

CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, California 93407
ACADEMIC SENATE

Executive Committee Agenda
Tuesday, May 6, 1986
FOB 24B, 3:00-5:00 p.m.

<u>MEMBER:</u>	<u>DEPT:</u>	<u>MEMBER:</u>	<u>DEPT:</u>
Ahern, James	Ag Mgmt	Hallman, Barbara	History
Bonds, Robert	LAC	Kersten, Timothy	Economics
Botwin, Michael	Arch Engr	Lamouria, Lloyd H.	Ag Engr
Cooper, Alan F.	Biology	Olsen, Barton	History
Fort, Tomlinson Jr.	Adm	Riener, Kenneth	Bus Admin
Gamble, Lynne E.	Library	Tandon, Shyama	EL/EE
Gay, Larry	Ind Tech	Terry, Raymond	Mathematics
Gooden, Reg	Poli Sci		

Copies: Baker, Warren J.
Irvin, Glenn W.

minutes removed

- I. Minutes: Approval of the April 29, 1986 Executive Committee Minutes (to be distributed).
- II. Announcements:
- III. Reports
 - A. President/Provost
 - B. Statewide Senators
- IV. Business Items:
 - A. Resolution No. 1 on Free Electives-Williamson, Chair, Curriculum Committee (attached p. 3).
 - B. Resolution No. 2 on Free Electives-Williamson, Chair, Curriculum Committee (attached p. 4).
 - C. "Conflict of Interest Policy for Principle Investigators (written response)-Andrews, Chair, Personnel Policies Committee/McNeil, Chair, Research Committee.
 - D. Proposed Dean Evaluation Form-Andrews, Chair, Personnel Policies Committee.
 - E. Proposed Inclusion of IE 314, Engineering Economics, in GE&B Area D-Lewis, Chair, General Education & Breadth Committee.

Consensus Agenda:

Report on Recommendations Relating to Reporting Format of Discretionary Funds-Pohl, Chair, Budget Committee. (Please bring materials concerning this agenda item which were included in the April 29, 1986 Executive Committee Agenda.)

V. Discussion Items:

- A. Improving effectiveness of Executive Committee meetings:
 - Consent calendar prepared by officers;
 - Committee replacements made by Chair honoring School/PCS caucus recommendation when received in writing from the caucus chair.
- B. Program review: How can the Senate be an effective participant in upgrading or deleting programs where justified?
- C. Problem-An insufficient number of nominations received for the elected position of senator. Chair proposal to Constitution & Bylaws Committee was to amend Bylaws to authorize the Executive Committee to appoint based upon recommendation of the caucus. This authority already exists for filling senator vacancies.

The Constitution & Bylaws Committee (Rogalla) suggests that for all types of elections: (1) When it appears that an insufficient number of nominations are forthcoming, notify each caucus chair by memo, with copy to the dean, that no nominations have been received. (2) If deadline occurs and there is still an insufficient number of nominees, elections proceed and that position remains vacant until the next regular election.
- D. Desire of department head representatives to have three department heads added as voting members of the Senate.
- E. Nominations for Faculty Trustee deadline at Long Beach is September 29, 1986. Forms are available in our Senate office.
- F. Chairman Roy Brophy has authorized distribution (to the Board of Trustees) of our Resolution on Adequate Lead Time for Consultation.
- G. Deadline on Call for Topics for Academic Program Improvement for 1987/88 is June 30, 1986. Forms available in Academic Senate office.

VI. Adjournment:

ACADEMIC SENATE
OF
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, California

Background statement:

The Provost has asked the Academic Senate to review the present requirement that a minimum of nine units of free electives exist in each major curriculum at Cal Poly. After gathering opinions from both school deans and school curriculum committees, the Curriculum Committee of the Academic Senate finds the University faculty as a whole and itself to be evenly divided on this issue. We therefore submit two opposing resolutions for the full Senate to discuss and act upon.

AS-____-86/____

RESOLUTION NO. 1 ON
FREE ELECTIVES

- WHEREAS, Students are required to take a broad spectrum of courses by the General Education & Breadth requirements; and
- WHEREAS, The units for General Education & Breadth requirements have been increased in recent years; and
- WHEREAS, California Polytechnic State University's hands-on, learn-by-doing philosophy may require many more design and project units than other schools; and
- WHEREAS, This has made it difficult if not impossible for a number of disciplines to maintain their traditional quality of program within a four-year degree; and
- WHEREAS, The spirit of collegiality vests curricular formulation responsibility within the faculty; and
- WHEREAS, The faculty, department heads/chairs, and school deans thoroughly review the curricula for which they are responsible; therefore, be it
- RESOLVED: That the curricula of majors at California Polytechnic State University need not include any free electives.

Proposed By:
Curriculum Committee
May 6, 1986

ACADEMIC SENATE
OF
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, California

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AS-____-86/____

RESOLUTION NO. 2 ON
FREE ELECTIVES

- WHEREAS,** It is desirable for all students to have the freedom to take courses of their own choice in the attainment of a bachelor's degree; and
- WHEREAS,** The Campus Administrative Manual (CAM) Section 411.1 requires 12 units of electives, 9 of which may not be restricted in any way by the student's department; and
- WHEREAS,** In recent years exemptions have been granted to this Section 411.1 requirement to the extent that some majors have had no free electives; therefore, be it
- RESOLVED:** That no exemptions from the requirements of CAM Section 411.1 be granted under any circumstances.

Proposed by:
Curriculum Committee
May 6, 1986

Tabled indefinitely
GENERAL EDUCATION AND BREADTH PROPOSAL

minutes
5.6.86 Exec Mtg

1. PROPOSER'S NAME Donald E. Morgan	2. PROPOSER'S DEPT. Industrial Engineering
3. SUBMITTED FOR AREA (include section, and subsection if applicable) D.4.b.	
4. COURSE PREFIX, NUMBER, TITLE, UNITS, DESCRIPTION, ETC. (use catalog format) IE 314 (3) 3 lectures Contemporary and historical effects upon a nation's economy and society of monetary decision making, capital allocation, investments, equipment replacement, and inventory and production management. Company decisions are forced by and cause changes in inflation, taxes, exchange rates, risk attitudes, and eventually trade balances. The time value of money also must be utilized in decision making.	
5. SUBCOMMITTEE RECOMMENDATION AND REMARKS <div style="display: flex; justify-content: space-between; margin-top: 20px;">Againstunanimous</div>	
6. GE & B COMMITTEE RECOMMENDATION AND REMARKS <div style="display: flex; justify-content: space-between; margin-top: 20px;">Against2-6-1</div>	
7. ACADEMIC SENATE RECOMMENDATION	

EXPANDED COURSE OUTLINE

I. CATALOG DESCRIPTION

IE 314 Engineering Economy (3) 3 lectures
Contemporary and historical effects upon a nation's economy and society of monetary decision making, capital allocation, investments, equipment replacement, and inventory and production management. Company decisions are forced by and cause changes in inflation, taxes, exchange rates, risk attitudes, and eventually trade balances. The time value of money also must be utilized in decision making.

II. REQUIRED PREREQUISITE PREPARATION

Courses which include principles of economics, basics of accounting, calculus, social and political science, and computer literacy.

III. EXPECTED OUTCOMES

The objective of this course is to provide the student with a disciplined approach to evaluating the consequences of technical alternatives and for rationally selecting among those alternatives. This course is designed to draw on the student's prior exposure to economic principles and political science in appreciating the nature of key variables affecting technical alternatives. These variables include: interest rates, taxes, inflation rates, exchange rates, and product demand along with environmental and social concerns. The student will be able to evaluate engineering decision alternatives using the time value of money.

IV. TEXT AND REFERENCES

Fleischer, G.A., ENGINEERING ECONOMY: CAPITAL ALLOCATION THEORY, Brooks-Cole, 1984.

Ref.: White, J.A., et al, PRINCIPLES OF ENGINEERING ECONOMIC ANALYSIS, 2nd Ed.
Wiley & Sons, 1984

Samuelson, P.A., ECONOMICS: AN INTRODUCTORY ANALYSIS, New York, 1979.

Friedman, Milton, CAPITALISM AND FREEDOM, Chicago, 1962.

V. MINIMUM STUDENT MATERIALS REQUIRED

Text and calculator.

VI. MINIMUM FACILITIES REQUIRED

Lecture room with chalkboards and facilities for audio and visual aids.

Is this
Text
the same?

VII. EXPANDED DESCRIPTION OF CONTENT AND METHOD OF INSTRUCTION

First two weeks-Review of principles of engineering economics. The decision making process, with emphasis on technical decision making. Cash flow analysis and the meaning of equivalence. Tools necessary for the conduct of the course. Review of the basic interest equations. Definition, meaning and use of interest rates. Practice in the use of the basic interest formulas.

Second two weeks-Detailed problem-solving in cash flow equivalence. Use of present value techniques in comparing alternatives. Presentation of annual cash flow analysis methods. Examination of internal rate of return analysis methods and comparison to other methods.

Third two weeks-Examination of the effects of depreciation, income taxes and management attitudes on cash flow analysis and economic decisions. Study of different methods of depreciation and their economic consequences. Review of income tax laws. Effect of ordinary income taxes, capital gains tax, and investment tax credits. Review of factors that determine the selection of a minimum attractive rate of return. The corporate capital structure and the cost of capital. Review of computer models of economic decision making that incorporate all variables previously studied.

Fourth two weeks-Historical influences on monetary decision making. The role of political, social, and economic institutions on capital allocation and investment. Review and analysis of inflation and international monetary policy on economic plans and decisions. Use of predicted inflation rates and their effect on exchange rates in corporate dealings. Use of hard assets in economic planning.

Fifth two weeks-The effect of corporate decisions on investment, equipment replacement, and pricing upon a nation's economy and society. The effect of trade balances on corporate risk attitudes and decision making.

VIII. METHODS OF EVALUATING OUTCOMES

The presentation of this course is basically lecture interspersed with problem solving and classroom projects. Visual aid material is used to maximize learning. The lectures are to integrate knowledge from outside sources.

Grading is based upon homework, class work and participation, three one-hour exams and the final exam.

Homework/Classwork	20%
Hour Exams	40%
Final Exam	40%
	100%

Estimated ABET Category Content:

Engineering Science: 1
Engineering Design: 2

Memorandum

To : George Lewis
Math Department
Chairman, GE&B Committee

Date : December 18, 1985
File No.: 100.2 GE&B Committee
Copies :

From : *DE Morgan*
Donald E. Morgan, Head
Industrial Engineering

Subject: IE 314 Submission

To clarify our submission of a new course, in an old number, IE 314:

We have submitted to the GE&B Committee a new course revised completely. This revision is designed to meet the D.4.b requirements in every way. It was presented to you and you indicated that you would refer it to the D.4.b subcommittee.

This is an explanation of our purpose in making this submission.

About a month before the final 1986-88 catalog copy was due, Provost Fort in a memo accepted the recommendation of the full Academic Senate that Engineering Economy, IE 314, not be accepted in the list of courses for the D.4.b requirement for GE&B. He expressed the hope that a new course could be created that

- (1) met the D.4.b requirements more exactly, and
- (2) be acceptable for ABET accreditation purposes.

In addition, the School of Engineering wants and needs a course giving enough of the principles of engineering economy so that engineering graduates can use these principles in making choices and decisions in engineering after graduation. The first important step in achieving Professional Engineer status for graduating engineers is an Engineer in Training exam, and one section of this exam is devoted entirely to Engineering Economy, so new graduates need the concepts.

In response to Provost Fort's suggestion, we submit this new course. We hope that the GE&B Committee will recommend to the Senate that IE 314 be included in the list of courses acceptable for D.4.b as it did in the 1986-88 catalog cycle. The Engineering Departments' curricula were changed for the latest catalog copy after Provost Fort's memo to state simply "a course chosen from the D.4.b list." Our graduates would be best served if each could choose IE 314. It is our hope that the GE&B Committee, and eventually the Senate, could recommend inclusion of IE 314 in the D.4.b list now, so that there would not be a hiatus in the inclusion of this important course in our engineering graduates' curricula.

George Lewis
Page Two

Attached is a key word topic list which we in this department use to describe the topics treated in a particular course, in addition to the expanded course outline. It may help in assuring committee and Senate members that this new course does meet D.4.b requirements.

Please pass this statement and the key word topic list along to the subcommittee now, and to the Senate and Provost Fort at the appropriate time.

(As an additional note, Provost Fort has given Dr. Seifoddini 1/4 release time for Winter and Spring Quarters 1986 to plan and write the details of this course.)

Attachment

KEY WORD TOPIC LIST
IE 314

1. Human impact of engineering decisions.
2. Economic results of engineering decisions.
3. The engineer's interaction with society.
4. Ethical implications of engineering decisions.
5. The engineer's contribution to a free society.
6. The engineer's influence in world trade.
7. Old and new methods of making engineering economic decisions.
8. Decision making.
9. Time value of money.
10. Internal rate of return.
11. Payback method.
12. Replacement analysis.
13. Depreciation.
14. Tax analysis.
15. Benefit/cost analysis.
16. Cost of capital.
17. Inflation effects.
18. Computer use in engineering economics.
19. Sensitivity analysis.
20. Risk analysis.

The following topics are recommended as supplemental for use as seen fit by the lecturer.

1. Financial statements and managerial accounting.
2. Break-even analysis.
3. Personal finance.

GE&B Subcommittee D Report on IE 314

There are a number of reasons why IE 314 should not be included in GE&B Area D 4.b. These include: (1) the structure and content of the course, (2) how it is regarded by ABET, and (3) multiple nonstated prerequisites for the course. However, before elaborating upon our unanimous recommendation against this course in GE&B, two points need to be emphasized. First, we have assessed this course against all the standards employed in deciding the fit of a course in the GE&B framework; we make no judgment as to its appropriateness in the engineering curricula for engineering students. Second, we have evaluated this course for GE&B for three consecutive years. In spite of the fact that the course description is somewhat different in the September, 1985, expanded course outline from previous years, the content of the course remains basically the same. We can only conclude that this course has been persistently returned to the GE&B Committee (and Area D Subcommittee) because of the term "economy" in the course title which somehow gives the course a legitimate claim for a place in Area D.

1. The Content and Structure of IE 314:

The revised course outline for IE 314 incorporates the language of E.O. 338 but fails to adhere to the substance and integrity necessary for acceptance in D4.b.

According to the revised course proposal IE 314 will qualify for the portion of 338 which requires all courses to deal "with human social, political and economic institutions and behavior and their historical background." Moreover, IE 314 claims to substantiate that "social, political, and economic institutions are inextricably interwoven." In addition topics will be "...examined in their contemporary as well as historical setting, including both western and nonwestern contexts." However, the course description of content and method of instruction does not substantiate either claim. According to the course outline, the

First two weeks are devoted to "principles of engineering economics."

The second two weeks details "problem solving in cash flow equivalence."

The third two weeks studies "the effects of depreciation, income taxes and management attitudes on cash flow analysis and economic decisions."

The fourth two weeks proposes to illustrate the "Historical influences on monetary decision making," and

The fifth two weeks discusses "the effect of corporate decisions on investment, equipment replacement, and pricing upon a nation's economy and society."

Several aspects of the course content render it inappropriate for GE&B Area D 4.b. First, IE 314 only allocates time during the 7th and 8th weeks to the "Historical influence on monetary decision making." The student is expected to learn that "...evaluating the cost and benefits of retraining workers needing it so that they may remain in their communities..." will help "...preserve the nature of their society..." and thus meet the requirement. "Clearly [the outline states] the retraining [of American engineers] would preserve the economic status of workers and stabilize the national and international political structure." An inference of this magnitude is dubious. Second, the outline surmizes that an investigation of tax credits, inflation, interest rates, and affirmative action in the United States will yield global stabilizing benefits. It is unlikely that a two week segment of this course could communicate these interconnections much less substantiate them. Third, we are informed that decisions that "...effect the social, economic, and political structure of [American] communities" allows an opportunity to study Japanese industry and contrast it with U.S. and European industry. This limited exposure to a nonwestern, highly industrialized nation does not fulfill the requirements of EO 338.

Our committee recognizes that courses taught in Area D 4.b must address the mandates of EO 338 as a general theme. The material taught in the 7th and 8th weeks of IE 314 does not qualify the course in D 4.b. IE 314 emphasizes the teaching of engineering economics to would be American engineers in a fashion totally divorced from the mandates of EO 338.

II. IE 314 and ABET Classification:

ABET uses the following classification scheme for categorizing courses in the engineering curriculum: (a) math, (b) basic science, (c) engineering science, (d) engineering design, (e) humanities and social science, and (f) other. IE 314 is listed as a major course for all engineering students except those in Arch Engineering where it is not required. ABET identifies IE 314 as 1 unit engr. science and 2 units engr. design in engineering department curriculums except for arch. engr (not required) and mech. engr. where it is listed as a 3 unit engr. design course. We can not accept the logic that IE 314 meets these specialized professional requirements in engineering for engineering students while at the same time it meets the Area D objectives as a general education course in the social sciences. If IE 314 is to be restructured to make it a GE course in the social sciences area, then its new content would jeopardize its ABET standing as an engr. science/design course. Put in other words, IE 314 can not be both an engr. science/engr. design course and a social science GE course.

III. Unstated Prerequisites:

The class syllabus lists the following as prerequisites for IE 314: principles of economics, basics of accounting, calculus, social and political science, and computer literacy. If the calculus is counted as a series (3 classes) this total adds up to 8 prerequisite classes, 6 classes if calculus is singular. Both economics 304 and 325, similar classes in this GE&B category, only have a single prerequisite--principles of economics. The single prerequisite is compatible with adequate access for general education students. There is a significant difference in the prerequisites for IE 314 as compared to parallel economic courses in Area D.

When the expanded course outline is examined, the necessity for the prerequisites is substantiated as the following topical examples show: two weeks review of engineering economics; cash flow analysis; major discussion of corporate "capital structure"; capital allocation; role of political, social, economic institutions of capital allocation; methods of depreciation; and so on.

In short, the number of prerequisites qualifies IE 314 as a non general education class. It is not "generally" accessible to the broad range of students in the university.

Summary: Legitimate courses in category D 4.b are broad and utilize the mandates of EO 338 as their prime directives and as their central themes. It is clear IE 314 remains a course that only serves engineering students outside the realm of General Education. The course cannot and does not serve both engineering majors and nonmajors. The course is inappropriate for inclusion in GE&B Area D 4.b.