

## UCSC – HSI – GANAS CAREER – Supplemental Instruction - Objective 2A & 2B Aggregated Fall 2023 to Spring 2024 Course Results

### Objective 2-A:

By Sept. 30, 2025, SI participants will earn grades in courses supported by SI 0.5 grade point higher than those of non-participants.

Average grade among SI participants across all SI-supported courses: 2.80

Average grade among non-SI participants across all SI-supported courses: 2.89

- **Year 4 difference: 0.09 lower GPA among SI participants**

### Objective 2-B:

By Sept. 30, 2025, reduce racial/social disparities in passing rates for EOP/non-EOP students by 12% in SI-supported gateway courses (Applied Mathematics, Mathematics, Computer Science and Engineering, and Biology).

The EOP baseline pass rate was 70% (Fall 2015-Fall 2018); the EOP 12% increase in pass rates aims for a 3% increase per year over the 4 years of implementation to 82%.

- **Year 4 pass rate among all EOP students across all SI-supported courses: 84.4%**
  - Note: This figure includes all EOP students whether or not they participated in SI.

### Supplemental Instruction (SI) Participation

A total of 22 course sections were supported with Supplemental Instruction (SI) in the 2023-24 Academic Year. Overall, **16.4% of students participated in SI**. See the table below for a more detailed breakdown of class enrollment and SI participation by class.

**Table 1: Total Enrollment in SI-Supported Courses in AY 2023-24**

Course Number	Quarter	Graded Enrollment	Graded SI Participants	% SI Participation
BIOL 100-01	Fall 2023	132	49	37.1%
CHEM 8A-01	Fall 2023	374	62	16.6%
CSE 12-01	Fall 2023	220	26	11.8%
CSE 13S-01	Fall 2023	208	38	18.3%
CSE 20-03	Fall 2023	298	41	13.8%
PHYS 6A-01	Fall 2023	272	36	13.2%
BIOL 100-01	Winter 2024	69	17	24.6%
CHEM 8A-01	Winter 2024	261	54	20.7%

CHEM 8B-01	Winter 2024	316	55	17.4%
CSE 12-01	Winter 2024	215	27	12.6%
CSE 13S-02	Winter 2024	198	20	10.1%
CSE 20-03	Winter 2024	166	5	3.0%
PHYS 6A-01	Winter 2024	132	32	24.2%
PHYS 6A-02	Winter 2024	199	20	10.1%
BIOL 100-01	Spring 2024	137	24	17.5%
BIOL 101-01	Spring 2024	160	36	22.5%
BIOL 105-01	Spring 2024	234	61	26.1%
CHEM 8B-01	Spring 2024	320	60	18.8%
CSE 12-02	Spring 2024	259	27	10.4%
CSE 13S-01	Spring 2024	120	8	6.7%
CSE 20-02	Spring 2024	169	16	9.5%
PHYS 6A-01	Spring 2024	205	53	25.9%
<b>Total</b>		<b>4664</b>	<b>767</b>	<b>16.4%</b>

### Grade Comparison Between All SI Participants and All SI Non-Participants

Objective 2-A is to increase grades of SI participants to 0.5 grade points higher than those of students who did not participate in SI. This objective was not met: across **all SI-supported courses, students who participated in SI earned, on average, a grade 0.09 grade points lower than those who did not.** See the table below for a more detailed grade comparison of SI participants and SI non-participants by class.

**Table 2: Grades Among All SI Participants and All SI Non-Participants**

Course Number	Term	SI Participants		SI Non-Participants		Grade Difference (SI - Non-SI)
		n	Avg. Grade	n	Avg. Grade	
BIOL 100-01	F	49	2.47	83	2.64	-0.17
CHEM 8A-01	F	62	2.58	312	2.56	0.02
CSE 12-01	F	26	3.00	194	2.87	0.13
CSE 13S-01	F	38	2.84	170	3.18	-0.34
CSE 20-03	F	41	3.00	257	3.24	-0.24
PHYS 6A-01	F	36	3.44	236	3.51	-0.07

BIOL 100-01	W	17	2.88	52	2.50	0.38
CHEM 8A-01	W	54	3.04	207	2.72	0.32
CHEM 8B-01	W	55	2.11	261	2.43	-0.32
CSE 12-01	W	27	3.85	188	3.47	0.38
CSE 13S-02	W	20	2.30	178	2.67	-0.37
CSE 20-03	W	5	2.00	161	3.25	-1.25
PHYS 6A-01	W	32	2.69	100	2.69	0.00
PHYS 6A-02	W	20	2.35	179	2.80	-0.45
BIOL 100-01	S	24	2.54	113	2.64	-0.10
BIOL 101-01	S	36	3.53	124	3.55	-0.02
BIOL 105-01	S	61	2.62	173	2.42	0.20
CHEM 8B-01	S	60	2.98	260	2.65	0.33
CSE 12-02	S	27	3.67	232	3.48	0.19
CSE 13S-01	S	8	2.63	112	3.05	-0.42
CSE 20-02	S	16	3.50	153	2.99	0.51
PHYS 6A-01	S	53	2.06	152	1.82	0.24
<b>Overall</b>		<b>767</b>	<b>2.80</b>	<b>3897</b>	<b>2.89</b>	<b>-0.09</b>

### Pass Rates Among EOP Students

Objective 2-B is concerned with reducing equity gaps in passing rates between EOP students and non-EOP students. In addition to reporting Measurable Objective 2-B—passing rates of all EOP students across all classes—we conducted several comparisons between different groups of students to better understand the impact of SI on EOP students.

#### *All EOP Students Compared to All Non-EOP Students*

First, we compared passing rates of all EOP students with all non-EOP students. **Overall, passing rates among EOP students were 5.1% lower than non-EOP students, demonstrating an equity gap in passing rates. A chi-square analysis found this difference to be highly statistically significant ( $p < .001$ ,  $n = 4664$ ).** See the table below for a breakdown of EOP and non-EOP passing rates by class.

**Table 3: Pass Rates Among All Students: EOP vs. Non-EOP Comparison**

Course Number	Quarter	All Students		EOP Students		Non-EOP Students		EOP - Non-EOP Difference
		n	Pass Rate	n	Pass Rate	n	Pass Rate	Pass Rate
BIOL 100-01	Fall 2023	132	90.2%	42	83.3%	90	93.3%	-10.0%
CHEM 8A-01	Fall 2023	374	78.6%	98	73.5%	276	80.4%	-7.0%
CSE 12-01	Fall 2023	220	86.8%	47	87.2%	173	86.7%	0.5%

CSE 13S-01	Fall 2023	208	91.8%	47	83.0%	161	94.4%	-11.4%
CSE 20-03	Fall 2023	298	92.3%	86	84.9%	212	95.3%	-10.4%
PHYS 6A-01	Fall 2023	272	97.8%	80	98.8%	192	97.4%	1.4%
BIOL 100-01	Winter 2024	69	92.8%	22	90.9%	47	93.6%	-2.7%
CHEM 8A-01	Winter 2024	261	90.0%	73	83.6%	188	92.6%	-9.0%
CHEM 8B-01	Winter 2024	316	70.3%	77	66.2%	239	71.5%	-5.3%
CSE 12-01	Winter 2024	215	95.8%	38	97.4%	177	95.5%	1.9%
CSE 13S-02	Winter 2024	198	83.3%	36	77.8%	162	84.6%	-6.8%
CSE 20-03	Winter 2024	166	89.2%	47	89.4%	119	89.1%	0.3%
PHYS 6A-01	Winter 2024	132	93.9%	35	94.3%	97	93.8%	0.5%
PHYS 6A-02	Winter 2024	199	93.5%	51	94.1%	148	93.2%	0.9%
BIOL 100-01	Spring 2024	137	91.2%	40	85.0%	97	93.8%	-8.8%
BIOL 101-01	Spring 2024	160	98.8%	47	97.9%	113	99.1%	-1.2%
BIOL 105-01	Spring 2024	234	85.5%	56	87.5%	178	84.8%	2.7%
CHEM 8B-01	Spring 2024	320	92.5%	90	93.3%	230	92.2%	1.2%
CSE 12-02	Spring 2024	259	95.0%	74	90.5%	185	96.8%	-6.2%
CSE 13S-01	Spring 2024	120	90.8%	23	87.0%	97	91.8%	-4.8%
CSE 20-02	Spring 2024	169	85.8%	64	73.4%	105	93.3%	-19.9%
PHYS 6A-01	Spring 2024	205	71.7%	52	53.8%	153	77.8%	-23.9%
<b>Overall</b>		<b>4664</b>	<b>88.2%</b>	<b>1225</b>	<b>84.4%</b>	<b>3439</b>	<b>89.5%</b>	<b>-5.1%</b>

### ***EOP SI Participants Compared to EOP SI Non-Participants***

Second, we compared EOP students who participated in SI with their EOP student peers who did not; although SI participation was not assigned randomly, so we cannot conclude that differences in pass rates are solely due to SI participation, this comparison gives some information as to how SI participation may affect the class performance of EOP students. **EOP students who participated in SI averaged a 4.1% higher passing rate than their EOP student peers who did not participate in SI. However, a chi-square analysis found that this difference is not statistically significant ( $p=.11$ ,  $n=1225$ ).** See the table below for more detailed data by class. Note that the data by class should be interpreted with caution due to very small sample sizes in individual classes.

**Table 4: Pass Rates Among All EOP Students: SI Participants vs. SI Non-Participants Comparison**

Course Number	Quarter	All EOP Students		EOP SI Participants		EOP SI Non-Participants		SI - Non-SI Difference
		n	Pass Rate	n	Pass Rate	n	Pass Rate	Pass Rate
BIOL 100-01	Fall 2023	42	83.3%	19	89.5%	23	78.3%	11.2%
CHEM 8A-01	Fall 2023	98	73.5%	25	76.0%	73	72.6%	3.4%
CSE 12-01	Fall 2023	47	87.2%	13	100.0%	34	82.4%	17.6%
CSE 13S-01	Fall 2023	47	83.0%	10	70.0%	37	86.5%	-16.5%
CSE 20-03	Fall 2023	86	84.9%	22	90.9%	64	82.8%	8.1%
PHYS 6A-01	Fall 2023	80	98.8%	11	100.0%	69	98.6%	1.4%
BIOL 100-01	Winter 2024	22	90.9%	4	100.0%	18	88.9%	11.1%
CHEM 8A-01	Winter 2024	73	83.6%	18	100.0%	55	78.2%	21.8%
CHEM 8B-01	Winter 2024	77	66.2%	16	62.5%	61	67.2%	-4.7%
CSE 12-01	Winter 2024	38	97.4%	8	100.0%	30	96.7%	3.3%
CSE 13S-02	Winter 2024	36	77.8%	9	55.6%	27	85.2%	-29.6%
CSE 20-03	Winter 2024	47	89.4%	2	100.0%	45	88.9%	11.1%
PHYS 6A-01	Winter 2024	35	94.3%	9	100.0%	26	92.3%	7.7%
PHYS 6A-02	Winter 2024	51	94.1%	8	100.0%	43	93.0%	7.0%
BIOL 100-01	Spring 2024	40	85.0%	10	80.0%	30	86.7%	-6.7%
BIOL 101-01	Spring 2024	47	97.9%	14	100.0%	33	97.0%	3.0%
BIOL 105-01	Spring 2024	56	87.5%	13	92.3%	43	86.0%	6.3%
CHEM 8B-01	Spring 2024	90	93.3%	23	100.0%	67	91.0%	9.0%
CSE 12-02	Spring 2024	74	90.5%	8	100.0%	66	89.4%	10.6%
CSE 13S-01	Spring 2024	23	87.0%	3	66.7%	20	90.0%	-23.3%
CSE 20-02	Spring 2024	64	73.4%	4	100.0%	60	71.7%	28.3%
PHYS 6A-01	Spring 2024	52	53.8%	10	50.0%	42	54.8%	-4.8%
Overall		1225	84.4%	259	87.6%	966	83.5%	4.1%

#### ***EOP SI Participants Compared to Non-EOP SI Participants***

We also compared passing rates among EOP students who participated in SI with their non-EOP student peers who also participated in SI in order to assess whether participation in SI may reduce equity gaps

between EOP and non-EOP students. Overall, among all students who participated in SI, **EOP students had on average a 1.9% lower passing rate than non-EOP students, which is a statistically nonsignificant difference ( $p=.42$ ,  $n=767$ )**. While we cannot conclusively say that their SI participation is responsible for the elimination of the equity gap between EOP and non-EOP students, since SI participation was not randomly assigned, this result suggests that EOP participation may contribute to closing the equity gap between EOP and non-EOP students. See the table below for a more detailed breakdown of passing rates by class. Note that the data by class should be interpreted with caution due to very small sample sizes in individual classes.

**Table 5: Pass Rates Among All SI Participants: EOP vs. Non-EOP Comparison**

Course Number	Quarter	All SI Participants		EOP SI Participants		Non-EOP SI Participants		EOP - Non-EOP Difference
		n	Pass Rate	n	Pass Rate	n	Pass Rate	Pass Rate
BIOL 100-01	Fall 2023	49	91.8%	19	89.5%	30	93.3%	-3.9%
CHEM 8A-01	Fall 2023	62	83.9%	25	76.0%	37	89.2%	-13.2%
CSE 12-01	Fall 2023	26	96.2%	13	100.0%	13	92.3%	7.7%
CSE 13S-01	Fall 2023	38	84.2%	10	70.0%	28	89.3%	-19.3%
CSE 20-03	Fall 2023	41	90.2%	22	90.9%	19	89.5%	1.4%
PHYS 6A-01	Fall 2023	36	97.2%	11	100.0%	25	96.0%	4.0%
BIOL 100-01	Winter 2024	17	100.0%	4	100.0%	13	100.0%	0.0%
CHEM 8A-01	Winter 2024	54	92.6%	18	100.0%	36	88.9%	11.1%
CHEM 8B-01	Winter 2024	55	60.0%	16	62.5%	39	59.0%	3.5%
CSE 12-01	Winter 2024	27	100.0%	8	100.0%	19	100.0%	0.0%
CSE 13S-02	Winter 2024	20	70.0%	9	55.6%	11	81.8%	-26.3%
CSE 20-03	Winter 2024	5	60.0%	2	100.0%	3	33.3%	66.7%
PHYS 6A-01	Winter 2024	32	90.6%	9	100.0%	23	87.0%	13.0%
PHYS 6A-02	Winter 2024	20	90.0%	8	100.0%	12	83.3%	16.7%
BIOL 100-01	Spring 2024	24	91.7%	10	80.0%	14	100.0%	-20.0%
BIOL 101-01	Spring 2024	36	100.0%	14	100.0%	22	100.0%	0.0%
BIOL 105-01	Spring 2024	61	90.2%	13	92.3%	48	89.6%	2.7%
CHEM 8B-01	Spring 2024	60	100.0%	23	100.0%	37	100.0%	0.0%
CSE 12-02	Spring 2024	27	96.3%	8	100.0%	19	94.7%	5.3%
CSE 13S-01	Spring 2024	8	87.5%	3	66.7%	5	100.0%	-33.3%

CSE 20-02	Spring 2024	16	100.0%	4	100.0%	12	100.0%	0.0%
PHYS 6A-01	Spring 2024	53	81.1%	10	50.0%	43	88.4%	-38.4%
<b>Overall</b>		<b>767</b>	<b>88.9%</b>	<b>259</b>	<b>87.6%</b>	<b>508</b>	<b>89.6%</b>	<b>-1.9%</b>

### ***EOP SI Participants Compared to Non-EOP SI Non-Participants***

Finally, we compared EOP students who participated in SI with non-EOP students who did not participate in SI. Although, as noted earlier, we cannot infer a directly causal relationship between SI participation and pass rates since SI participation was not randomly assigned to students and there are likely student characteristics that affect both their choice to participate in SI and their course performance, this comparison offers some information as to how SI might function to close the equity gap between EOP and non-EOP students if applied as a targeted intervention to students from marginalized groups. **EOP SI participants passed at a rate 1.8% lower than non-EOP SI non-participants, which is statistically nonsignificant ( $p=.36$ ,  $n=3190$ ).** While, again, this does not conclusively demonstrate that participation in SI eliminates the equity gap between EOP and non-EOP students, it suggests that SI participation may contribute to the reduction of equity gaps. See the table below for more detailed information on passing rates by class.

**Table 6: EOP SI Participants vs. Non-EOP SI Non-Participants**

Course Number	Quarter	EOP SI Participants		Non-EOP SI Non-Participants		EOP SI - Non-EOP Non-SI Difference
		n	Pass Rate	n	Pass Rate	Pass Rate
BIOL 100-01	Fall 2023	19	89.5%	60	93.3%	-3.9%
CHEM 8A-01	Fall 2023	25	76.0%	239	79.1%	-3.1%
CSE 12-01	Fall 2023	13	100.0%	160	86.3%	13.8%
CSE 13S-01	Fall 2023	10	70.0%	133	95.5%	-25.5%
CSE 20-03	Fall 2023	22	90.9%	193	95.9%	-4.9%
PHYS 6A-01	Fall 2023	11	100.0%	167	97.6%	2.4%
BIOL 100-01	Winter 2024	4	100.0%	34	91.2%	8.8%
CHEM 8A-01	Winter 2024	18	100.0%	152	93.4%	6.6%
CHEM 8B-01	Winter 2024	16	62.5%	200	74.0%	-11.5%
CSE 12-01	Winter 2024	8	100.0%	158	94.9%	5.1%
CSE 13S-02	Winter 2024	9	55.6%	151	84.8%	-29.2%
CSE 20-03	Winter 2024	2	100.0%	116	90.5%	9.5%
PHYS 6A-01	Winter 2024	9	100.0%	74	95.9%	4.1%

PHYS 6A-02	Winter 2024	8	100.0%	136	94.1%	5.9%
BIOL 100-01	Spring 2024	10	80.0%	83	92.8%	-12.8%
BIOL 101-01	Spring 2024	14	100.0%	91	98.9%	1.1%
BIOL 105-01	Spring 2024	13	92.3%	130	83.1%	9.2%
CHEM 8B-01	Spring 2024	23	100.0%	193	90.7%	9.3%
CSE 12-02	Spring 2024	8	100.0%	166	97.0%	3.0%
CSE 13S-01	Spring 2024	3	66.7%	92	91.3%	-24.6%
CSE 20-02	Spring 2024	4	100.0%	93	92.5%	7.5%
PHYS 6A-01	Spring 2024	10	50.0%	110	73.6%	-23.6%
<b>Overall</b>		<b>259</b>	<b>87.6%</b>	<b>2931</b>	<b>89.5%</b>	<b>-1.8%</b>

Figure 1.



**Figure 2.**

