

Department of Mathematics
College of Science and Mathematics
Student Outcomes Assessment Plan (SOAP)
For Undergraduate Program

I. Mission Statement

The undergraduate program of the Department of Mathematics at California State University, Fresno offers a high quality educational opportunity to students at the Bachelor's level that matches the breadth and excitement of modern mathematics, develops important concept knowledge and critical thinking and problem solving skills, and prepares students for the hundreds of career opportunities that use mathematics as a foundation.

II. Program Goals

- A.** Provide students with conceptual background knowledge in the core areas of mathematics.
- B.** Teach students to read, understand, and write rigorous mathematical proofs.
- C.** Provide students with opportunities to apply mathematical knowledge to solve theoretical and practical problems.
- D.** Develop students' communication skills, both written and oral for purposes of conveying mathematical information.
- E.** (For credential students) Encourage a positive attitude towards mathematics teaching and learning.

III. Student Learning Outcomes

- A1.** Students will understand and use the definitions and basic properties of fundamental concepts in algebra and analysis, such as function, derivative, integral, matrix, group.
- B1.** Students will be familiar with common notations and proof techniques.
- B2.** Students will demonstrate their understanding by reconstructing rigorous proofs of elementary theorems in various areas of mathematics.
- B3.** Students will be able to write elementary proofs.
- C1.** Students will use their knowledge of calculus and linear algebra to solve practical application problems.
- C2.** (For credential students) Students will use a variety of problem-solving techniques to solve a wide range of problems, of both practical and theoretical nature.
- D1.** Students will be able to explain their solutions and proofs both orally and in writing.
- E1.** Students will demonstrate their appreciation for the art and science of mathematics by explaining it in a clear and engaging manner.

IV. Curriculum Map (Matrix of Courses x Learning Outcomes)

	A. 1	B.1	B.2	B.3	C.1	C.2	D.1	E.1
75, 75AB (required)	I	I			I	I	I	
76 (required)	R				R		R	
77 (required)	R				E		R	
111 (required)	E	I	I	I		I	I, R	I
151 (required)	I	M	M	M		R	M	
152 (required)	I	R	R	R	E	R	R	
171 (required)	M	M	M	M		R	M	
128/165/172 (required)	E	E	R	R	E	R	R	
CSCI 40 (required)						I		I
PHYS4A (required)					E			I
81 (elective)	E				I			
101 (elective)	R				R	R	R	
114 (elective)		R	E	R				
116 (elective)	R	R	R	R		R	R	I
123 (elective)	R	I	I	R	M			I
143 (elective)	R	R	E	E		R	R	E
145 (elective)	R	M	E	M		M	M	E
149 (elective)	M	M	M	E	E	E	M	M
161 (elective)	R	R	R	R		R	R	R
181 (elective)	M	R	R	R	R	R	R	

Notes:

- (1) 75, 76, 77, 111, 151, 152, 171, 128/165/172, CSCI40, PHYS4A, and 4 electives – required for all B.A. in Mathematics.
- (2) 75, 76, 77, 111, 151, 152, 171, 81/114/128/165/172/181, CSCI40, PHYS4A, 101, 116, 143, 145, 149, 161 – required for Single Subject Credential in Mathematics.
- (3) I=Introduced, R=Reinforced, E=Emphasized, M=Mastered

V. Assessment Methods

Direct measures:

1. Embedded questions on exams in the following courses:

- a. Math 111
- b. Math 152
- c. Math 151
- d. Math 171

on a rotating basis (one course/year).

2. Evaluation of field experience in Math 149. (Reports from instructor to be collected every year, reviewed and evaluated every 5 years.)

Indirect measures:

3. Exit survey. (To be administered every year, reviewed and evaluated every 5 years.)

4. Alumni survey

5. Employer survey

Additional assessment activities to evaluate and/or confirm the effectiveness and/or necessity of recent curriculum changes:

6. Percent of students passing Math 75 or Math75AB versus their score on the Calculus Readiness Test (CRT). This activity will evaluate effectiveness/necessity of CRT and determine an appropriate CRT score for admittance into Math 75 and Math 75A. (To be completed every 5 years.)

V. Student Learning Outcomes x Assessment Methods Matrix

	A.1	B.1	B.2	B.3	C.1	C.2	D.1	E.1
1.a	x	x	x	x	x	x	x	
1.b	x	x	x		x	x	x	
1.cd		x				x	x	
2		x	x			x	x	x
3		x				x	x	x
4		x	x	x		x	x	
5		x						x
6	x	x					x	x
7	x	x	x				x	x

VI. Timeline for Implementation of Assessment Methods and Summary Evaluations

2014-2015: 1.a
2015-2016: 1.a, 6 (review/evaluate)
2016-2017: 1.b, write questions for 1.a to be used in the future
2017-2018: 1.c, 3 (review/evaluate)
2018-2019: 1.d, 4 (review/evaluate)

VII. Closing the loop – Summary Evaluation, Curriculum Adjustment, and Reporting

The assessment committee will meet annually to review the results of the assessment activities and determine areas where curriculum changes may be necessary. The report will be forwarded to the department. The department will decide whether/which curriculum changes should be made. Based on the department's selection, the curriculum committee will develop and propose specific changes back to the department.

Last revision: May 2016