

## **Associate in Science for Transfer Degree in Mathematics Riverside City College**

### Narrative

- **Criteria A. Appropriateness to Mission**

- 1. Program Goals and Objectives**

The goal of the Associate in Science for Transfer Degree program in Mathematics is to provide the lower division preparation needed for students to transfer to the CSU system, UC system, and local private universities to attain a baccalaureate major in Mathematics.

Objective 1) The courses required and recommended for the AS-T in Mathematics will be aligned, scheduled, and taught over a 2-year period to assure that all students pursuing said degree will matriculate on schedule.

Objective 2) Course schedules and teaching assignments for the AS-T in Mathematics will be available for Spring 2013.

- 2. Catalog Description**

The Associate in Science Degree in Mathematics for Transfer is designed to prepare the student for transfer to four-year institutions of higher education and specifically intended to satisfy the lower division requirements for the Baccalaureate Degree in Mathematics at a California State University (but does not guarantee acceptance to a particular campus or major). It will also provide the student with a sufficient academic basis from which to pursue a career in mathematics, statistics, actuarial sciences, and education.

#### PROGRAM LEARNING OUTCOMES

Upon successful completion of this program, students should be able to:

- Reason mathematically both abstractly and computationally.
- Create and analyze mathematical models.

The Associate in Science for Transfer degree in Mathematics will be awarded upon completion of 60 California State University (CSU) transferable units including the above major requirements and the Intersegmental General Education Transfer Curriculum (IGETC) or California State University General Education (CSUGE) requirements with a minimum grade point average of 2.0. All courses in the major must be completed with a grade of "C" or better. (Students completing this degree are not required to fulfill the RCCD graduation requirements found in section VII. Additional degree requirements: Health Education and Self Development)

### 3. Program Requirements

<u>REQUIRED COURSES: 12 units</u>		<u>Units</u>
MAT-1A*	Calculus I	4
MAT-1B*	Calculus II	4
MAT-1C*	Calculus III	4

#### CHOOSE 2 FROM THE FOLLOWING WITH AT LEAST 1 FROM

<u>GROUP A: 6 to 8 units</u>		<u>Units</u>
Group A		
MAT-2*	Differential Equations	4
MAT-3*	Linear Algebra	3
Group B		
PHY-4A*	Mechanics	4
CSC-5	Fundamentals of Programming Logic using C++	3

*\*course may be double counted as CSUGE/IGETC*

Total Major Units	18 to 20
Double counted courses	4-8
CSUGE/IGETC	34-39
General electives	1-8
Total units	60

California State University General Education Requirements (CSUGE)  
Riverside City College may certify a maximum of 39 units as having fulfilled the CSU lower division general education requirements.

**CALIFORNIA STATE UNIVERSITY GENERAL EDUCATION (CSUGE) 2012-2013**

To obtain a Bachelor's degree from a CSU campus, you must complete 48 semester units of general education, none of which must be upper division units. Riverside Community College may certify a maximum of 30 units as having fulfilled the CSU lower division general education requirements. Grades of "C" or better must be earned in 30 of these 39 units. All students are strongly advised to complete all the requirements prior to transfer.

**A. English Language Communication and Critical Thinking (min. 9 units) \*Must be completed prior to transfer!**

Select one course from each area. Grades of 'C' or better are required.

1. Oral Communication: Communication Studies 1 or 1H, 6, 9 or 9H	3
2. Written Communication: English 1A or 1AH	4
3. Critical Thinking: Communication Studies 2, 3; English 1B or 1BH; Philosophy 11; Philosophy 32/Math 32	3

**B. Scientific Inquiry and Quantitative Reasoning (min. 10 units) \*Math must be completed prior to transfer!**

Select one course from areas 1,2 and 4. At least one of the science courses must have a lab-- see underlined courses.

1. Physical Science: Astronomy 1A, 1B; Chemistry <u>1A</u> or <u>1AH</u> , <u>1B</u> or <u>1BH</u> , <u>2A</u> , <u>2B</u> , 3, 10, <u>12A</u> , <u>12B</u> ; Geography 1, <u>1/1L</u> , 1H/1L, 5; Geology 1, <u>1/1L</u> , <u>1B</u> , 2, 3; Oceanography 1, <u>1/1L</u> ; Physical Science 1, 5; Physics <u>2A</u> , <u>2B</u> , <u>4A</u> , <u>4B</u> , <u>4C</u> , <u>4D</u> , 10, <u>10/11</u>	3-4
2. Life Science: Anatomy and Physiology <u>2A</u> , <u>2B</u> , 10; Anthropology 1; Biology <u>1</u> , <u>2A</u> , <u>2B</u> , 3, 5, 6, 7, 8, 9, 10, <u>11</u> , <u>12</u> , 17, 34, 36; Microbiology <u>1</u> ; Psychology 2	3-4
3. Laboratory Activity: This requirement may be met by completion of any lab course listed above in areas B-1 or B-2. All underlined courses will meet this requirement.	
4. Mathematics/Quantitative Reasoning (grade of 'C' or better is required): Math 1A, 1B, 1C, 2, 3, 4, 5, 10, 11, 12 or 12H, 25, 36; Math/CSC 6	3

**C. Arts and Humanities (min. 9 units)**

Select three courses, at least one course from each area:

1. Arts: Art 1, 2, 5, 6 or 6H, 7, 8, 9, 10, 12; Communication Studies 11; Dance 6; Film Studies 1, 2, 3, 4, 5; Film, Television and Video 65; Music 6, 19, 20, 21, 22, 23, 25, 26, 89; Theater Arts 3, 29	9
2. Humanities: American Sign Language 1, 2, 3, 4, 5; Arabic 1, 2, 3, 8, 11; Art 4; Chinese 1, 2, 11; English 1B or 1BH, 6, 7, 8, 9, 11, 12, 14, 15, 16, 18, 20, 23, 25, 26, 30, 35, 40, 41, 44, 45, 48; Film Studies 5, 6, 7, 8; Film, Television and Video 12; French 1, 2, 3, 4, 8, 11; German 1, 2, 3, 11; Greek 1, 2; History 1, 2, 4, 5, 6 or 6H, 7 or 7H, 8, 9, 11, 12, 14, 15, 19, 21, 22, 23, 25, 26, 28, 29, 30, 31, 34, 35; Humanities 3, 4 or 4H, 5 or 5H, 8, 9, 10 or 10H, 11, 16, 18, 23, 35; Italian 1, 2, 3, 11; Japanese 1, 2, 3, 4, 11; Korean 1, 2, 11; Latin 1, 2; Military Science 1, 2; Philosophy 10 or 10H, 12, 13, 14, 15, 16, 19, 20, 21, 22, 33, 35; Portuguese 1, 2; Russian 1, 2, 3, 11; Spanish 1 or 1H, 1A, 1B, 2 or 2H, 3, 3N, 4, 8, 11, 12;	

**D. Social Sciences (min. 9 units)**

Select three courses from at least two areas:

1. Anthropology and Archeology: Anthropology 2, 3, 5, 6, 7, 8, 21	9
2. Economics: Economics 4, 5, 7 or 7H, 8; Political Science/Economics 6	
3. Ethnic Studies: Anthropology 4; History 14, 15, 28, 29, 30, 31; Sociology 10	
4. Gender Studies: Communication Studies 13; History 34; Sociology 15;	
5. Geography: Geography 2, 3, 4, 6	
6. History: History 1, 2, 4, 5, 6* or 6H*, 7* or 7H*, 8, 9, 11, 12, 19, 21, 22, 23, 25, 26, 35; Military Science 1, 2; Chemistry/Physical Science 17	
7. Interdisciplinary Social or Behavioral Science: Communication Studies 9 or 9H, 12; Early Childhood Education 20, 42; Film, Television and Video 41;	
8. Political Science, Government and Legal Institutions: Political Science *1 or *1H, 2 or 2H, 3, 4 or 4H, 5, 7ABCD, 8, 10ABCD, 11, 12, 13; Political Science/Economics 6	
9. Psychology: Psychology 1, 8, 9, 33, 35	
10. Sociology and Criminology: Sociology 1, 2, 3, 12, 20, 45, 50	

*Courses designated with an asterisk (\*) may also be used to satisfy the U.S. History, Constitution and Government requirement.*

**E. Lifelong Learning and Self-Development (min. 3 units)**

Select one course from:

Biology 30; Early Childhood Education 20, 42; Guidance 47; Health Science 1; Physical Education 4, 35, 36; Psychology 9, 33; Sociology 12	3
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**United States History, Constitution and Government (6 units)**

Although this is not a part of the general education requirements, all students must complete coursework in U.S. History, Constitution and Government. History 6 or 6H or 7 or 7H may also be used to partially fulfill Area C or D. Political Science 1 or 1H may be used to partially fulfill Area D.

**1. U.S. History (3 units)**

History 6 or 6H or 7 or 7H or Humanities 16

**2. Constitution and Government (3 units)**

Political Science 1 or 1H

**NOTE: Transfer students are required to complete both the general education and lower division major requirements. Make an appointment with your counselor to complete a Student Educational Plan.**

*Students planning to transfer to Cal Poly Pomona or Cal Poly San Luis Obispo have specific general education requirements which must be taken, based upon their major. See your counselor to ensure proper academic planning.*

REQUIREMENTS FOR COLLEGE TRANSFER

### INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM (IGETC) 2012-2013

If you choose to follow IGETC, you must complete it before you transfer; otherwise you will be required to satisfy the specific lower division general education requirements of the university or college of transfer. Completion of the Intersegmental General Education Transfer Curriculum (IGETC) will permit a student to transfer from a community college to a campus in either the California State University (CSU) or University of California (UC) system without the need to take additional lower-division general education courses. **Transfer students will receive IGETC certification after completing all the subject areas below for a minimum total of 34 units with a min. "C" grade or better. IGETC certification is valid for community college students only. Those who have already transferred to the CSU/UC systems may not return to RCC to complete IGETC requirements.**

See your counselor for courses required in your major. The UC System will allow IGETC courses to also count toward major requirements, CSU campus limitations on double-counting of general education courses toward major preparation are not changed by the IGETC. Courses which can be certified as general education for transfer to the Universities of California or the California State Universities are listed below. These courses are transferable and are considered baccalaureate level.

#### 1. English Communication (CSU 3 courses required; one from each group)

**Units**

(UC 2 courses required; one from group a and one from group b)

a. English Composition: English 1A or 1AH	6-9
b. Critical Thinking–English Composition: English 1B (must be taken Fall '93 or later) or 1BH	
c. Oral Communication: Communication Studies (formerly Speech) 1 or 1H, 6, 9 or 9H (CSU requirement only)	

#### 2. Mathematical Concepts And Quantitative Reasoning

Math +1A, 1B, 1C, 2, 3, 4, +5, +10, +11, 12, 12H, 25	3
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#### 3. Arts And Humanities

(3 courses required with at least one course from the Arts and one from the Humanities.)

a. Arts: Arabic 11; Art 1, 2, 5, 6 or 6H, 7, 8, 9, 10, 12; Chinese 11; Dance 6; Film Studies 1, 2, 3, 4, 5; French 11; German 11; Italian 11; Japanese 11; Korean 11; Music 3, 4, 5, 6, 19, 20, 21, 22, 23, 25, 26, 89; Russian 11; Theater Arts 3, 29	9
b. Humanities: American Sign Language *3; Arabic *2, *3, *8; Art 4; Chinese *2; Communication Studies 12; English 6, 7, 8, 9, 14, 15, 18, 20, 21, 22, 23, 25, 26, 35, 40, 41, 44, 45, 48; Film Studies 6, 7, 8; French *2, *3, *4, 8; German *2, *3; Greek *2; History 1*, 2*, 4*, 5*, 6* or 6H*, 7* or 7H*, 8*, 9*, 11*, 12*, 14*, 15*, 19*, 21*, 22*, 23*, 25*, 26*, 28*, 29*, 30*, 31*, 34*, 35*; Humanities 4 or 4H, 5 or 5H, 8, 9, 10 or 10H, 11, 16, 18, 23, 35; Italian *2, *3; Japanese *2, *3, *4; *Korean 2; Latin *2; Military Science *1, *2; Philosophy 10 or 10H, 12, 13, 14, 19, 20, 21, 22, 33, 35; Portuguese *2; Russian *2, *3; Spanish 2 or 2H, *3, *3N, 4, 8, 11, 12;	

#### 4. Social And Behavioral Sciences

Choose three courses from at least two academic disciplines.

Anthropology 1*, 2, 3, 4, 5, 6, 7, 8, 21; Chemistry 17; Communication Studies 12, 13 Early Childhood Education 20; Economics *4, 5, 6, 7, 7H, 8; Geography 2, 3, 4, 6; History 1*, 2*, 4*, 5*, 6* or 6H*, 7* or 7H*, 8*, 9*, 11*, 12*, 14*, 15*, 19*, 21*, 22*, 23*, 25*, 26*, 28*, 29*, 30*, 31*, 34*, 35*; Military Science *1, *2; Physical Science 17; Political Science 1 or 1H, 2 or 2H, 3, 4 or 4H, 5, 6, 11, 13; Psychology 1, 2*, 8, 9, 33, 35; Sociology 1, 2, 3, 10, 12, 15, 17, 20, 50;	9
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#### 5. Physical And Biological Sciences

Choose at least one Physical Science and one Biological Science course. One of the courses must include a lab—see underlined courses.

a. <u>Physical Science</u> : Astronomy 1A, 1B; Chemistry <u>1A or 1AH, 1B or 1BH</u> , **2A, 2B, **3, **10, <u>12A, 12B</u> ; Geography 1, 1H, 1/1L, 1H/1L, 5; Geology 1, 1/1L, 1B, 1H, 3; Oceanography 1, 1/1L; Physical Science **1, 5; Physics **2A, **2B, **4A, **4B, **4C, 4D, **10, **10/11	7
b. <u>Biological Science</u> : Anatomy and Physiology <u>2A, 2B</u> ; Anthropology 1*; Biology 1, 2A, 2B, 3, 5, *6, 7,*8, 9, *10, 11, 12, 17, 30, 34, *36; Microbiology 1; Psychology 2*	
c. <u>Laboratory</u> : Complete one underlined course	

#### 6. Language Other Than English (one course - UC requirement only)

a. American Sign Language 1, 2, 3, 4; Arabic 1, 2, 3; Chinese 1, 2; French 1, 2, 3, 4; German 1, 2, 3; Greek 1, 2; Italian 1, 2, 3; Japanese 1, 2, 3, 4; Korean 1, 2; Latin 1, 2; Portuguese 1, 2; Russian 1, 2, 3; Spanish 1 or 1H, 1B, 2 or 2H, 3, 3N, 4	0-5
OR b. Proficiency equivalent to two years of high school in the same language (Level 1 foreign language courses at RCCD are equivalent to two years of high school study, completed with a "C" or better, in the same language.)	

#### CSU Graduation Requirement In U.S. History, Constitution, And American Ideals

(not part of IGETC; recommend completion before transferring)

Complete one course from area a and one from area b:

- History 6 or 6H or 7 or 7H or Humanities 16
- Political Science 1 or 1H

\*Course may be listed in more than one area, but shall not be certified in more than one area.

\*\*Indicates that transfer credit may be limited by either UC or CSU or both. Consult with a counselor for additional information.

#### **4. Background and Rationale**

There has been a nationwide pervasive effort to increase the total number of students who attain at least a 2-yr college education. California, particularly has engaged in this effort through two legislative acts that require an increase in 2-year degrees, transfers to four-year institutions, and overall academic completions in the next 10 years. The AS-T in Mathematics is dedicated to that effort. Historically, in California, Community Colleges have not pursued discipline-specific degrees. Rather the focus has been on the more general Associates of Arts and Sciences degrees, in addition to numerous career- and technical-focused certificate programs. Given the national effort and the legislative mandates an AS-T in Mathematics serves multiple purposes: to expand the breadth of offerings for our growing community, to enhance the likelihood of students moving to a four-year school and their subsequently attainment of baccalaureate degrees. It is the mission of Riverside City College to continue to attend to the demands of its community and to continually expand its offerings to include a more broad and diverse learning community for our area. The Riverside City College area of influence continues to undergo rapid growth and change, and subsequently an increasing demand for more diverse opportunities for its students. Mathematics, for example, has always been an academic staple for college-level education and is a foundation for the STEM fields. Therefore it is completely rational for Riverside City college to add a Math-specific program. It will provide a lower division configuration and learning environment that is superior to the 4-yr and higher institutions that are currently impacted and have more exclusive admission practices. RCC has an open-door policy, therefore far more students can avail themselves of college, in general, and Sociology, in particular.

The Mathematics program at RCC has long offered a broad range of courses, thus, when the TMC was developed by the ACCCs, in response to SB1440, faculty at RCC immediately saw the opportunity for doing what would have been desirable decades ago. The TMC required no new course to be developed, and, in fact, completely legitimized the range of courses we have been offering all along. They were completely compatible with our current offerings and subsequently the TMC was adopted unanimously.

- **Criteria B.**

- 5. **Enrollment and Completer Projections**

- [Need to research]

- 6. **Place of Program in Curriculum/Similar Programs**

- The AS-T in Mathematics will be housed in the Math Department.

- **Criteria C. Curriculum Standards**

- See TMC attachment
  - See Course Outlines attachments

- **Criteria D-Adequate Resources**

No additional resources will be required beyond the college's current resources. This includes library and learning resources, facilities and equipment, and financial support. All of the faculty that will teach in this program meet the state minimum qualifications and possess knowledge and experience in this program area.

The Rotella Library at Riverside City College can adequately support student coursework for the Mathematics Transfer Program. Book coverage is good for most courses; the statistics collection is very good.

- **Criteria E-Compliance**

There are no licensing or accrediting standards that apply to this program. No additional student selection criteria are in place, this program complies with California Code of Regulations, title 5 section 55201 and 58106. Additionally, there are no additional fees required beyond those identified in California Education Code section 76300.