MATH 149C discontinued.

Typo MATH 35A corrected to MATH 135A.

Under Math Economics Option: ECON 102A and 102B replaced with ECON 104A and ECON 104B
 ECON 103A and ECON 103B replaced with ECON 105A and 105B. ECON 143B, ECON 134C, ECON 156 and ECON 206 discontinued. Additional ECON added to expand the electives roster.

Under Environmental Sciences Option: SWSC 100 discontinued.

Approvals:

Approved by the faculty of the Department of Mathematics: January 15, 2020

Approved by the Executive Committee of the College of Natural and Agricultural Sciences: February 18, 2020

Approved by the Committee on Educational Policy: April 15, 2020