Senate Task Force for Area Realignment/Reapportionment Report Fall 2024

Article VIII section 4 of the bylaws establishes both areas and the number of senators each area receives (apportionment). Any changes will require changes to the bylaws.

Current Areas:

Area 01: Counseling, Extended Opportunity Programs & Services (EOPS), Work Experience
Area 02: Agriculture/Natural Resource, Biological Sciences, Chemistry & Physics, Earth & Space Sciences
Area 03: English
Area 04: Business, Computer Studies, Engineering & Applied Technology
Area 05: Art; Communication Studies; Ethnic Studies; Music; Philosophy, Humanities, Religion; Theatre Arts & Fashion
Area 06: English as a Second Language, Library & Info Resources, World Languages
Area 07: Behavioral Sciences, Social Sciences
Area 08: Adapted Physical Education, College Skills, Disability Resources
Area 09: Mathematics
Area 10: Health Sciences; Kinesiology, Athletics & Dance (KAD)
Area 11: Administration of Justice, Child Development, Culinary Arts, Industrial & Trade Technology, Public Safety
Area 12: Associate: Areas 1, 2, 4, 8, 9, 10, 11
Area 13: Associate: Areas 3, 5, 6, 7

Current Distribution of Faculty and Senators by Area:

The number of contract and associate faculty are based upon a report produced by the SRJC Payroll Department. Only associate faculty paid since January 2023 have been included. There is no official census procedure; this is something AS may want to address.

Contract

Area	1	2	3	4	5	6	7	8	9	10	11	Total
Faculty	33	37	25	21	43	25	27	17	22	43	19	312
Senators	2	2	2	2	2	2	2	2	2	2	2	22
Fac/Sen Ratio	16.5	18.5	12.5	10.5	21.5	12.5	13.5	8.5	11	21.5	9.5	14.18

Associate

Area	12	13	Total
Faculty	630	269	899
Senators	3	3	6
Fac/Sen Ratio	210	89.67	149.83

Concerns:

- Some areas consist of many departments, others only 1.
- Some areas group departments that appear unrelated (such as Areas 5 and 11).
- The number of faculty in areas 1 to 11 ranges from 17 to 43 yet each area has the same number of senators.
- Area 12 has 2.3 times as many faculty as Area 13 yet both areas have 3 senators.

Apportionment: To *apportion* is to divide and assign according to a plan. Numerous methods have been devised to apportion legislatures in a manner that makes representation approximately proportional to the areas represented. For the U.S. House of Representatives, four different methods have been used: Jefferson's, Hamilton's, Webster's, and Huntington- Hill. The Huntington- Hill method (highest averages) is currently in use. This method

- minimizes the percentage difference in the constituent to representative ratio [Balinski, Young 2001],
- guarantees each area at least one representative. ("Huntington-Hill Method", 2024)

If the Senate opts for reapportionment, the task force recommends the Huntington-Hill method. An example of the apportionment produced using the current census data with details on the method and supporting calculations are provided in the Appendix.

Realignment: The task force was also asked to consider realigning the existing areas. Departments could be moved from one area to another. The number of areas could be increased or decreased. Realignment could

- equalize the number of faculty in each area,
- place departments with similar interests in the same area.

Options:

1. Leave areas as they are and reapportion senators so that representation is more proportional to the number of faculty in each area.

   Pros: Easy. Makes representation more proportional. Establishes an apportionment procedure that could be used for future reapportionments.
   Cons: Leaves unrelated disciplines in same areas; constituents may not feel represented.

2. Rearrange areas placing departments with similar disciplines/interests in the same area, then apportion senators.

   Pros: Makes representation more proportional. Establishes an

apportionment procedure that could be used for future reapportionments. Increased alignment of areas by interests; easier for senators to represent constituents.
Cons: Could be difficult to formulate new areas. Additional rearrangements may be necessary if new departments are added, or departments consolidated.

3. Rearrange areas to make populations approximately equal; leave number of senators per area unchanged.

   Pros: Makes representation more proportional.
   Cons: Produces areas representing very unrelated departments; constituents may not feel represented. Over time, as the number of faculty in each department changes, additional rearrangements will be necessary.

4. Leave apportionment the same. Make no changes.

   Pros: Easy.
   Cons: Representation remains very unproportional. Leaves unrelated disciplines in same areas; constituents may not feel represented.

Recommendation: The task force recommends option 2 (using the Huntington-Hill Method). This recommendation addresses proportionality of representation and greater alignment of departments with shared interests. However, this will require greater commitment from the senate to gather input from constituents to identify the new areas.

Appendix

Example of Huntington-Hill Apportionment for Areas 1 to 11 using current contract and associate faculty distribution:

Summary:

Contract

Area	1	2	3	4	5	6	7	8	9	10	11	Total
Faculty	33	37	25	21	43	25	27	17	22	43	19	312
Senators	2	3	2	1	3	2	2	1	2	3	1	22
Fac/Sen Ratio	16.5	12.33	12.5	21	14.33	12.5	13.5	17	11	14.33	19	14.18

Associate

Area	12	13	Total
Faculty	630	269	899
Senators	4	2	6
Fac/Sen Ratio	157.5	134.5	149.83

Huntington-Hill Method (Highest Averages):

1. Initially each area gets a quota $q = 1$.
2. Divide each area's population p (it's number of constituents) by $\sqrt{q(q+1)}$ where q is the area's current quota.
3. Increase the quota q of the area(s) with the largest quotient from step (2) by 1.
4. Repeat steps (2) and (3) until the total quota of all the areas equals the total number of senators being apportioned. Each area's number of senators is that area's quota.

Computation for current contract faculty distribution:

Area	1	2	3	4	5	6	7	8	9	10	11	Total
Faculty	33	37	25	21	43	25	27	17	22	43	19	312
Quota	1	1	1	1	1	1	1	1	1	1	1	11
p/SQRT(q(q+1))	23.33	26.16	17.68	14.85	30.41	17.68	19.09	12.02	15.56	30.41	13.44	
Additional Seats	0	0	0	0	1	0	0	0	0	1	0	
Quota	1	1	1	1	2	1	1	1	1	2	1	13
p/SQRT(q(q+1))	23.33	26.16	17.68	14.85	17.55	17.68	19.09	12.02	15.56	17.55	13.44	
Additional Seats	0	1	0	0	0	0	0	0	0	0	0	
Quota	1	2	1	1	2	1	1	1	1	2	1	14
p/SQRT(q(q+1))	23.33	15.11	17.68	14.85	17.55	17.68	19.09	12.02	15.56	17.55	13.44	
Additional Seats	1	0	0	0	0	0	0	0	0	0	0	
Quota	2	2	1	1	2	1	1	1	1	2	1	15
p/SQRT(q(q+1))	13.47	15.11	17.68	14.85	17.55	17.68	19.09	12.02	15.56	17.55	13.44	
Additional Seats	0	0	0	0	0	0	1	0	0	0	0	
Quota	2	2	1	1	2	1	2	1	1	2	1	16
p/SQRT(q(q+1))	13.47	15.11	17.68	14.85	17.55	17.68	11.02	12.02	15.56	17.55	13.44	
Additional Seats	0	0	1	0	0	1	0	0	0	0	0	
Quota	2	2	2	1	2	2	2	1	1	2	1	18
p/SQRT(q(q+1))	13.47	15.11	10.21	14.85	17.55	10.21	11.02	12.02	15.56	17.55	13.44	
Additional Seats	0	0	0	0	1	0	0	0	0	1	0	
Quota	2	2	2	1	3	2	2	1	1	3	1	20
p/SQRT(q(q+1))	13.47	15.11	10.21	14.85	12.41	10.21	11.02	12.02	15.56	12.41	13.44	
Additional Seats	0	0	0	0	0	0	0	0	1	0	0	
Quota	2	2	2	1	3	2	2	1	2	3	1	21
p/SQRT(q(q+1))	13.47	15.11	10.21	14.85	12.41	10.21	11.02	12.02	8.98	12.41	13.44	
Additional Seats	0	1	0	0	0	0	0	0	0	0	0	
Quota	**2**	**3**	**2**	**1**	**3**	**2**	**2**	**1**	**2**	**3**	**1**	**22**

Computation for current associate faculty distribution:

Area	12	13	Total
Faculty	630	269	899
Quota	1	1	2
p/SQRT(q(q+1))	445.48	190.21	
Additional Seats	1	0	
Quota	2	1	3
p/SQRT(q(q+1))	257.20	190.21	
Additional Seats	1	0	
Quota	3	1	4
p/SQRT(q(q+1))	181.87	190.21	
Additional Seats	0	1	
Quota	3	2	5
p/SQRT(q(q+1))	181.87	109.82	
Additional Seats	1	0	
Quota	4	2	6

References:

Balinski, M. and Young, H. (2001). *Fair Representation*. Brookings Institution Press.

Huntington-Hill Method. (2024, November 12). In *Wikipedia*. https://en.wikipedia.org/wiki/Huntington%E2%80%93Hill_method