

Distribution: Members of Faculty-Staff Council
All Faculty and Staff

AGENDA

Faculty Sub-Council
California State Polytechnic College
Tuesday - November 28, 1967
Staff Dining Room, 3:00 p.m.

ORDER OF BUSINESS

Recommendation from the Curriculum Committee.

The Faculty-Staff Council recommends to the President that he approve the curricular changes for the 1968-69 Catalog from the departments of Education, Aeronautical Engineering, Electrical Engineering, Electronic Engineering, and Mechanical Engineering as set forth in the November 21, 1967 report of the Curriculum Committee.

(The report of the Curriculum Committee is attached for all members of the Faculty-Staff Council. It is available to others by phoning extension 2431.)

State of California

California State Polytechnic College
San Luis Obispo

M e m o r a n d u m

To : Dr. Corwin Johnson, Chairman
Faculty-Staff Council

Date: November 21, 1967

From : Curriculum Committee
Donald W. Hensel, chairman (Soc Sci), William Armentrout (Educ),
Gaylord Chizek (Farm Mgt), Harry Finch (Bio Sci), George Ikenoyama
(Arch), Rod Keif (AC&R)

Subject: Curricular Additions for 1968-69 Catalog

MOTION: The Faculty-Staff Council recommends to the President that he approve the curricular changes for the 1968-69 catalog from the departments of Education, Aeronautical Engineering, Electrical Engineering, Electronic Engineering, and Mechanical Engineering as set forth in the November 21, 1967 report of the Curriculum Committee.

- I. Recommended new course proposal from the Education Department.
Psy 203, Physiological Psychology, 3 units

Justification:

Those who receive a teaching credential in agriculture, technical arts, physical education, or home economics must have an academic minor. The addition of this course to the curriculum in psychology will provide a minor in this field to accommodate those who desire it. A number of students and faculty have suggested the feasibility of a psychology minor. Three units are necessary to reach the total of 30, required for a teaching minor.

Justification for acceptance beyond the deadline:

Dr. Walter Schroeder appeared before the Faculty-Staff Council last June with a proposal for additional psychology course work and was informed that the Council would consider such course work this fall.

- II. Recommended courses and changes in curricular layouts and course offerings in the School of Engineering.

A. Justification for acceptance beyond the deadline:

It is the desire of President Kennedy and Dean Higdon to seek accreditation from the Engineers' Council for Professional Development (ECPD). If curricular changes are delayed until the publication of the 1969-70 catalog, an accreditation visit will also be delayed and probably until the spring of 1970. With additional work now, such changes could be incorporated in the 1968-69 catalog and thus could lay the basis for an accreditation visit in the spring of 1969.

B. Significant changes:

1. Reduction of total units from 210 to 204. Dean Higdon reported to us that the national average for engineering has been going down steadily. The recommended maximum is 136 semester hours (204 quarter hours) as developed in the report, "Goals of Engineering Education," of the American Society for Engineering Education (not published).
2. Expansion of electives in the area of social sciences and humanities (literature, philosophy, fine arts) from 21 or 23 units to at least 27 units. Although the California state requirement is also 27 units, this change is necessary because the ECPD will not accept business courses as social science and it will not accept shop courses (Manufacturing Processes) as humanities. The ECPD phrasing is "the equivalent of one-half year to one full year as the minimum content in the area of humanistic-social studies. Of this content, at least one-half year should be selected from such fields as history, economics, government, literature, sociology, philosophy, psychology, or fine arts, and should not include such courses as accounting, industrial management, finance, personnel administration, or ROTC." On the basis of a total of 204 units for graduation, Dean Higdon has asked each department to raise its units in social science--humanities to 27 units.
3. Reduction of skills courses in the freshman year (Manufacturing Processes) from 6 units to 4 units. Mechanical Engineering has chosen not to make this change in reducing its units.
4. Removal of the Undergraduate Seminar (463) from the curriculum layout of Aeronautical Engineering.
5. Reduction in free electives from 12 units to 7 (Aero and EE) or 5 (EL and ME). The ECPD report does not comment on a preferred number of free electives.
6. The present 1967-68 catalog includes a change in the mathematics requirement which should satisfy the ECPD objective, but which was not in effect when the 1965 accreditation visit occurred. That objective is "about half" a year of math beyond trigonometry.

The 24 units of mathematics (141, 142, 143, 241, 242, 318) begin at a level beyond trigonometry and represent "about half" a full year culminating in differential equations. In addition, the Electrical Engineering Department has provided 4 units as an elective in mathematics.

7. Is the requirement in basic science satisfied? ECPD calls for "one academic year of basic sciences, about half of which is mathematics beyond trigonometry."

On the basis of 204 total units, one year totals 51 units.

Basic Sciences	AERO	EE	EL	ME
Bio 110 or Life Science	3	3	3	3
Chem 321, 322	8	8	8	8
Physics 131, 132	8	8	8	8
Physics 133	4			4
Physics 201, 202	6	6	6	
Physics 211		4	4	4
Physics 412, 452			4	
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Total of Science	29	29	33	27
Math 141, 142, 143, 241, 242, 318	24	24	24	24
Math elective		4		
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Total of basic science including "about half" a year of math beyond trigonometry.	43	57	57	51

The minimal requirement in basic science is met.

8. The engineering science courses are also to be "at least the equivalent of one year....". Examples of such courses are thermodynamics, fluids materials, strength of materials, electrical circuits, etc. These are applications of science to general and specific engineering problems. They vary from department to department. Dean Higdon has reported that each department already has satisfied this requirement. In the short time at our disposal we did not seek to identify these courses. They tend to merge with both basic science courses (ME 211, 212, Engineering Mechanics) and more specialized professional courses (Aero 203, Fluid Mechanics of Flight). ECPD recommends such integration as a more meaningful educational experience.

C. Aeronautical Engineering

1. Two 2-unit courses have been consolidated into one 3-unit course

Aero 346, 349 (2,2) to Aero 421 (3), Flight Mechanics

This change helps to meet the criticism of too many courses required each quarter.

2. Two additional units of lecture have been added to Aero 444, 445, 446, Missile and Aircraft Design Laboratory, raising the units from 2 to 4 for each course.
3. Aero 326 was renumbered 306, Aerodynamics, and increased from 4 to 5 units.
4. WM 301, Theory of Materials, has been added as a required course, increasing the engineering science total by 3 units.

5. Social science and humanities courses have been increased to or beyond 27 units. IR 311, Industrial Management, had to be dropped because it is unacceptable as a social science to ECPD.
6. Aero 463, Undergraduate Seminar, has been dropped. Dean Higdon confirmed that this change had the approval of the department heads in engineering.
7. Manufacturing Processes courses have been reduced from 6 to 4 1-unit courses.
8. As reported earlier, total units have fallen from 210 to 204. The six deleted units include two from Manufacturing Processes and four with Aero prefixes.
9. The ECPD report suggested, but did not require, consideration of the following in the Aero Department:
 - a. Two 5-unit courses in classical mechanics instead of Physics 131, 201, 202.
 - b. The learning rate and extent related to disassembly and reassembly of an aircraft engine.
 - c. A more modern treatment of thermodynamics.
 - d. Reduction of 14 units devoted to design.
 - e. Formal courses in viscous fluids and boundary layer theory, modern physics and materials science or modern engineering materials with a metallurgical flavor.

D. Electrical Engineering

1. A specific criticism of this curriculum was that "too many courses are required of the student during each quarter and consolidation into fewer courses with more extensive credit should be possible." In response to this comment, the EE Department has combined the lab with the corresponding lecture course in fourteen courses, thereby reducing by fourteen the number of different courses which appear to clutter the curriculum layout.

EE 102, 152 (3,1) to EE 132 (4)
 EE 103, 153 (3,1) to EE 133 (4)
 EE 202, 242 (3,1) to EE 221 (4)
 EE 203, 243 (3,1) to EE 222 (4)
 EE 301, 341 (3,1) to EE 321 (4)
 EE 302, 342 (3,1) to EE 322 (4)
 EE 304, 344 (3,1) to EE 323 (4)
 EE 303, 343 (3,1) to EE 323 (4)
 EE 305, 345 (3,1) to EE 331 (4)
 EE 306, 346 (3,1) to EE 332 (4)
 EE 314, 354 (3,1) to EE 335 (4)
 EE 315, 355 (3,1) to EE 336 (4)
 EE 316, 356 (3,1) to EE 337 (4)
 EE 401, 441 (3,1) to EE 431 (4)

2. Manufacturing Processes courses have been reduced from 6 to 4 1-unit courses.

3. ME 152, Engineering Drafting, has been dropped from the required curriculum (1 unit).
4. Six hours of EE have been dropped (EE 146, 253, 304, 344) from the major requirements and from the departmental offerings.
5. The total units have dropped from 210 to 204. Four changes account for this 6-unit reduction:

a. Reduction in Manufacturing Processes	-2
Deletion of ME 152	-1
Deletion of EE courses	-6
Removal of free electives	-5
	-14
b. Addition of controlled electives (1 in math, 1 in EE, 3 in social science, 3 in literature)	+8
c. Net change	--6
6. Social science and humanities courses have been increased to or beyond the minimum of 27 units.

E. Electronic Engineering

1. The total units have been reduced from 210 to 204 by reducing the units in Manufacturing Processes from 6 to 4 and by reducing the free electives by 4. That leaves 8 free electives, which are reduced to 5 when 3 units are assigned as social science--humanities electives.
2. The criticism of EE that too many courses were required in each quarter was also applied to EL. However, the phrasing is permissive in that the statement begins, "It appears that too many courses are required..." The Electronic Engineering Department did not reduce the number of separate courses.
3. Social science and humanities courses have been increased to at least the minimum of 27 units.
4. The EL Department has responded favorably to our committee's suggestion to make one change on its proposed curriculum sheet. It has reduced a 4-unit elective in social sciences--humanities to 3 units and raised a literature elective from 2 to 3 units. Without this change, the 4-unit requirement could not be fulfilled because the courses in these subjects are organized as 3-unit courses.

F. Mechanical Engineering

1. The total units have been reduced from 210 to 204 by reducing electives from 12 to 6.
2. Social science and humanities courses have been increased to at least the minimum of 27 units.

3. The ECPD report included the following additional comments about the curriculum, without specifically requiring changes:
 - a. It is questionable whether the skills learned in the shop and lab practices of the freshmen year "will ever be used in practice." ME was the only department which did not reduce the shop units.
 - b. "The coverage given in thermodynamics and heat transfer is a minimum...."
 4. The ME Department has responded favorably to our committee's suggestion to make one change in its proposed curriculum sheet. It has reduced a 4-unit elective in social sciences--humanities to 3 units and raised literature or philosophy electives from 5 to 6 units. Without this change the 4-unit requirement could not be implemented because the courses in these subjects are organized as 3-unit courses.
- G. A final comment is necessary. The Curriculum Committee has been asked to evaluate the curricular revisions of four engineering departments at this time in order to facilitate the efforts to win ECPD accreditation. This analysis has reported various norms and criticisms and the departmental responses. As a consequence, we have made no mention of the numerous compliments in the report about the engineering program in general and about specific departmental offerings or strengths. They are in the report, but are not relevant to our committee's responsibility at this time.