

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. Goals and Student Learning Outcomes

A. Provide students with conceptual background knowledge in the core areas of mathematics.

1. Students will understand and use the definitions and basic properties of fundamental concepts in algebra and analysis, such as function, derivative, integral, matrix, group.

B. Teach students to read, understand, and write rigorous mathematical proofs.

1. Students will be familiar with common notations and proof techniques.

2. Students will read, understand, and be able to reconstruct rigorous proofs of elementary theorems in various areas of mathematics.

3. Students will be able to write elementary proofs.

C. Provide students with opportunities to apply mathematical knowledge to solve theoretical and practical problems.

1. Students will use their knowledge of calculus and linear algebra to solve practical application problems.

2. (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.

D. Develop students' communication skills, both written and oral for purposes of conveying mathematical information.

1. Students will be able to explain their solutions and proofs both orally and in writing.

E. (For credential students) Encourage a positive attitude towards mathematics teaching and learning.

1. Students will show their excitement and appreciation for the art and science of mathematics.

III. 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	I	I			I	I	I	
76	R				R		R	
77	R, A				R		R	
111	R	I	I	I		I	I, R	I
151	I, A	R	R	A		R	R	
152	I	R	R	R	I	R	R	
171	A	R	R	A		R	R	
128/165/172	R, A	R	R	R		R	R	
CSCI 40						I		I
PHYS4A					I			I
101	R				R	R	R	
116	I	R	R	R		R	R	I
143	R	R	R			R	R	I
145	R	R		A	R	A	R	I, R
149	R	R	A	R	R	R	A	A
161	R	R	R	R		R	R	
81/114/181	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, A=Advanced

IV. 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.)

3. Evaluation of student teaching experience. (Reports from supervisors to be collected every year, reviewed and evaluated every 5 years.)

4. Compare number of times students take Math 151 and Math 171 before they pass these courses with corresponding data before 2005 (before Math 111 was offered). This measure will evaluate effectiveness/necessity of Math 111. (To be completed once.)

Indirect measures:

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

6. Alumni survey

7. Employer survey

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

8. 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.)

9. Percent of students passing Math 76 and/or 77 after taking Math 75 or Math 75AB. This activity will evaluate effectiveness of Math 75AB. (To be completed once.)

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

2012-2013: 1.c, 4

2013-2014: 1.d, 3

2014-2015: 1.a, 5

2015-2016: 1.b, 8

2016-2017: 1.c, 6

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: February 2013