

**EXECUTIVE COMMITTEE
COLLEGE OF NATURAL AND AGRICULTURAL SCIENCE**

**REPORT TO RIVERSIDE DIVISION
MAY 23, 2017**

To be adopted:

Proposed changes to the undergraduate major requirements in Mathematics

PRESENT:

Change of Major Criteria

All courses taken to fulfill major requirements must be completed with grades of C- or better after repeats.

Freshman (0-44.9 units earned)

Completion of the following with grade of "C-" or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 009A

Sophomores (45-89.9 earned units)

Completion of the following with grade of "C-" or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 009A

MATH 009B

MATH 009C or MATH 010A

Juniors & Seniors (90 or more earned units)

Completion of the following with grade of "C-" or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 009A

MATH 009B

MATH 009C

MATH 010A

MATH 031

Major change requests are reviewed during the 2nd, 3rd, 4th & 10th weeks of each quarter. Students are required to complete degree programs without exceeding 216 earned units.

PROPOSED:

Change of Major Criteria

All courses taken to fulfill major requirements must be completed with grades of C- or better after repeats.

Freshman (0-44.9 units earned)

Completion of the following with grade of "C-" or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 007A or MATH 009A

Sophomores (45-89.9 earned units)

Completion of the following with grade of "C-" or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 007A or MATH009A

MATH 007B or MATH009B

No Change

Juniors & Seniors (90 or more earned units)

Completion of the following with grade of "C-" or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 007A or MATH 009A

MATH 007B or MATH 009B

No Change

No Change

No Change

No Change

Transfer Selection Criteria

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with “C” grades or better:

MATH 009A, MATH 009B, and MATH 009C (mandatory)

And at least one sequence from:

1. BIOL 005A/BIOL 05LA and BIOL 005B (and BIOL 005C, if articulated)
2. CHEM 001A, CHEM 01LA, CHEM 001B, CHEM 01LB, CHEM 001C, and CHEM 01LC
3. PHYS 040A, PHYS 040B, and PHYS 040C
4. MATH 010A, MATH 010B, and MATH 046

Courses must be completed with a letter grade, with no grade lower than a “C.” Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

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:

Transfer Selection Criteria

No Change

No Change

MATH 007A or MATH009A, MATH 007B or MATH 009B, and MATH 009C (mandatory)

And at least one sequence from:

1. No Change
2. No Change
3. No Change
4. No Change

No Change

University Requirements

No Change

College Requirements

No Change

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

No Change

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 009A, MATH 009B, MATH 009C, 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 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046, CS 010 (CS 012 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) Twenty (20) 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,

1. One of the year sequences
 - a) No Change
 - b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
 - c) No Change
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, MATH 007B or MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046
2. No Change
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, MATH 007B or MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046, CS 010 (CS 012 is recommended).

1. Pure Mathematics program (56 units)

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

differential equations, and probability may be particularly useful.)

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) Three courses from MATH 120, MATH 121, MATH 35A, MATH 135B, MATH 149B, MATH 149C
- (4) BIOL 102, BIOL 105, BIOL 108
- (5) Four (4) additional units of upperdivision biology

c) Chemistry option

- (1) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
- (2) PHYS 040A, PHYS 040B, PHYS 040C
- (3) Four 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 upperdivision chemistry

d) Economics option

- (1) MATH 120, MATH 121, MATH 149A, MATH 149B, MATH 149C
- (2) Five 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,

2. Applied Mathematics programs

No Change

a) General Applied Mathematics option

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

b) Biology option

- (1) No Change
- (2) No Change
- (3) Two courses from MATH 120, MATH 121, MATH 35A, MATH 135B, MATH 149B, MATH 149C
- (4) No Change
- (5) No Change

c) Chemistry option

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

d) Economics option

- (1) No change
- (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	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	e) Environmental Sciences option
(1) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC	(1) No Change
(2) ECON 006/ENSC 006	(2) No Change
(3) GEO 001 is recommended	(3) No Change
(4) MATH 149A	(4) No Change
(5) Three courses from MATH 120, MATH 121, MATH 135A, MATH 135B, MATH 149B, MATH 149C, CS 177, STAT 155	(5) <u>Two</u> 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	(6) No Change
(7) Eight additional units of upperdivision environmental sciences	(7) <u>Four</u> additional units of upperdivision environmental sciences
f) Physics option	f) Physics option
(1) MATH 135A, MATH 165A, MATH 165B	(1) MATH 135A, MATH 165A
(2) Either MATH 120 or MATH 171	(2) No Change
(3) PHYS 130A, PHYS 130B	(3) No Change
(4) Either PHYS 135A, PHYS 135B, PHYS 136 or PHYS 156A, PHYS 156B	(4) No Change
g) Statistics option	
(1) MATH 120, STAT 160A, STAT 160B, STAT 160C	
(2) Either STAT 130 or STAT 146	
(3) STAT 161, STAT 170A, STAT 170B, STAT 171	
3. Computational Mathematics program	3. Computational Mathematics program
a) MATH 011/CS 011, MATH 131, MATH 120, MATH 132, MATH 135A, MATH 135B	a) No Change
b) CS 012, CS 014, CS 141, CS 150	b) No Change
c) One additional CS course to be chosen from the list of approved technical elective courses.	c) No Change
d) Twenty-four (24) units of technical electives to be chosen from	d) <u>Sixteen (16)</u> 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	(1) No Change
(2) CS 130, CS 166, CS 170, CS 177	(2) No Change

Major Requirements for the Bachelor of Science in Mathematics for Secondary School Teachers

1. Lower-division Mathematics requirements (24 units)
MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046
2. Upper-division Mathematics requirements (36 units)
 - a) MATH 131, MATH 133, MATH 140, MATH 144, MATH 153
 - b) MATH 150A or MATH 151A
 - c) Three courses from: MATH 132, MATH 136, MATH 137, MATH 138A, MATH 145A, MATH 145B, MATH 149A, MATH 149B, MATH 149C, MATH 150B, MATH 151B, MATH 151C, MATH 171, MATH 172
3. Additional Mathematics and related disciplines requirements (12 units)
 - a) CS 010
 - b) CS 011/MATH 011
 - c) STAT 155
4. Natural Sciences (16-20 units)
 - a) BIOL 002 or BIOL 003 or BIOL 005A and BIOL 05LA
 - b) CHEM 001A and CHEM 01LA or CHEM 001HA and CHEM 1HLA
 - c) PHYS 040A
 - d) CHEM 001B and CHEM 01LB or CHEM 001HB and CHEM 1HLB or PHYS 040B or an additional laboratory Biological science course
5. Social Sciences (16 units)
 - a) One course in ECON or POSC
 - b) One course in ANTH
 - c) One course in PSYC
 - d) One course in SOC
6. Mathematics Education and Education requirements (18 or 19 units): EDUC 003 or EDUC 004 or EDUC 100B or equivalent, EDUC 104, EDUC 109/EDUC 109S, EDUC

Major Requirements for the Bachelor of Science in Mathematics for Secondary School Teachers

1. Lower-division Mathematics requirements (24 units)
MATH 007A or MATH 009A, MATH 007B
or MATH 009B, MATH 009C, MATH
010A, MATH 010B, MATH 031, MATH 046
2. No Change
 - a) No Change
 - b) No Change
 - c) No Change
3. Additional Mathematics and related disciplines requirements (12 units)
 - a) No Change
 - b) No Change
 - c) No Change
4. No Change
 - a) No Change
 - b) No Change
 - c) No change
 - d) No Change
5. No Change
 - a) No Change
 - b) No Change
 - c) No Change
 - d) No Change
6. No Change

110, EDUC 139

7. Recommended Courses LING 020 or LING 021, EDUC 116, EDUC 174, EDUC 175/
EDUC 175S
7. No Change

Justification:

Math 007A/B is the new Calculus for Life Sciences course that runs parallel to Math 009A/B (and has the same placement criteria as well as prerequisites). MATH007A/B will be considered equivalent in terms of program requirements and in the progression of the first-year calculus sequence. The content of Math 007A/B significantly overlaps with Math 009A/B; credit is only awarded for either Math 007A or Math 009A, and credit is only awarded for either Math 007B or Math 009B. The change in upper division units is proposed in response to the UCOP mandated system-wide review of degree programs with more than 45 upper division unit requirements.

Approvals:

Approved by the faculty of the Department of Mathematics:	May 16, 2016
Approved by the Executive Committee of the College of Natural and Agricultural Sciences:	January 31, 2017
Reviewed by the Committee on Undergraduate Admissions:	April 25, 2017
Approved by the Committee on Educational Policy:	April 21, 2017