

UNIVERSITY FACULTY SENATE

SUMMARY OF AGENDA

March 2, 1987

- I. ADOPTION OF THE AGENDA
- II. APPROVAL OF THE MINUTES: February 2, 1987
- III. REMARKS BY PRESIDENT TRABANT and/or PROVOST CAMPBELL
- IV. ANNOUNCEMENTS

- 1. Senate President Callahan

ANNOUNCEMENT FOR CHALLENGE

- 1. Curricula revisions to the Undergraduate Programs in Chemical Engineering

V. OLD BUSINESS

- A. Resolution, introduced by Senator Pill, at the February Senate Meeting, for further discussion of the plus/minus grading system
 - B. Recommendations altering the charges of various committees

VI. NEW BUSINESS

- A. Recommendation for the establishment of an Honors Degree in Economics (B.A. in College of Arts and Science, and B.S. in College of Business and Economics)
 - B. Recommendation for permanent status of the Doctor of Education Degree (Ed.D.) and for the major of Educational Leadership leading to that degree
 - C. Recommendation for provisional approval of a new major leading to the B.S. degree in Biological Science with a concentration in Biotechnology
 - D. Recommendation for provisional approval of a Bachelor of Applied Sciences Degree with a major in Engineering Technology and Technical Management
 - E. Resolution to change the automatic "F" sanction for academic dishonesty in courses carrying five or more credits
 - F. Recommendation on the adoption of revised Undergraduate Admissions Standards

- G. Amorous Relationship Policy
- H. Recommendation for an addition to the Faculty Handbook on terminations and nonrenewals
- I. Introduction of new business.



University of Delaware

UNIVERSITY FACULTY SENATE
301 HULLIHEN HALL
NEWARK, DELAWARE 19716

(302) 451-2921

February 19, 1987

TO: All Faculty Members

FROM: Thomas F. Merrill, Vice-President
University Faculty Senate *Thomas F. Merrill*

SUBJECT: Regular Faculty Senate Meeting, March 2, 1987

In accordance with Section IV, paragraph 6 of the Constitution, the regular meeting of the University Faculty Senate will be held on Monday, March 2, 1987 at 4:00 p.m. in room 110 Memorial Hall.

AGENDA

- I. Adoption of the Agenda.
- II. Approval of the minutes of the Senate meeting of February 2, 1987.
- III. Remarks by President Trabant and/or Provost Campbell.
- IV. Announcements
 1. Senate President CallahanAnnouncement for Challenge
 1. Curricula revisions of the Undergraduate Programs in Chemical Engineering effective September 1987 (Attachment 1).
- V. Old Business
 - A. Resolution, introduced by Senator Wallace Pill (Plant Science) at the February Senate meeting, on a request for further discussion of the plus/minus grading system. (Resolution approved by the University Faculty Senate on May 6, 1985 is at attachment 2.)

WHEREAS: The College of Agricultural Sciences at its December 1, 1986 faculty meeting passed a motion requesting further discussion of the plus/minus grading system on the floor of the University Faculty Senate, therefore be it

RESOLVED: That further discussion by the University Faculty Senate on the advantages and disadvantages of the plus/minus grading system precede implementation of this system.

B. Resolutions from the Committee on Committees (A. DeHaven, Chairperson) altering the charges of the Committee on Student Life, the Computer Committee, the Committee on Physical Planning and Utilization, the Committee on Rules, and the Committee on Academic Freedom.

1. RESOLVED, that the charge to the Committee on Student Life as it appears in Section III, page I-24, paragraph 2, of the Faculty Handbook be changed to read:

This committee shall consist of two designees of the Vice-President for Student Affairs; one representative of the Office of Graduate Studies, designated by the Associate Provost for Graduate Studies¹; four faculty members, one of whom shall be chairperson, one of whom shall serve on the Undergraduate Behavior Review Committee, and one of whom shall serve on the Graduate Behavior Review Committee²; three undergraduate students, two of whom shall serve on the Undergraduate Behavior Review Committee³; and one graduate student appointed by the Committee on Graduate Studies in the absence of a duly constituted Graduate Student Association, who shall also serve on the Graduate Behavior Review Committee.

2. RESOLVED, that the charge to the Computer Committee as it appears in Section III, page I-17, paragraph 1, of the Faculty Handbook be changed to read:

This committee⁵ shall consist of the Director of Academic Computing Services, the Director of Management Information Systems, and the Assistant Provost and⁶ Director of the Office of Instructional Technology, who will serve as ex officio, non-voting members. In addition, the voting members of the committee shall

¹Formerly "Coordinator of Graduate Studies."

²Approved by Faculty Senate on September 8, 1986.

³Approved by Faculty Senate on November 3, 1986.

⁴In keeping with general provisions of Section III in the Faculty Handbook but making special provision for graduate student appointment to this committee.

⁵Word added for clarification.

⁶Formerly "Director of Computer-Based Instruction."

consist of seven faculty members of whom one shall be chairperson, and one undergraduate and one graduate student.

3. RESOLVED, that the charge to the Committee on Physical Planning and Utilization as it appears in Section III, page I-22, paragraph 1, of the Faculty Handbook be changed to read:

This committee shall meet at least twice a semester with the Associate Vice-President for Facilities Management and Services in order to serve in an advisory capacity in respect to initiation and preparation of plans for University structures and lands and their utilization.

4. RESOLVED, that the charge to the Committee on Rules as it appears in Section III, page I-24, paragraph 2, of the Faculty Handbook be changed to read:

This committee shall consist of the Secretary of the Senate, who shall be its chairperson, and two other members chosen by the Senate.

5. RESOLVED, that the charge to the Committee on Academic Freedom as it appears in Section III, page I-14, paragraph 2, of the Faculty Handbook be changed to read:

The committee shall consist of three faculty members, of whom one shall be chairperson⁷; a designee of the President; and one undergraduate student and one graduate student.

VI. New Business

- A. Recommendation from the Committee on Undergraduate Studies (C. Marler, Chairperson), with the concurrence of the Coordinating Committee on Education (J. Crawford, Chairperson), for the establishment of an Honors Degree Program in Economics (B.A. in College of Arts and Science, and B.S. in College of Business and Economics.) (Attachment 3)

RESOLVED, that the Faculty Senate approves the establishment of an Honors Degree Program in Economics (B.A. in College of Arts and Science, and B.S. in College of Business and Economics), effective September 1987.

⁷ Stipulation added.

⁸ Formerly "chairman."

⁹ Formerly "chairman."

- B. Recommendation from the Committee on Graduate Studies (L. Lemay, Chairperson), with the concurrence of the Coordinating Committee on Education (J. Crawford, Chairperson), for permanent status of the Doctor of Education Degree (Ed.D.) and for the major of Educational Leadership leading to that degree. (Attachment 4) [Provisional approval was given for four years in December 1, 1980.]

RESOLVED, that the Faculty Senate approves and recommends to the Board of Trustees that the Doctor of Education Degree (Ed.D.) and the major of Educational Leadership leading to that degree be granted permanent status.

- C. Recommendation from the Committee on Undergraduate Studies (C. Marler, Chairperson), with the concurrence of the Coordinating Committee on Education (J. Crawford, Chairperson), for provisional approval of a new major leading to the B.S. degree in Biological Science with a concentration in Biotechnology. (Attachment 5)

RESOLVED, that the Faculty Senate approves provisionally, for four years, the establishment of a new major leading to the B.S. degree in Biological Science with a concentration in Biotechnology, effective September 1987.

- D. Recommendation from the Committee on Undergraduate Studies (C. Marler, Chairperson), with the concurrence of the Coordinating Committee on Education (J. Crawford, Chairperson), for provisional approval of a Bachelor of Applied Sciences Degree with a major in Engineering Technology and Technical Management. (Attachment 6)

RESOLVED, that the Faculty Senate approves provisionally, for four years, the establishment of a Bachelor of Applied Sciences Degree with a major in Engineering Technology and Technical Management, effective September 1987.

- E. Recommendation from the Committee on Student Life (J. Beer, Chairperson) to change the automatic "F" sanction for academic dishonesty in courses carrying five or more credits.

WHEREAS, the current minimum mandatory sanctions for academic dishonesty include, "A guilty finding for academic dishonesty will result in the student receiving an 'F' in the course in which the offense occurred"; and

WHEREAS, this represents a particular inequity when courses carrying five or more credits are involved; and

WHEREAS, most of these large credit courses are sequential in nature so that an "F" can substantially retard a student's progress toward graduation, therefore

BE IT RESOLVED, that the sanction for academic dishonesty in any course carrying five or more credits be changed to allow the judicial hearing officer to impose a lesser sanction that might not automatically include an "F" for the entire course.

Any sanction less than an "F" in the course must be justified in writing to the Council on Student Judicial Affairs. The justification would become part of a cumulating record of such exceptions to be used as precedents for rulings in analogous cases which may arise in the future.

All other sanctions (listed in the Student Guide to Policies, page 9, paragraphs K. 2. through K. 6.) would apply in these cases.

Under this resolution the Student Guide to Policies section on "Academic Dishonesty Sanctions" (K. 1., page 9) would read:

"A guilty finding for academic dishonesty will result in the student receiving an 'F' in the course in which the offense occurred. In courses carrying five or more credits the judicial hearing officer may impose a lesser sanction that might not automatically include an 'F' for the entire course."

- F. Recommendation from the Committee on Undergraduate Admissions and Standing (A. Clark, Chairperson) on the adoption of new Undergraduate Admissions Standards. (Information is at attachment 7.)

RESOLVED, that the Faculty Senate approves and recommends the adoption of new Undergraduate Admissions Standards for the University of Delaware as given in Attachment 7.

- G. Report and recommendations from the Committee on Faculty Welfare and Privileges on the revised draft of the Amorous Relationship Policy forwarded by Provost L. Leon Campbell. (Attachment 8)

At the request of the Senate President, the Committee on Faculty Welfare and Privileges has reviewed two drafts of a policy proposed by the University administration on amorous relationships between University employees and students. In a written response, the Committee expressed its objections to the first draft presented to us. A second draft (approved by the Council of Deans), dated January 13, 1987, was submitted to the Senate with a request that it be reviewed by the appropriate Senate Committee.

This Committee notes that several of its objections to the original draft have been rectified in the present proposal. However, the Committee finds that the present draft singles out a particular relationship as its focus rather than the unprofessional conduct for which faculty are to be held responsible, regardless of the relationship from which the unprofessional conduct arises. Unacceptable conflicts of interest may arise from relationships with

friends, enemies, relatives as well as with romantic partners. What is of importance, is to make clear that professional conduct requires in all instances that University employees act in a fair and impartial manner and that employees will be held accountable for their conduct in such instances. We do not believe it appropriate to promulgate policy on one specific form of relationship to the exclusion of all others. The same principles of professional conduct apply equally to all forms of employee-student relationships.

Second, the Committee objects to the wording of the second paragraph of the draft. This paragraph may be construed to mean that only the student with whom the employee is engaged in an amorous relationship may initiate a complaint of unprofessional conduct. We believe that any such policy should make it clear that the University administration, faculty members or other students may initiate complaints of conflict of interest and unprofessional conduct.

Thus, the Committee makes the following recommendations for Senate action:

1. RESOLVED, that the Faculty Senate does not approve the revised draft proposal on amorous relationships.
 2. RESOLVED, that the Faculty Senate endorse the joint development by the University administration and the Faculty Senate Committee on Faculty Welfare and Privileges of a general statement of policy on conflict of interest and unprofessional conduct between employees and students, to be presented to the Faculty Senate for consideration no later than its September, 1987 meeting.
- H. Report and recommendation from the Committee on Faculty Welfare and Privileges for an addition to Faculty Handbook, Section III-N.1, Terminations and Nonrenewals. This was proposed at the request of President E. A. Trabant. (Attachment 9)

In the view of the Committee on Faculty Welfare and Privileges all tenured faculty of the University should enjoy the same privileges and protections regardless of any non-academic position held concurrently. The fact that one holds an administrative position should be irrelevant to either the granting or termination of tenure. Thus, the Committee is unaware of any compelling reason to substitute another officer to receive the report of the Committee on Faculty Welfare and Privileges in the case of certain tenured faculty members who happen to hold specified administrative positions. While the entire policy on termination for cause is presently under review, we suggest, in the interim, the following replacement for the proposed change in the Faculty Handbook, Section III-N:

RESOLVED, that the Faculty Senate recommends the following addition to paragraph 1 of Section III-N of the Faculty Handbook:
[Addition underlined]

N. TERMINATIONS AND NONRENEWALS

1. Terminations

A clear understanding of the terms of the contract between the faculty member and the University is a prerequisite for a harmonious relationship. Within the terms of his/her¹⁰ contract, a faculty member at the University of Delaware is assured that an appointment will be terminated only for adequate cause--incompetence, gross irresponsibility, or moral turpitude--except for retirement because of age or termination caused by extraordinary financial circumstances.

Faculty members shall be terminated for cause only after being afforded a hearing before the Senate Committee on Faculty Welfare and Privileges. Faculty members shall be informed in writing at least four weeks prior to the hearing of the reasons for the proposed termination, shall have the opportunity to be heard in their own defense, and shall be permitted to be advised and represented by persons of their own choosing. This committee shall render its advisory decision to the appropriate administrative officer within 14 working days after the hearing. The President of the University is the appropriate administrative officer to receive the report from the Committee on Faculty Welfare and Privileges. However, if in the judgment of the President, he/she does not believe that he/she can render an impartial, unbiased decision in any case of termination for cause, the President should so state in writing and the most academically senior Vice-President be designated to receive the report and to act in place of the President in this matter. By "academically senior" is meant: 1) senior in academic rank, and 2) if of equal rank then by time in rank at the University of Delaware. Should all Vice-Presidents claim inability to render an impartial, unbiased decision then the receiver of the report shall pass to the ranking academic Dean.

In the case of termination for cause, the burden of proof in the proceedings rests with the party or parties bringing the charge. In the case of proposed termination for moral turpitude, faculty members may be temporarily suspended in the event that their continued presence at the University would constitute a clear and present danger to the health, morals, or safety of members of the University community until the final decision is rendered. Termination for cause

¹⁰-----
Formerly "his."

shall become effective after one year's notice of the final decision to terminate; however, the effective date for termination involving gross irresponsibility or moral turpitude may be immediate.

- I. Such items as may come before the Senate. (No motion introduced at this time may be acted upon until the next meeting of the Senate.)

rg

Attachments: Committee Activities Report

1. Curricula revisions of the Undergraduate Programs in Chemical Engineering
2. Resolution approved by the University Faculty Senate on May 6, 1985
3. Honors Degree Program in Economics (B.A. in College of Arts and Science, and B.S. in College of Business and Economics)
4. Doctor of Education Degree (Ed.D.)
5. New major leading to the B.S. degree in Biological Science with a concentration in Biotechnology
6. Bachelor of Applied Sciences Degree with a major in Engineering Technology and Technical Management
7. New Undergraduate Admissions Standards
8. Revised draft of the Amorous Relationship Policy
9. Proposal to the Faculty Handbook on Terminations and Nonrenewals

COMMITTEE ACTIVITIES REPORT

ACADEMIC COMPLAINTS, UNIVERSITY REVIEW COMMITTEE FOR (William Nichol)

No items before the Committee.

BEVERAGE ALCOHOL, COMMITTEE TO REGULATE THE USE OF (James Fischer)

No items before the Committee.

COMMITTEES, COMMITTEE ON (Anna DeHaven)

1. Filling vacancies on standing committees.
2. Reviewing committee charges of standing committees.

EDUCATION, COORDINATING COMMITTEE ON (J. Steve Crawford)

No items before the Committee.

EDUCATIONAL INNOVATION AND PLANNING, COMMITTEE ON (Gary Laverty)

No items before the Committee.

PHYSICAL PLANNING AND UTILIZATION, COMMITTEE ON (Kenneth Lomax)

Discussing smoking areas policy.

PROMOTIONS AND TENURE, COMMITTEE ON (Jon H. Olson)

1. Reviewing field study as a component of teaching.
2. Reviewing report of the President's Commission on Undergraduate Education with respect to promotion and tenure.

UNDERGRADUATE ADMISSIONS AND STANDING, COMMITTEE ON (Anne Clark)

Discussing undergraduate admissions standards.

UNDERGRADUATE STUDIES, COMMITTEE ON (Charles Marler)

1. Discussing Drop/Add policies and their implementation (nearing completion).
2. Discussing plus/minus grading system recommendation.
3. Discussing multicultural course requirement.
4. Discussing amorous relationship policy.
5. Discussing report of the President's Commission on Undergraduate Education.

VISITING SCHOLARS AND SPEAKERS SUBCOMMITTEE (Frank Dilley)

Funds committed. Seeking additional funding from Committee on Cultural Activities and Public Events.



UNIVERSITY OF DELAWARE INTER-DEPARTMENTAL

Memorandum



February 3, 1987

TO: Charles Marler
Committee on Undergraduate Studies

FROM: T.W.F. Russell
Chair, Chemical Engineering

SUBJECT: **MODIFICATION OF THE REQUIREMENTS FOR THE
CHEMICAL ENGINEERING UNDERGRADUATE PROGRAM**

The Chemical Engineering Department has revised the undergraduate curricula to meet the needs of changing technology and to meet the revised standards of ABET (Accreditation Board of Engineering and Technology). Although these revisions are mandated, they represent minor modifications from present practice.

The "Policies" catalog lists three curricula for chemical engineers, Bachelor of Chemical Engineering (pg. 145-146), Chemical Engineering Curriculum - Master's-Bachelor's Program (pg. 146-148), and the Arts and Science - Engineering Curriculum: Chemical Engineering (pg. 163-164). The last two are derivatives of the first, and consequently the first will be described in detail and the latter two in less.

The bachelors program is described in conventional time sequence (the form used by the undergraduates and the faculty) in Table 1. The checkout form consistent with this curriculum is shown in Table 2, and Table 3 gives the "markup" of the entry forms for the curriculum.

The chemical engineering curriculum has four classes of courses, a) required fundamentals courses in mathematics, science and engineering; b) required chemical engineering courses; c) technical electives; and d) the general education program. The revisions to these groups are as follows:

A. Required Fundamentals Courses

Add:	B207	Introduction to Biology	4 CCH
	C332	Organic Chemistry (second course)	3 CCH
	CIS106	General Computer Science for Engineers	3 CCH
	MET302	Material Science for Engineers	4 CCH



Change: C333(2) to C332(1)

Remove: C445(1) and C446(1)

Net Change

+11 CCH

Rationale: The additions of B207, C332 and M302 represent the conversion of current technical electives into required courses. These changes are made in response to alterations in the emphasis of chemical engineering. The addition of CIS106 is made to insure that all Freshmen have all adequate and consistent introduction to use of computers. The reduction and deletions are made to keep the total program within reasonable bounds.

B. Required Chemical Engineering Courses

Add:	ChE009	Chemical Engineering	0 CCH(P/F)
		Freshman Seminar	
	ChE112	Introduction to Chemical Engineering	3 CCH
	ChE401	Chemical Process Dynamics and Control	3 CCH

Remove:	EG125	Introduction to Engineering	3 CCH
	ChE230	Introduction to Chemical Analysis	3 CCH

Net Change

0 CCH

Rationale: ChE009, a non-credit but required seminar, is a first-term qualitative introduction to the program. The course is intended to help freshmen understand the profession and to begin to feel a part of the department. ChE401 represents the conversion of a technical elective to a required course to meet ABET standards. ChE112 (and CIS106) represent a revision of the EG125-ChE230 sequence to give greater emphasis to computation and to consolidate the introduction to chemical engineering models.

C. Technical Electives

Add:	Technical Electives	6 CCH
	Chemical Engineering Electives	9 CCH

Remove:	Technical Electives Group II)	
	(sophomore)	13 CCH
	Technical Electives Group III)	
	(junior)	
	Technical Electives Group IV	12 CCH
	(senior)	
	Net Change	-10 CCH

Rationale: Technical Electives Groups II and III have been redistributed into required fundamentals courses and six CCH of Technical Electives. The four courses in Group IV have been reassigned into one required course, ChE401, and three Chemical Engineering Electives. These changes give greater focus and vigor to the technical elective program.

D. General Education Program

There is no change in the "non-engineering" portion of the curriculum. Consistent with ABET majors must define a coherent act of courses and are required to advance beyond the introductory level in a portion of them; this requirement is satisfied (minimally) by the "mini-minor".

Net Change	0 CCH
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Summary: The net change of this program is to shift one chemical engineering required course to a required fundamentals course with an increase of one CCH in the minimum total required for graduation.

Consistent with the revisions of the curriculum for chemical engineering majors, Tables 4 and 5 "mark up" the curricula for the MS-BChE and AS-BChE programs. In passing one should note that these programs are so demanding that few students are able to complete them. Consequently they are almost special advisement by exception. The department is eager to provide any additional information you may wish.

JO/jmm

cc: R. Byron Pipes, Dean
College of Engineering
David M. Robinson, Educational Activities Committee
College of Engineering
Jon H. Olson

Table 1

CHEMICAL ENGINEERING CURRICULUM

<u>First Term</u>	<u>Credits</u>	<u>Second Term</u>	<u>Credits</u>
<u>Freshman Year</u>			
C111. General Chemistry	3	C112. General Chemistry	3
C119. Quantitative Chemistry I	2	C120. Quantitative Chemistry	3
ChE009. Freshman Seminar (P/F)	0	ChE112. Intro. to Chemical Engineering	3
CIS106*. General Comp. Sci. for Engrs.	3	M242. Analytical Geometry & Calculus B	4
E110. Critical Reading and Writing	3	PS207. General Physics	4
M241. Analytical Geometry & Calculus A	4		17
	15		
<u>Sophomore Year</u>			
C443. Physical Chemistry	3	B207*. Introductory Biology	4
ChE231. Thermodynamics I	3	C444. Physical Chemistry	3
M243. Analytical Geometry & Calculus C	4	ChE325. Thermodynamics II	3
PS208. General Physics	4	M302. Ord. Differential Equations	3
General Education Program 2	3	General Education Program 3	3
	17		16
<u>Junior Year</u>			
C331. Organic Chemistry	3	C332. Organic Chemistry	3
C333. Organic Chemistry Lab	1	ChE332. Chemical Engineering Kinetics	3
ChE341. Fluid Mechanics	3	ChE342. Heat & Mass Transfer	3
MET302*. Material Science for Engrs.	4	ChE345. Chemical Engineering Lab 1	3
General Education Program 4	3	Technical Elective 1	3
General Education Program 5	3	General Education Program 6	3
	17		18
<u>Senior Year</u>			
ChE443. Transfer Operations	3	ChE401. Chemical Process Dynamics	3
ChE445. Chemical Engineering Lab II	3	ChE432. Chemical Process Analysis	3
Technical Elective 2	3	Chemical Engineering Elective 2	3
Chemical Engineering Elective 1	3	Chemical Engineering Elective 3	3
General Education Program 7	3	General Education Program 8	3
	15		15

Minimum credits to graduate = 130

* Section for Chemical Engineers planned

Table 2

CHEMICAL ENGINEERING SENIOR CHECKOUT FORM

Class of 1990

(Entering Fall 1987 (88A))

B 207	Introductory Biology I	4	---
C 111	General Chemistry	3	---
C 112	General Chemistry	3	---
C 119	Quantitative Chemistry I	2	---
C 120	Quantitative Chemistry II	3	---
C 331	Organic Chemistry	3	---
C 333	Organic Chemistry Lab	1	---
C 332	Organic Chemistry	3	---
C 443	Physical Chemistry	3	---
C 444	Physical Chemistry (P/F)	3	---
CHE 009	Freshman Seminar (P/F)	0	---
CHE 112	Intro. to Chem. Engr.	3	---
CHE 231	Chem. Engr. Thermo. I	3	---
CHE 325	Chem. Engr. Thermo. II	3	---
CHE 332	Chem. Engr. Kinetics	3	---
CHE 341	Fluid Mechanics	3	---
CHE 401	Chem. Process Dynamics	3	---
CHE 342	Heat & Mass Transfer	3	---
CHE 345	Chem. Engineering Lab I	3	---
CHE 443	Transfer Operations	3	---
CHE 445	Chem. Engineering Lab II	3	---
CHE 432	Chem. Process Analysis	3	---
CIS 106	Gen. Comp. Sci. for Engr.	3	---
M 241	Analytic Geom. & Calc. A	4	---
M 242	Analytic Geom. & Calc. B	4	---
M 243	Analytic Geom. & Calc. C	4	---
M 302	Ord. Diff. Equations I	3	---
MET 302	Material Sci. for Engr.	4	---
PS 207	General Physics	4	---
PS 208	General Physics	4	---

Chemical Engineering Technical Electives:

Three Chemical Engineering courses at the 460 level or above, U-401-402, and materials courses at the 400-level and above.

---	---	3	---
---	---	3	---
---	---	3	---

Technincal Electives

A minimum of six credits taken from courses in the following list, normally two courses.

Biology

B 301 (4) Cellular & Molecular Biology
 B 303 (4) Genetic & Evolutionary Biology
 B 305 (4) Cell Biology
 B 306 (4) General Physiology
 B4XX 3-4 With approval of Advisor

Chemistry

C 334 Organic Chemistry majors Lab II 2
 C 457 Inorganic Chemistry 3
 C 527 Introductory Biochemistry 3
 6XX and 8XX With approval of Advisor

Computer Science

CIS 300 Introduction to Scientific Computation

Mathematics

M 349 Elements of Linear Systems
 M 389 Discrete Mathematics
 M 426 Introduction to Numerical Analysis and Algorithmic Computation
 M 427 Approximation Theory
 M 428 Algorithmic & Numerical Solution to Differential Equations
 M 5XX With approval of Advisor
 M 6XX With approval of Advisor

Mechanical Engineering Applied Mathematics

MAE 361 Applied Engineering Analysis
 MAE 863, MAE 864 Engineering Analysis

Physics

PS 419, 420 Analytical Mechanics
 PS 6XX With approval of Advisor

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING
 MAJOR: CHEMICAL ENGINEERING (CHE)

<u>SUGGESTED CURRICULUM</u>	<u>CREDITS</u>	<u>TYPICAL FRESHMAN COMPLETES</u>	<u>TYPICAL SOPHOMORE COMPLETES</u>	<u>TYPICAL JUNIOR COMPLETES</u>	<u>TYPICAL SENIOR COMPLETES</u>
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UNIVERSITY REQUIREMENTS

E 110 Critical Reading and Writing

3

F
X(X)

COLLEGE REQUIREMENTS

Mathematics

M 241 Analytic Geometry and Calculus A
 M 242 Analytic Geometry and Calculus B
 M 243 Analytic Geometry and Calculus C
 M 302 Ordinary Differential Equations I

4

X(F)

4

X(S)

4

X(F)

3

X(S)

Physics

PS 207 General Physics
 PS 208 General Physics

4

X(S)

4

X(F)

General Education Program

21

~~X(F)~~

X(F,S)

~~X(F,S)~~
X(F,F,S)

X(F,S)

Mini-Minor (see below)

Group 1. Humanities: Six credits from Art History, History, Language courses at the 200-level or above, Literature (excluding writing skills courses such as E 110 and E 410) and Philosophy (except PHL 100, 105 and 205, which fall into Group 4).

Group 2. Social Science: Six credits from Anthropology, Political Science, Psychology and Sociology.

Group 3. Liberal Arts and Economics: Three credits in Economics or in the College of Arts and Science other than in Mathematics, Science or Military Science. Language courses may be included in this group if the student furnishes the Dean's Office with written permission from the adviser indicating that these courses are not repetitious.

Mini-Minor

Students are required to define a unified set of general education courses (three minimum) at least one of which is at an advanced level. The mini-minor selection must be approved by the advisor.

Statistics

ST 450 Statistics for Eng'r. and Phy.Sci.
ST 6XX with approval of Advisor

Electronic Materials

(Please note prerequisites)

EE 314 Electronics & Instrumentation
EE 340 Solid State Electronics
EE 4XX Solid State Fabrication Laboratory
EE 623, 624 Electrical Properties of Matter
EE 626 Integrated Circuits
EE 629 Switching & Finite Automatic Theory

Polymeric Materials

MAE 410 Experimental Mechanics for Composite
Materials (prereq. MAE 213)
MAE 415 Structural Analysis Using Finite
Element Method

3-4 | ---
3-4 | ---

General Education Program:

Student should define a unified three-course
"mini-minor" with at least one course at the
advanced level.

Category #1. Humanities

3 | ---
3 | ---

Category #2. Social Science

3 | ---
3 | ---

Category #3. Liberal Arts & Economics

E 110 Critical Reading & Writing 3 | ---

3 | ---

Category #4 Gen., includ. skill courses

3 | ---
3 | ---

MINIMUM TOTAL CREDIT HOURS = 130

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING
 MAJOR: CHEMICAL ENGINEERING (CHE)

SUGGESTED CURRICULUM	CREDITS	TYPICAL FRESHMAN COMPLETES	TYPICAL SOPHOMORE COMPLETES	TYPICAL JUNIOR COMPLETES	TYPICAL SENIOR COMPLETES
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Group 4. General Studies: Six credits outside the College of Engineering and not in Mathematics or Science, with the following restrictions:

- No more than two credits in Physical Education.
- No more than four credits in Military Science or Air Force.
- No more than three credits in Winter Session nontraditional courses.

The following courses also apply to Group 4: CJ 110, English writing skills courses such as E 410, PHL 100 and PHL 105, ~~PHL 100~~ and courses cross-listed in the College of Physical Education. The faculty adviser should be consulted for classification of courses under general education.

Arts and Science "Group D" courses can be used to satisfy the general education program

Pass/Fail Option: To encourage engineering students to take general education courses at an upperclass (300 and above) level, students may take these advanced courses under the pass/fail option.

MAJOR REQUIREMENTS

Biology

0 207 Introductory Biology

Chemistry

C 111* General Chemistry
 C 119 Quantitative Chemistry I
 C 112 General Chemistry
 C 120 Quantitative Chemistry II
 C 443 Physical Chemistry
~~C 445 Physical Chemistry Laboratory~~
 C 444 Physical Chemistry
~~C 446 Physical Chemistry Laboratory~~
 C 331 Organic Chemistry
 C 333 Organic Chemistry Laboratory I
 C 332 Organic Chemistry

External to the College

4			X(S)
3	X(F)		
2	X(F)		
3	X(S)		
3	X(S)		
3		X(F)	
1		X(F)	
3		X(S)	
1		X(S)	
3			X(F)
2			X(F)
3			X(S)

Within the College

~~EE 125 Introduction to Engineering (CHE)~~ 3 X(F)

Computer and Information Science

CIS 106 General Computer Science for Engineers. 3 X(F)

Within the College

MET 302 Material Science for Engineers 4 X(F)

COLLEGE: ENGINEERING
DEPARTMENT: CHEMICAL ENGINEERING
DEGREE: BACHELOR OF CHEMICAL ENGINEERING
MAJOR: CHEMICAL ENGINEERING (CHE)

<u>SUGGESTED CURRICULUM</u>	<u>CREDITS</u>	<u>TYPICAL FRESHMAN COMPLETES</u>	<u>TYPICAL SOPHOMORE COMPLETES</u>	<u>TYPICAL JUNIOR COMPLETES</u>	<u>TYPICAL SENIOR COMPLETES</u>
CHE 009 Chemical Engineering Freshman Seminar	0	X(F)			
CHE 112 Introduction to Chemical Engineering	3	X(S)			
CHE 230 Introduction to Chemical Engineering Analysis	3		X(F)		
CHE 231 Chemical Engineering Thermodynamics	3		X(S) X(F)		
CHE 325 Chemical Engineering Thermodynamics	3		X(S)	X(F)	
CHE 341 Fluid Mechanics	3			X(F)	
CHE 332 Chemical Engineering Kinetics	3			X(S)	
CHE 345 Chemical Engineering Laboratory I	3			X(S)	
CHE 342 Heat and Mass Transfer	3			X(S)	
CHE 443 Mass Transfer Operations	3				X(F)
CHE 445 Chemical Engineering Laboratory II	3				X(F)
CHE 432 Chemical Process Analysis	3				X(S)
CHE 401 Chemical Process Dynamics	3				X(S)
<u>Technical Electives</u>					
<u>Technical Electives</u>					
Category II	6-8		X(S)	X(S) X(F)	X(F)
B 207 Introductory Biology I	4				
B 208 Introductory Biology II	4				
CE 311 Dynamics	3				
CIS 300 Introduction to Scientific Computation	3				
EE 314 Electronics and Instrumentation	4				
GEO 234 Earth Resources and Ecology	3				
M 349 Elements of Linear Systems	3				
MAE 361 Applied Engineering Analysis	3				
PS 209 General Physics	3				
ST 450 Statistics for the Engineering and Physical Sciences	3				

see next sheet

<u>Technical Electives</u>	<u>Credits</u> 6	<u>Typical Junior Completes</u> X(S)	<u>Typical Senior Completes</u> X(F)
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The purpose of the technical electives is to advance the scientific or engineering background of the chemical engineers at the intermediate (300-400) level. The technical electives program is a minimum of six credits taken from courses in the following list, normally two courses. Students should select their technical electives in the spring of sophomore year to avoid scheduling conflicts. Students should formulate an academic plan for their technical and chemical engineering electives with the assistance of their academic advisor.

Biology

B301 (4) Cellulare & Molecular Biology
B303 (4) Genetic & Envolutionary Biology
B305 (4) Cell Biology
B306 (4) General Physiology
B4XX (3-4) with approval of Advisor

Chemistry

C334 Organic Chemistry majors Lab II 2
C457 Inorganic Chemistry 3
C527 Introductory Biochemistry 3
6XX and 8XX with approval of Advisor

Computer Sciences

CIS300 Introduction to Scientific Computation

Mathematics

M349 Elements of Linear Systems
M389 Discrete Mathematics
M426 Introduction to Numerical Analysis and Algorithmic Computation
M427 Approximation Theory
M428 Algorithmic & Numerical Solution to Differential Equations
M5XX with approval of Advisor
M6XX with approval of Advisor

Mechanical Engineering Applied Mathematics

MAE361 Applied Engineering Analysis
MAE863, MAE864 Engineering Analysis

Physics

PS419, 420 Analytical Mechanics
PS6XX with approval of Advisor

Statistics

ST450 Statistics for Engr. & Physical Sci.
ST6XX with approval of Advisor

Electronic Materials (Please note prerequisites)

EE314 Electronics & Instrumentations
 EE340 Solid State Electronics
 EE4XX Solid State Fabrication Laboratory
 EE623, 624 Electrical Properties of Matter
 EE626 Integrated Circuits
 EE629 Switching & Finite Automatic Theory

Polymeric Materials

MAE410 Experimental Mechanics for Composite Materials (prereq. MAE213)
 MAE415 Structural Analysis Using Finite Element Method

	<u>Credits</u>	<u>Completes</u> Typical Senior
<u>Chemical Engineering Electives</u>	9	X(F), X(S, S)

The curriculum provides three chemical engineering technical electives in the senior year. These courses are intended to provide some flexibility in selecting a chemical engineering program at the advanced level. Students should decide with the assistance of their advisor if they should conduct a program of independent research and then choose their course elective(s).

Chemical engineering technical electives are defined as follows:

Any Chemical Engineering course numbered between 470 and 499; any 400- or higher-level Materials and Metallurgy course; U401-U402 Senior Thesis; any 600- or 800-level course in Chemical Engineering. Courses at the 600- and 800-level are graduate courses open, with the consent of the instructor, to advanced students in senior standing.

Concentrations

The technical electives and the chemical engineering electives can be coupled to provide a more intense concentration in an area of interest. The groupings below are some examples of this approach.

Applied Mathematics

M426	Junior	Spring
M389	Senior	Fall
ChE827	Senior	Spring

Biology

B301	Junior	Spring
C527	Senior	Fall
ChE620	Senior	Spring

Chemistry

C457	Junior	Spring
C527	Senior	Fall
ChE606	Senior	Spring
(Introduction to Catalysis)		
ChE610	Senior	Spring
(Industrial & Engineering Chemistry)		
ChE836	Senior	Fall

Electronic Materials

EE314	Junior	Fall
EE340	Junior	Spring
EE4XX	Senior	Fall
(Solid State Fabrication Laboratory)		
ChE667 (Solid State Device Fabrication)		

Polymeric Materials

MEC213	Junior	Winter (extra course)
MAE415	Senior	Fall
MAE410	Senior	Winter
ChE601 or 603	Senior	Fall
ChE602 or 604	Senior	Spring

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING
 MAJOR: CHEMICAL ENGINEERING (CHE)

<u>SUGGESTED CURRICULUM</u>	<u>CREDITS</u>	<u>TYPICAL FRESHMAN COMPLETES</u>	<u>TYPICAL SOPHOMORE COMPLETES</u>	<u>TYPICAL JUNIOR COMPLETES</u>	<u>TYPICAL SENIOR COMPLETES</u>
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Technical Electives

#	Category III	6-8
B 301	Cellular and Molecular Biology	4
C 332	Organic Chemistry	3
C 334	Organic Chemistry Majors Laboratory II	2
C 437	Instrumental Methods	3
C 438	Instrumental Methods Laboratory	1
C 457	Inorganic Chemistry	3
C 458	Inorganic Chemistry Laboratory I	1
NEI 302+	Material Science for Engineers	4

X(S)

X(F)

*Chemical Engineering*Technical ElectivesCategory IV

Any Chemical Engineering course numbered between 470 and 499, ~~any 501~~; any 400- or higher-level Materials and Metallurgy course; any 600- or 800-level course in Chemical Engineering. Courses at the 600- and 800-level are graduate courses open, with the consent of the instructor, to advanced students in senior standing.

12 3 9

X(F,S,S,X)

U401-U402 Senior Thesis;

CREDITS TO TOTAL A MINIMUM OF

129 130

(F) = FALL SEMESTER

(S) = SPRING SEMESTER

*Students may enter Chemical Engineering after completing the eight credit freshman Chemistry sequence, C103-104. However, an additional three credit Chemistry course will be required.

~~*Students are required to take at least one laboratory course in the four major courses in Technical Electives Categories II and III. Some of the laboratory courses carry separate numbers.~~

~~This course forms an important foundation for an understanding of the solid state and is a prerequisite for the Materials and Metallurgy option.~~

Note: The technical elective program is under constant review by the faculty. An updated list is available in the department office. Students should check with their advisers before selecting courses and should be aware that a formal mechanism exists to provide additional flexibility in selection of their Technical Elective courses.

Students should select their technical electives during the spring of sophomore year to avoid scheduling conflicts. The technical electives may be coupled with the chemical engineering technical electives to obtain a technical concentration.

COLLEGE: ARTS AND SCIENCE - ENGINEERING
 DEPARTMENT: DEPENDENT UPON AREA OF CONCENTRATION - CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF ARTS OR BACHELOR OF SCIENCE - BACHELOR OF CHEMICAL ENGINEERING
 MAJOR: NONE REQUIRED - CHEMICAL ENGINEERING (LAC)

SUGGESTED CURRICULUM	CREDITS	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR
		STUDENT COMPLETES	STUDENT COMPLETES	STUDENT COMPLETES	STUDENT COMPLETES	STUDENT COMPLETES

UNIVERSITY REQUIREMENTS

E 110 Critical Reading and Writing 3 X(S)

AS-COLLEGE REQUIREMENTS

Skill Requirements

Writing: A writing course involving significant writing experience including two papers with a combined minimum of 3,000 words which are to be submitted for extended faculty critique of both composition and content. 3

Foreign Language: Completion of the intermediate-level course in a given language (112) or satisfactory performance on a placement test in the language of the student's choice. 0-12

Breadth Requirements

Group A. Understanding and appreciation of the creative arts and humanities. Twelve credits representing at least two departments. 12

Group B. The study of culture and institutions over time. Twelve credits representing at least two departments. 12

Group C. Empirically based study of human beings and their environment. Twelve credits representing at least two departments. 12

NOTE: The above groups differ from General Education groups of the College of Engineering. This requires the student to make careful course selection in order to have courses that satisfy both curricula simultaneously.

COLLEGE: ARTS AND SCIENCE - ENGINEERING
 DEPARTMENT: DEPENDENT UPON AREA OF CONCENTRATION - CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF ARTS OR BACHELOR OF SCIENCE - BACHELOR OF CHEMICAL ENGINEERING
 MAJOR: NONE REQUIRED - CHEMICAL ENGINEERING (LAC)

SUGGESTED CURRICULUM	CREDITS	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR
		STUDENT COMPLETES	STUDENT COMPLETES	STUDENT COMPLETES	STUDENT COMPLETES	STUDENT COMPLETES

AS-AREA OF
CONCENTRATION REQUIREMENTS

Area of Concentration:

15

Fifteen credits of Arts and Science electives to be used for acquiring some depth of knowledge in a field chosen by the student in consultation with an Arts and Science adviser.

ARTS-SCIENCE COURSES COMPLETED

X(F,S,S) X(F,S,S) X(F,F,S,S) X(F,F,S,S) X(F,F,S,S)
~~X(F,S)~~ ~~X(F,S)~~ ~~X(F,S)~~ ~~X(F,S)~~ ~~X(F,S)~~

The liberal arts component is listed as 51 credit hours. The absolute minimum required to satisfy the requirements listed above is 45; this assumes that the foreign language requirement is satisfied from high school work, the writing course is in one of the Groups A, B, or C, and that nine credits of the Area of Concentration are also from one of the Groups A, B, or C. Thus, students without language skills and concentrating in science or mathematics will need more than 51 credit hours to complete all of these requirements.

EG-COLLEGE REQUIREMENTS

Mathematics

M 241	Analytic Geometry and Calculus A	4	X(F)	
M 242	Analytic Geometry and Calculus B	4	X(S)	
M 243	Analytic Geometry and Calculus C	4		X(F)
M 302	Ordinary Differential Equations	3		X(S)

Physics

PS 207	General Physics	4		X(F)
PS 208	General Physics	4		X(S)

EG-MAJOR REQUIREMENTS

Biology

B 207 Introduction to Biology I

Chemistry

C 111*	General Chemistry	3	X(F)	
C 119	Quantitative Chemistry I	2	X(F)	
C 112	General Chemistry	3	X(S)	

Computer Science

C 106	Gen. Comp. Sci for Engrs	3	X(F)	
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External to the College

X(F)

COLLEGE: ARTS AND SCIENCE - ENGINEERING
 DEPARTMENT: DEPENDENT UPON AREA OF CONCENTRATION - CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF ARTS OR BACHELOR OF SCIENCE - BACHELOR OF CHEMICAL ENGINEERING
 MAJOR: NONE REQUIRED - CHEMICAL ENGINEERING (LAC)

SUGGESTED CURRICULUM		CREDITS	1ST YEAR STUDENT COMPLETES	2ND YEAR STUDENT COMPLETES	3RD YEAR STUDENT COMPLETES	4TH YEAR STUDENT COMPLETES	5TH YEAR STUDENT COMPLETES
C	120 Quantitative Chemistry II	3	X(S)				
C	443 Physical Chemistry	3		X(F)	X(F)		
C	445 Physical Chemistry Laboratory	1		X(F)			
C	444 Physical Chemistry	3		X(S)	X(S)		
C	446 Physical Chemistry Laboratory	1		X(S)			
C	331 Organic Chemistry	3		X(F)	X(F)		
C	333 Organic Chemistry Laboratory I	2		X(F)	X(F)		
C	332 Organic Chemistry			X(S)			

Within the College

~~EG 125 Introduction to Engineering (CHE)~~ 3 X(F) X(F)
~~MET 302 Material Science for Engineers~~

		CREDITS	1ST YEAR STUDENT COMPLETES	2ND YEAR STUDENT COMPLETES	3RD YEAR STUDENT COMPLETES	4TH YEAR STUDENT COMPLETES	5TH YEAR STUDENT COMPLETES
<u>Within the Department</u>		0		X(F) X(S)			
CHE 009	Chemical Engineering Seminar						
CHE 113	Intro to Chem Engr.						
CHE 130	Introduction to Chemical Engineering	3		X(F)			
	Analysis			X(S)			
CHE 231	Chemical Engineering Thermodynamics	3			X(F)		
CHE 341	Fluid Mechanics	3			X(F)	X(F)	
CHE 342	Heat and Mass Transfer	3			X(S)	X(S)	
CHE 325	Chemical Engineering Thermodynamics	3			X(S)	X(F)	
CHE 332	Chemical Engineering Kinetics	3				X(S)	
CHE 345	Chemical Engineering Laboratory I	3				X(S)	
CHE 443	Mass Transfer Operations	3					X(F)
CHE 445	Chemical Engineering Laboratory II	3					X(F)
CHE 432	Chemical Process Analysis	3					X(S)

Technical ElectivesTechnical Electives

		CREDITS	1ST YEAR STUDENT COMPLETES	2ND YEAR STUDENT COMPLETES	3RD YEAR STUDENT COMPLETES	4TH YEAR STUDENT COMPLETES	5TH YEAR STUDENT COMPLETES
#Category II		6-8			X(S,S)		
B	207 Introductory Biology I	4					
B	208 Introductory Biology II	4					
CE	311 Dynamics	3					
CIS	300 Introduction to Scientific Computation	3					
EE	314 Electronics and Instrumentation	4					
GEO	234 Earth Resources and Ecology	3					
M	349 Elements of Linear Systems	3					
MAE	361 Applied Engineering Analysis	3					
PS	209 General Physics	3					
ST	450 Statistics for the Engineering and Physical Sciences	3					

<u>Technical Electives</u>	<u>Credits</u> 6	<u>Typical Junior Completes</u> X(S)	<u>Typical Senior Completes</u> X(F)
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The purpose of the technical electives is to advance the scientific or engineering background of the chemical engineers at the intermediate (300-400) level. The technical electives program is a minimum of six credits taken from courses in the following list, normally two courses. Students should select their technical electives in the spring of sophomore year to avoid scheduling conflicts. Students should formulate an academic plan for their technical and chemical engineering electives with the assistance of their academic advisor.

Biology

B301 (4) Cellulare & Molecular Biology
 B303 (4) Genetic & Envolutionary Biology
 B305 (4) Cell Biology
 B306 (4) General Physiology
 B4XX (3-4) with approval of Advisor

Chemistry

C334 Organic Chemistry majors Lab II 2
 C457 Inorganic Chemistry 3
 C527 Introductory Biochemistry 3
 6XX and 8XX with approval of Advisor

Computer Sciences

CIS300 Introduction to Scientific Computation

Mathematics

M349 Elements of Linear Systems
 M389 Discrete Mathematics
 M426 Introduction to Numerical Analysis and Algorithmic Computation
 M427 Approximation Theory
 M428 Algorithmic & Numerical Solution to Differential Equations
 M5XX with approval of Advisor
 M6XX with approval of Advisor

Mechanical Engineering Applied Mathematics

MAE361 Applied Engineering Analysis
 MAE863, MAE864 Engineering Analysis

Physics

PS419, 420 Analytical Mechanics
 PS6XX with approval of Advisor

Statistics

ST450 Statistics for Engr. & Physical Sci.
 ST6XX with approval of Advisor

Electronic Materials (Please note prerequisites)

EE314 Electronics & Instrumentations
 EE340 Solid State Electronics
 EE4XX Solid State Fabrication Laboratory
 EE623, 624 Electrical Properties of Matter
 EE626 Integrated Circuits
 EE629 Switching & Finite Automatic Theory

Polymeric Materials

MAE410 Experimental Mechanics for Composite Materials (prereq. MAE213)
 MAE415 Structural Analysis Using Finite Element Method

	<u>Credits</u>	<u>Completes</u> Typical Senior
<u>Chemical Engineering Electives</u>	9	X(F).X(S,S)

The curriculum provides three chemical engineering technical electives in the senior year. These courses are intended to provide some flexibility in selecting a chemical engineering program at the advanced level. Students should decide with the assistance of their advisor if they should conduct a program of independent research and then choose their course elective(s).

Chemical engineering technical electives are defined as follows:

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Concentrations

The technical electives and the chemical engineering electives can be coupled to provide a more intense concentration in an area of interest. The groupings below are some examples of this approach.

Applied Mathematics

M426	Junior	Spring
M389	Senior	Fall
ChE827	Senior	Spring

Biology

B301	Junior	Spring
C527	Senior	Fall
ChE620	Senior	Spring

Chemistry

C457	Junior	Spring
C527	Senior	Fall
ChE606	Senior	Spring
(Introduction to Catalysis)		
ChE610	Senior	Spring
(Industrial & Engineering Chemistry)		
ChE836	Senior	Fall

Electronic Materials

EE314	Junior	Fall
EE340	Junior	Spring
EE4XX	Senior	Fall
(Solid State Fabrication Laboratory)		
ChE667 (Solid State Device Fabrication)		

Polymeric Materials

MEC213	Junior	Winter (extra course)
MAE415	Senior	Fall
MAE410	Senior	Winter
ChE601 or 603	Senior	Fall
ChE602 or 604	Senior	Spring

COLLEGE: ARTS AND SCIENCE - ENGINEERING
DEPARTMENT: DEPENDENT UPON AREA OF CONCENTRATION - CHEMICAL ENGINEERING
DEGREE: BACHELOR OF ARTS OR BACHELOR OF SCIENCE - BACHELOR OF CHEMICAL ENGINEERING
MAJOR: NONE REQUIRED - CHEMICAL ENGINEERING (LAC)

<u>SUGGESTED CURRICULUM</u>	<u>CREDITS</u>	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR
		STUDENT <u>COMPLETES</u>	STUDENT <u>COMPLETES</u>	STUDENT <u>COMPLETES</u>	STUDENT <u>COMPLETES</u>	STUDENT <u>COMPLETES</u>
<hr/>						
<u>Technical Electives</u>						
#Category III	6-8				X(F,F)	
C 332 Organic Chemistry	3					
C 334 Organic Chemistry Majors Laboratory II	2					
C 437 Instrumental Methods	3					
C 438 Instrumental Methods Laboratory	1					
C 457 Inorganic Chemistry	3					
C 458 Inorganic Chemistry Laboratory I	1					
NET 302+ Material Science for Engineers	4					

Technical Electives
 Category IV
 Any Chemical Engineering course numbered between 470 and 499, or CHE 401; any 400 or higher level Materials and Metallurgy course; any 600- or 800-level course in Chemical Engineering. Courses at the 600 and 800-level are graduate courses open, with the consent of the instructor, to advanced students in senior standing.

- see insert -
CREDITS TO TOTAL A MINIMUM OF 160 158
(F) = FALL SEMESTER (S) = SPRING SEMESTER

*Students may enter Chemical Engineering after completing the eight credit freshman Chemistry sequence, C103-104. However, an additional three credit Chemistry course will be required.

~~#Students are required to take at least one laboratory course in the four major courses in technical electives categories II and III. Some of the laboratory courses carry separate numbers. Category II and III technical electives may be taken concurrently.~~

~~This course forms an important foundation for an understanding of the solid state and is a prerequisite for the Materials and Metallurgy option.~~

Note: The technical elective program is under constant review by the faculty. An updated list is available in the department office. Students should check with their advisers before selecting courses and should be aware that a formal mechanism exists to provide additional flexibility in selection of their Technical Elective courses.

AS-CHE Sample

C111	3
C119	2
C15 106	3
M241	4
AS 1	<u>3</u>
	15

C112	3
C120	3
M242	4
E110	3
AS 2	<u>3</u>
	16

C331	3
C333	1
CHE 009	0
M243	4
D5207	4
AS 3	<u>3</u>
	15

C332	3
CHE 112	3
M302	3
D5208	4
AS 4,5	<u>6</u>
	19

B207	4
C443	3
CHE231	3
AS 6,7	<u>6</u>
	16

C444	3
CHE325	3
AS 8,9,10	9
	<u>15</u>

CHE341	3
MET302	4
TE 1	3
AS 11,12	<u>6</u>
	16

CHE 332	3
CHE 342	3
CHE 345	3
TE 2	3
AS 13	<u>3</u>
	15

CHE 442	3
CHE 445	3
CHE TE 1	3
AS 14-16	<u>6</u>
	18

CHE 401	3
CHE 432	3
CHE TE 2,3	6
AS 17	<u>3</u>
	15

Assumes

foreign language satisfied at entrance
second writing course in A,B,C distribution
15 CCH concentration above distribution

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF CHEMICAL ENGINEERING*
 MAJOR: CHEMICAL ENGINEERING (CHE)

SUGGESTED CURRICULUM	CREDITS	TYPICAL FRESHMAN COMPLETES	TYPICAL SOPHOMORE COMPLETES	TYPICAL JUNIOR COMPLETES	TYPICAL SENIOR COMPLETES
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COLLEGE REQUIREMENTS

Mathematics

M 243 Analytic Geometry and Calculus C	4	X(F)			
M 302 Ordinary Differential Equations I	3	X(S)			

Physics

PS 208 General Physics	4	X(F)			
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General Education Program

18	X(F,S)	X(F, / ,S)	X(F)	X(F)
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Mini-Minor (see below - insert here)

Group 1. Humanities: Six credits from Art History, History, Language courses at the 200-level or above, Literature (excluding writing skills courses such as E 110 and E 410) and Philosophy (except PHL 100, 105 and 205; which fall into Group 4). *Land*

Group 2. Social Science: Six credits from Anthropology, Political Science, Psychology and Sociology.

Group 3. Liberal Arts and Economics: Three credits in Economics or in the College of Arts and Science other than in Mathematics, Science or Military Science. Language courses may be included in this group if the student furnishes the Dean's Office with written permission from the adviser indicating that these courses are not repetitious.

Three
Group 4. General Studies: ~~Six~~ credits outside the College of Engineering and not in Mathematics or Science, with the following restrictions:

- No more than two credits in Physical Education.
- No more than four credits in Military Science or Air Force.
- No more than three credits in Winter Session nontraditional courses.

The following courses also apply to Group 4: CJ 110, English writing skills courses such as E 410, PHL 100, PHL 105, ~~PHL 205~~ and courses cross-listed in the College of Physical Education. The faculty adviser should be consulted for classification of courses under general education.

Mini-Minor
 Students should select at least three courses in a coherent thematic area and at least one of these courses should be at the 300 level or above.

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF CHEMICAL ENGINEERING*
 MAJOR: CHEMICAL ENGINEERING (CHE)

SUGGESTED CURRICULUM	CREDITS	TYPICAL FRESHMAN COMPLETES	TYPICAL SOPHOMORE COMPLETES	TYPICAL JUNIOR COMPLETES	TYPICAL SENIOR COMPLETES
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Pass/Fail Option: To encourage engineering students to take general education courses at an upperclass (300 and above) level, students may take these advanced courses under the pass/fail option.

MAJOR REQUIREMENTS

Biology

B 207 Introductory Biology I

External to the College 4 X(S)

Chemistry

C 443 Physical Chemistry 3 X(F)
~~C 445 Physical Chemistry Laboratory 1 X(F)~~
 C 444 Physical Chemistry 3 X(S)
~~C 446 Physical Chemistry Laboratory 1 X(S)~~
 C 331 Organic Chemistry 3 X(F)
 C 333 Organic Chemistry Laboratory I 2 1 X(F)
 C 332 Organic Chemistry 3 X(S)

Within the College

MAE 863 Engineering Analysis 3 X(F) ~~X(F)~~
 MAE 864 Engineering Analysis 3 X(S) ~~X(S)~~
 MET 302 Material Science for Engineers 4 X(F)

Within the Department

CHE 009 Freshman Seminar 0 X(F)
~~CHE 112 Introduction to Chemical Engineering 3 X(S)~~
~~CHE 230 Introduction to Chemical Engineering Analysis 3 X(F)~~
 CHE 231 Chemical Engineering Thermodynamics 3 ~~X(S)~~ X(F)
 CHE 325 Chemical Engineering Thermodynamics 3 X(S) X(F)
 CHE 341 Fluid Mechanics 3 X(F)
 CHE 332 Chemical Engineering Kinetics 3 X(S)
 CHE 345 Chemical Engineering Laboratory I 3 X(S)
 CHE 342 Heat and Mass Transfer 3 X(S)
 CHE 443 Mass Transfer Operations 3 X(F)
 CHE 445 Chemical Engineering Laboratory II 3 X(F)
 CHE 825# Chemical Engineering Thermodynamics 3 X(F)
 CHE 432 Chemical Process Analysis 3 X(S)
 CHE 835 Applied Chemical Kinetics 3 X(S)
 CHE 863 Diffusional Operations 3 X(S)
 CHE XXX Graduate Electives 12 X X(S) X(F) X(F,S)
 CHE 830# Fluid Mechanics 3 X(F)
 CHE 869 Master's Thesis 6 X(F,S)

CHE 401 Chemical Process Dynamics and Control 3 X(S)

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF CHEMICAL ENGINEERING*
 MAJOR: CHEMICAL ENGINEERING (CHE)

SUGGESTED CURRICULUM	CREDITS	TYPICAL FRESHMAN COMPLETES	TYPICAL SOPHOMORE COMPLETES	TYPICAL JUNIOR COMPLETES	TYPICAL SENIOR COMPLETES
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Technical ElectivesTechnical Electives

	+Category II	6-8
B 207	Introductory Biology I	4
B 208	Introductory Biology II	4
CE 311	Dynamics	3
CIS 300	Introduction to Scientific Computation	3
EE 314	Electronics and Instrumentation	4
GEO 234	Earth Resources and Ecology	3
M 349	Elements of Linear Systems	3
MAE 361	Applied Engineering Analysis	3
PS 209	General Physics	3
ST 450	Statistics for the Engineering and Physical Sciences	3

X(S,S)

NB

There are no undergraduate technical electives. Remove this section

Technical Electives

	+Category III	6-8
B 301	Cellular and Molecular Biology	4
C 332	Organic Chemistry	3
C 334	Organic Chemistry Majors Laboratory II	2
C 437	Instrumental Methods	3
C 438	Instrumental Methods Laboratory	1
C 457	Inorganic Chemistry	3
C 458	Inorganic Chemistry Laboratory I	1
MET 302	Material Science for Engineers	4

X(S,S)

(F) = FALL SEMESTER

(S) = SPRING SEMESTER

*This curriculum assumes that the following courses have been granted by advanced placement or the equivalent. It is necessary to have 28-30 credits of advanced placement to participate in the program outlined above. The schedule will be adjusted for the accomplishments of the student by the faculty adviser.

AP Chemistry	8 credits
AP Calculus	8 credits
AP Physics	4 credits
AP English	6 credits
AP Computer Science	3 credits

COLLEGE: ENGINEERING
 DEPARTMENT: CHEMICAL ENGINEERING
 DEGREE: BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF CHEMICAL ENGINEERING*
 MAJOR: CHEMICAL ENGINEERING (CHE)

<u>SUGGESTED CURRICULUM</u>	<u>CREDITS</u>	TYPICAL	TYPICAL	TYPICAL	TYPICAL
		FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
		<u>COMPLETES</u>	<u>COMPLETES</u>	<u>COMPLETES</u>	<u>COMPLETES</u>

#Both CHE 825 and CHE 830 are required. The course not taken in the third year is taken in the fourth.

~~Category II and III technical electives also may be taken concurrently in two semesters.~~

~~Note: The technical elective program is under constant review by the faculty. An updated list is available in the department office. Students should check with their advisers before selecting courses and should be aware that a formal mechanism exists to provide additional flexibility in selection of their Technical Elective courses.~~

Table 5 Translation

C443	3
M243	4
P208	4
CHE009	0
CHE281	3
GE 1	<u>3</u>
	17

B207	4
C444	3
M302	3
CHE 112	3
CHE 325	3
GE 2	<u>3</u>
	19

C331	3
C333	1
CHE 341	3
MAE 863	3
MET 302	4
GE 3	<u>3</u>
	17

C332	3
CHE 332	3
CHE 342	3
CHE 345	3
MAE 864	3
GE 4	<u>3</u>
	18

CHE 442	3
CHE 445	3
CHE 830	3
Grad Math TE	3
GE 5	<u>3</u>
	15

CHE 401	3
CHE 432	3
CHE 825	3
CHE 863	3
Grad Math TE	<u>3</u>
	15

CHE 825	3
CHE 869	3
Grad TE	3
GE 6	<u>3</u>
	12

CHE 869	3
Grad TE	3
	<u>6</u>

Key: GE General Education
 Grad TE Technical Elective in Graduate Program
 two approved math courses
 two other approved courses

INPUT ID

CM10
CM9
CM1

CM2

COURSE SEQUENCE NO.

COLG	DEPT	COURSE
0	5	7
0	1	1
1	1	2

X Revision
☐ NEW COURSE

UNIVERSITY OF DELAWARE
-COURSE INVENTORY SYSTEM -
COURSE APPROVAL FORM

PRINTED: _____
VERSION: _____

DEPT.	SYMBOL
ChE	0110

COURSE TITLE (32)
Introduction, Chemical Engineering

GRADE TYPE

0135	L
------	---

L-LETTER
P-PASS/FAIL

CREDIT HOURS (FIXED OR VARIABLE)

0150	FIXED	0	3	0155	VAR. MIN	0156	VAR. MAX
0154	0	3	0155	0	3	0156	0

REPLACES

0350	0	5	7	2	1	2	5
------	---	---	---	---	---	---	---

CROSS LISTED WITH:

0320	COLG	DEPT	COURSE
0321	0	5	7
0322	0	5	7
0323	0	5	7

CONTACT: HOURS

0160	LECT.	0	3	0164	LAB.
0162	0	3	0164	0	3

CONTACT: WEEKS

0170	LECT.	1	3	0174	LAB.
0172	1	3	0174	1	3

OFFICE
USE
ONLY

DATES

APPROVED	INACTIVE
YR. MO.	YR. MO.
0210	0220
0210	0230

CROSS LIST
INDICATOR

Y-YES N-NO
0310

COURSE DESCRIPTION
(45 WORDS OR LESS)

Much of chemical engineering stems from the development of quantitative models for physical systems using a combination of first principles and carefully focused experimental information. This course develops skills in model building using material and energy conservation principles. The course shows the links to experimental data.

This course is a combination of material taught in EGI25, Introduction to Engineering and ChE230, Introduction to Chemical Engineering Analysis.

APPROVALS AND REVIEW:

INSTRUCTOR David Olson DATE 30 Jan 87 COLLEGE DEAN

DEPT COMM SA Michael T. Van DATE 2/4/87 UNDER STUDIES COMM

DEPT CHAIR 217 J. Smith DATE 2/3/87 GRAD STUDIES COMM

COLG COMM _____ DATE _____ PROVOST

UNIVERSITY OF DELAWARE

-COURSE INVENTORY SYSTEM-

COURSE APPROVAL FORM

COURSE SEQUENCE NO

COLG DEPT COURSE

0 5 7 0 1 1 2

X Revision

NEW COURSE

PRINTED:

VERSION:

DEPT. SYMBOL

0110 C h E

COURSE TITLE (32)

Introduction to Chemical Engineering

GRADE TYPE

L-LETTER

P-PASS/FAIL

0135 L

CREDIT HOURS (FIXED OR VARIABLE)

0150

FIXED

0154 0.3

VAR. MIN.

0155

VAR. MAX.

0156

REPLACES

0350

COLG DEPT COURSE

0 5 7 0 2 3 0

CROSS LISTED WITH:

0320

COLG DEPT COURSE

0321

COLG DEPT COURSE

0322

COLG DEPT COURSE

0323

CONTACT: HOURS

0160

LECT.

0162 0 3

LAB

0164

CONTACT: WEEKS

0170

LECT.

0172 1 3

LAB

0174

OFFICE USE ONLY

DATES

APPROVED YR MO

0210

INACTIVE YR MO

0220

TERM EFF.

0230

CROSS LIST INDICATOR

Y-YES

N-NO

0310

COURSE DESCRIPTION

(45 WORDS OR LESS)

Much of chemical engineering stems from the development of quantitative models for physical systems using a combination of first principles and carefully focused experimental information. This course develops skills in model building using material and energy conservation principles. The course shows the links to experimental data.

This course is a combination of material taught in EG125, Introduction to Engineering and CHE 230, Introduction to Chemical Engineering Analysis.

APPROVALS AND REVIEW:

INSTRUCTOR

Jan H. Olson

DATE

30 Jan 97

COLLEGE DEAN

DATE

DEPT COMM

Michael I. Klein

DATE

2/4/87

UNGR STUDIES COMM.

DATE

DEPT CHAIR

THF Jurek

DATE

GRAD STUDIES COMM.

DATE

COLG COMM

PROVOST

DATE

SUPPLEMENT TO COURSE APPROVAL FORM

Course symbol and number: ChE 112

1. Justify the need to initiate, revise or delete this course.

The ChE undergraduate curriculum is being revised to meet changes in national accreditation standards. This course is a coalescence of EG 125, Intro. to Chemical Engineering and ChE 230, Intro. to Chemical Engineering Analysis. These courses were combined to allow inclusion of CISI06, General Computer Science for Engineers as a required first-term course; all engineers must have skills in computer use.

2. Identify and justify any effect on other courses in your department or in another department. Specifically list other department chairpersons and/or faculty consulted and summarize results of discussion.

Dr. Bobby Caviness has agreed to offer a separate section of CISI06 for Chemical Engineers after the program revisions are approved.

3. Identify the main emphasis of the course along with major topics covered. If the proposal is a revision, indicate the nature of the change(s).

This course develops skills in building models for chemical processes. The course emphasized use the principles of conservation of mass and energy with constitutive relations obtained from experiments or by estimation methods.

INPUT ID

CM0
CM9
CM1

CM2

COURSE SEQUENCE NO.

COLG	DEPT	COURSE
05	70	000

☒ NEW COURSE

UNIVERSITY OF DELAWARE
- COURSE INVENTORY SYSTEM -
COURSE APPROVAL FORM

PRINTED:
VERSION:

--

DEPT SYMBOL	COURSE TITLE (32)
0110	Chemical Engineering

0120	0135P
------	-------

GRADE TYPE

L - LETTER
P - PASS/FAIL

CREDIT HOURS (FIXED OR VARIABLE)

0150	0155	0156
0154	0155	0156

REPLACES

0350

CROSS LISTED WITH:

0320	0321	0322	0323
------	------	------	------

CONTACT: HOURS

0160	0162
0170	0172

CONTACT: WEEKS

0170	0172
0173	0174

OFFICE
USE
ONLY

DATES

0210	0220	0230
------	------	------

TERM EFF.

CROSS LIST
INDICATOR

0310

COURSE DESCRIPTION
(45 WORDS OR LESS)

This course answers the question, "What is chemical engineering, and where is the profession going?" through weekly lectures, discussions and demonstrations.

APPROVALS AND REVIEW:

INSTRUCTOR	DATE	30 Jan 97	COLLEGE DEAN	DATE
DEPT COMM	DATE	2/4/97	UNGR STUDIES COMM	DATE
DEPT CHAIR	DATE	2/3/97	GRAD STUDIES COMM	DATE
COLG. COMM	DATE		PROVOST	DATE

SUPPLEMENT TO COURSE APPROVAL FORM

Course symbol and number: ChE 009 zero credits

1. Justify the need to initiate, revise or delete this course.

This course is initiated as part of a curriculum revision. The purpose of the course is to introduce beginning chemical engineering students to the field through lectures and laboratory tours. The course is required for advancement to sophomore standing and is graded pass/fail on the basis of participation. This course carries no academic credit because the work required by from the student is minor.

2. Identify and justify any effect on other courses in your department or in another department. Specifically list other department chairpersons and/or faculty consulted and summarize results of discussion.

This course has no effect on the activities of other departments. Similar courses have been tried by Civil & Electrical engineering in the past.

3. Identify the main emphasis of the course along with major topics covered. If the proposal is a revision, indicate the nature of the change(s).

Most freshmen have only a vague understanding of chemical engineering as an education and as a profession. This course provides the opportunity to gain a better appreciation of chemical engineering to direct students toward research opportunities, and to motivate the students for the demands of the program.

SAMPLE FRESHMAN SEMINAR SERIES

1. Chemical Engineering as a part of contemporary technology
2. A brief history of Chemical Engineering
3. The basic concepts in Chemical Engineering
4. Models in chemical engineering
5. Numbers you never knew you needed, the demography of Chemical Engineering
6. Research areas - Biomedical
7. Research areas - Biochemical
8. Research areas - Advanced separations
9. Research areas - Electronic material processes
10. Research areas - Catalysis and surface science
11. Research areas - Polymers and composite materials
12. Understanding the Chemical Engineering Program
13. Student panel discussion

This program will be changed yearly as the interests of the department shift.

RESOLVED, that a plus and minus grading system for all students enrolled in 500-900 level courses for which letter grades are awarded be instituted concurrently with the implementation of the new student records system. The following numerical scale will be used with this system:

A	4.0	B-	2.7	D+	1.3
A-	3.7	C+	2.3	D	1.0
B+	3.3	C	2.0	D-	0.7
B	3.0	C-	1.7	F	0-0

The minimum requirement for good academic standing and for conferral of degrees for graduate students shall remain at 3.0, and the definitions of academic substandard status for graduate students shall remain as given by current policy.

RESOLVED, that a plus and minus grading system for all students enrolled in 000-400 level courses for which letter grades are awarded be instituted concurrently with the implementation of the new student records system. The following numerical scale will be used with this system:

A	4.0	B-	2.7	D+	1.3
A-	3.7	C+	2.3	D	1.0
B+	3.3	C	2.0	D-	0.7
B	3.0	C-	1.7	F	0-0

The minimum requirement for good academic standing and conferral of degrees for undergraduate students shall remain at 2.0, and the rules governing probation and dismissal for academic deficiency shall remain as given by current policy.

REQUIREMENTS FOR HONORS DEGREES/ECONOMICS
(B.A. in the College of Arts and Sciences)
(B.S. in the College of Business and Economics)

1. All the usual requirements for the Economics degree program elected (the Bachelor of Arts in Economics or the Bachelor of Science in Economics) must be completed.
2. At least 60 of the total credits accumulated for graduation shall be at the 300-level or above.
3. A cumulative grade-point index of 3.40 or better must be achieved.
4. At least 30 credit hours must be earned in designated honors courses or honors sections of courses. Of these credit hours:
 - a. at least 12 credit hours must be earned in honors courses or sections in the Economics Department. Courses at the 600-level or higher in Economics may be considered as honors courses. Economics 401 and Economics 402 must be completed in honors sections.
 - b. at least 12 credit hours must be earned in elective courses not specified under (a) above;
 - c. six (6) credit hours must be earned in Honors Tutorials, including three credit hours designated as Humanities and Arts, and three credit hours designated as Natural and Social Sciences. These honors tutorial credits may be counted as part of the 12 credit hours referred to in section (b) above; and
 - d. at least 12 of the credit hours must be earned at the 300-level or higher.
5. Six (6) credit hours of Honors Thesis (U401-80 and U402-80) must be completed. An oral presentation and discussion of the thesis must be presented orally to, and discussed with, a committee from the Economics Department and the University Honors Program.
6. A comprehensive examination in Economics must be passed. The examination will be administered during the senior year.



University
of
Delaware

RECEIVED

ATTACHMENT 4

DEC 10 1986

GRADUATE OFFICE

OFFICE OF THE DEAN
COLLEGE OF EDUCATION
NEWARK, DELAWARE 19716

*Approved by Brad C
Dec 12, 86*

8001 451-2311

December 9, 1986

MEMORANDUM

TO : J. A. Leo Lemay, Chair, Senate Graduate Committee
FROM : Frank B. Murray, Dean, *Frank B. Murray* College of Education
SUBJECT: Changes in the Ed.D. Program in the
College of Education

I was sorry that I had not been able to complete this response in time for your October meeting as I had intended after my verbal report at the end of September to Richard Murray, Associate Provost for Graduate Education. The changes we have made in the program were of the sort that required lengthy discussions and negotiations between the existing program faculty and the new members of the program faculty. As well, the University Council for Educational Administration (UCEA) undertook a national study last year of the doctorate in educational administration. The study, chaired by Dr. Daniel Griffiths, former Dean of Education at New York University, and co-sponsored by the Land Grant Deans Association, is in its third draft and was thought to be helpful in our work as the kind of program advocated in the study follows the line of reasoning we used in the design of our program at Delaware.

In his September 20, 1985, memorandum, Dr. Raffel, the chair of the Senate Graduate Committee at the time, listed five concerns of the committee that he asked us to address, of which his item 3 was the most difficult for us. This item refers to the expansion of the faculty groups that have primary responsibility for the program.

Expansion of the Faculty in Educational Leadership.

The following faculty members have been added to the program faculty as mentors:

1. James Crouse, Professor, sociology and educational policy.
2. Rita Fillos, Director of the Center for Educational Leadership, educational measurement and evaluation.
3. Robert Hampel, Assistant Professor, history and educational policy.
4. Michael Middaugh, Director of Institutional Research and Strategic Planning, educational administration and evaluation.
5. Frank Murray, Dean of the College, educational psychology and policy.

In addition Dr. Stephanie Hinson (Assistant Director, CELE) and Dr. Dale Trusheim (Assistant Director, Institutional Research) are being reviewed currently for faculty appointments and once those are in place they will be able to assist the mentors who have full-time professional appointments in their program duties.

Dr. William Bailey and Dr. Billy Ross will continue as mentors and Dr. Craig Wilson will no longer participate in the program, nor will Dr. Robert Uffelman who has retired.

Faculty, as appropriate, from the entire University may serve on the position paper committee. Our practice has been to have at least one member of the committee from outside the college and that another member be from the "field" (from DPI, a school district, the Governor's Office, etc.).

The faculty, in cooperation with faculty in the College of Business and Economics and the staff of the Department of Public Instruction, have submitted a \$500,000 LEAD grant (over three years) to the Department of Education to be used for the training of educational administrators. One grant is awarded in each state under the LEAD program and only one was submitted in Delaware. This collaborative venture addresses the faculty needs cited in the reviewers' report. In addition, we expect to devote another faculty line to the program in the near future.

Finally, we are having discussions with the Institute for Educational Leadership (IEL) in Washington, D. C., for Delaware to be a site for one of their fellows programs. The notion is that Ed.D. students in their final year will be designated IEL fellows and participate, with fellows from thirty other states,

in a series of national seminars in educational leadership. Funding for the participation in the program, at \$1,500 a fellow, is nearly complete. This opportunity for our students expands the faculty base, so to speak, of the program.

Ensure that the program is capable of being audited.

The concept of program "auditability" is a notion advanced by one of the reviewers, Fenwick English; our program is designed to be auditable in that measurements of student progress are made throughout the program. These are the traditional measures, however, of student accomplishments, viz. scores on the admissions tests (writing test, group interview, prior grade index and level of prior performance in the field), graduate course grades, score on qualifying examination, advisory committee approval of the plan for executive position papers, and the oral defense of the papers. The program conforms, in other words, to the usual measures employed at Delaware for graduate student progress, i.e., the standards for grade-point indices and other formal evaluations, viz. pass/fail judgments on qualifying exams, plans, and the final defense. As well, a time-line for each evaluation event is published.

We believe the reviewers in their evaluation of the many innovative features of the program failed to see that the usual measures of graduate education were still in place in this program. In any case, the program is "auditable" in the same way any other graduate program is "auditable" at Delaware--or anywhere else for that matter.

Validation of Admission Procedures (page 7 and Raffel's item 2).

At the present time, we do not require the GRE examination results, although most of the applicants have taken them because a master's degree is required for admission to the program. Thus, the correlation of the GRE with other program measures and outcomes can be had should it interest anyone. Any other traditional measure can be treated in the same way. However, one should not think that these correlations would validate the procedure we follow; if anything it would be the other way around.

The validation of the admission procedure we use for this program follows fairly traditional considerations of content, construct, and predictive validity (data on the latter awaits a larger alumni group, of course). The program is designed to improve the likelihood that a person will be an educational leader. We select persons who have demonstrated a talent for leadership in

education by virtue of their educational positions; we then target each component of the program around a task and skill that leaders and high level school administrators perform and ask for evidence in course work, the summer institutes, and the position papers that the tasks have been mastered. Finally, we note the subsequent career advancement our graduates have.

In sum, the admission procedure meets tests of content validity because we sample the very skills and attitudes we want to develop further; tests of construct validity are met in the interview with regard to the faculty's theories of leadership, and predictive validity is measured later by the career changes that can be attributed to the doctorate.

Inclusion of Material on Methods of Analysis.

Each of the new mentors has strong methodological training and each has an ongoing research program served by their fluency with current research techniques.

Beginning with the next cohort of students (1987-88), students will be required to take a second methodology core course--EDD 8XX Survey of Methods of Analysis for Educational Organizations. In addition, the EDS course sequence at the doctoral level (viz., 665, 861, 862, and 874) is more available with the addition of mentors from EDS.

Executive Position Papers.

The concept of the Executive Position Paper has evolved over the last few years and will now have the following form. The candidate will advocate an educational policy decision in the following way:

- Paper 1 -- The appropriate literature on the issue will be reviewed and analyzed.
- Paper 2 -- Special features of the local context for the decision will be described and analyzed with regard to the issues raised in Paper 1. This paper could very well require the collection and analysis of local data if none existed on the issue. The context could be as narrow as a school or classroom and as broad as a state or region.
- Paper 3 -- A plan for the implementation of the decision will be developed and described to insure that the decision will have the expected outcome(s).

In most cases the policy decision that is the subject of the papers is one that the candidate will make or must make in the course of his or her current or next position. The papers are often topics of moment and controversy in which detached objectivity is not possible or desirable; the principal criterion for the value of the decision is that it proved to be correct. In the oral defense the candidate must satisfy the committee that the decision is at least likely, by all that is known, to be the correct decision.

Administration of the Program.

The program will be governed by the mentors, those persons named above in the discussion of item 3, the expansion of the faculty. This makes the program interdisciplinary in that faculty from the entire college--both departments--are now responsible for the program.

In the College of Education programs that involve faculty members from both departments are monitored by the appropriate standing committee of the College--in this case, the Committee on Graduate Studies. Administrative issues (matters of workload, space, resources, scheduling, etc.) are the responsibility of one of the department chairs in close collaboration with the other chair and the dean. The chair of the Department of Educational Development administers the Ed.D. program for the college at the present time.

In conclusion we note that the external panel concluded that "there is no doubt that the program should be given permanent status in the University" (pp. 5-6), a recommendation that is perfectly acceptable to us. While the program is novel in many respects, it follows the logic of our M.I. (Master of Instruction) program, a program that is praised locally and listed by the Department of Education as one of the nation's "notable programs." We have every expectation that our Ed.D. program, after an unsure beginning perhaps, will follow the same path as the M.I. Like other departments in the university our graduate programs are sometimes distinguished by the ordinary graduate criteria, of excellence, namely gifted students seek admission, the faculty have mounted important research programs that attract high levels of external funding, and so on. Unlike

many other departments, some of our programs are distinguished and recognized by the fact that they advance our understanding of how to conceptualize a curriculum and deliver a program of instruction. Our Ed.D. program has this potential.

FBM:pah

cc: Bill Moody, Chair, Ed. Development
Vic Martuza, Chair, Ed. Studies
Richard Murray, Assoc. Provost, Grad. Ed. ←
Mentors (B. Bailey, B. Ross, J. Crouse, R. Fillos,
R. Hampel, M. Middaugh)

1

REVIEW OF THE GRADUATE PROGRAM IN THE
DEPARTMENT OF EDUCATIONAL DEVELOPMENT
UNIVERSITY OF DELAWARE

INTRODUCTION

This is a report of a review of the graduate programs in the Department of Educational Development at the University of Delaware. This report has been prepared for and is being submitted to the Office of Graduate Studies at the University of Delaware by Dr. Eunice Askov, Pennsylvania State University, Dr. Fenwick English, Lehigh University, Dr. Robert Owens, Hofstra University and Dr. Thomas Romberg, University of Wisconsin-Madison.

The purpose of this review was two fold. First, we were to evaluate the implementation of the new Ed.D. program in educational leadership which was implemented in September 1981. This external evaluation would be one source of evidence in determining whether that program should be given permanent status. Second, we were to conduct a normal external review of the total graduate program in the department of educational development. Such a review is conducted of all departments at the University of Delaware on an eight year cycle.

Scope of the Review.

In order to carry out the review, information was provided to the external team via documents that were sent prior to the site visit and a site visit that was conducted in Newark, Delaware on April 28 - 30, 1985. During the site visit several additional documents were provided and examined. Interviews were conducted with faculty members, the Dean, the University Coordinator for Graduate Studies, and graduate students in the various programs.

This review reflects only our understanding of the programs based on the information that was provided to us. The review cannot encompass all of the possible relevant information about these programs. Nevertheless, since everyone at the University of Delaware was open and cooperative, we are confident this review captures the key elements of the various programs.

Organization of this Report.

This report is organized in four segments. The first segment is this brief introduction. A review of the Ed.D. program in Educational Leadership follows. The third section contains the review of the other graduate programs in the Department of Educational Development. The document then concludes with some general statements about the graduate programs in the Department of Educational Development at the University of Delaware.

Because of the nature of how this review was conducted and the expertise of the reviewers the preparation of this report was as follows. Professors English and Owens prepared the comments on the Ed.D. program on Educational Leadership. Professors Askov and Romberg wrote the report for the other graduate programs. However, all four participants had an opportunity to react, edit and clarify various assertions before this document was completed.

REVIEW OF THE Ed.D. PROGRAM IN EDUCATIONAL LEADERSHIP AT THE UNIVERSITY OF DELAWARE

Purpose of the Review

The Ed.D. program in Educational Administration was started, with its first cadre of students, in September, 1981. At the University of Delaware "new programs are always initially approved on a provisional basis and then evaluated in the fourth year to determine whether they should be given permanent status."¹ The purpose of ". . . this evaluation (was) to advise the University of whether the program should be retained and whether changes are indicated."²

Scope of the Review

The review was informed by (a) documents that were sent to the reviewers for study prior to the site visit and (b) a site visit that was conducted in Newark on April 28-30, 1985.

Documents examined included:

1. Implementation Report (dated April, 1985)
2. A compilation of information concerning the history of the program and vitas of faculty involved in it.
3. Relevant University catalogs.
4. Four selected "Executive Position Papers" which had been successfully defended by students completing the program.

During the site visit six more "executive position papers" were studied, bringing the total to ten. This represents the entire corpus of such work extant at the time of the review.

In addition, the following persons were interviewed during the site visit:

1. The Dean of the School of Education
2. The chairperson of the Department of Educational Development, in which the Ed.D. program resides
3. The University Coordinator for Graduate Studies
4. The three faculty members who serve as "mentors" in the Ed.D. program as well as other faculty members associated with the program
5. Five students who had completed the final stage of the Ed.D. program (i.e., had completed and defended their "executive position papers").

The review sought to respond to the following four questions:

1. Is there a need for an Ed.D. program in Delaware?
2. If so, is the Ed.D. program at the University of Delaware meeting this need?
3. Should the Ed.D. program be continued?
4. If "yes" to all of the above, what changes (if any) should be made?

Background

Unlike its sister land-grant universities, and the preponderance of all American universities having schools of education, the University of Delaware has long eschewed a program of professional studies leading to a practitioner-oriented doctoral-level degree in educational administration. Nationally, however, during the last half-century Ed.D.

programs in school administration have flourished spurred by a combination of stimulating influences. Important among these are

- advocacy by major foundations in recognition of the need to strengthen educational leadership as a means to solving broader social problems and,
- rising aspirations of educational professionals to develop their competence in their chosen field of practice.

This long and extensive history in academe has given rise to a persistent set of concerns that revolve around the fact that the Ed.D. is viewed as the degree the professional who practices school administration as contrasted with the traditional Ph.D. that is normally associated with the professional scholar, in this case one who studies school administration.

These persistent concerns usually focus on the program of studies itself as well as on the dissertation, and the issue is often discussed in terms of "rigor" or "maintaining standards." Indeed, in many American universities today - as a result of long years of pressure for Ed.D. programs to conform to traditional academic practices - one is hard-pressed to differentiate between either the program or the dissertation of Ed.D. students as compared with Ph.D. students. This remains a field of nettlesome and lively controversy.

Obviously, the University of Delaware plays an unusual role in the educational life of the state in view of its near-monopoly in the state. Practicing school administrators in the public educative organizations for the state, well-aware of the strong national trend in their profession toward advanced graduate study, had few options for pursuing a program of studies leading to a practitioner-oriented degree. Small numbers turned to institutions in Pennsylvania, New Jersey, and Maryland. Many, however, turned to "external degree" programs that began to flourish in the late 1960s as a way of meeting their educational need. As enrollment of school administrators in various "external degree" programs surged, it quickly became evident that leadership in Delaware's educational infrastructure would soon be little-influenced by the University. Realization that the current State Superintendent of Public Instruction holds an external degree from Nova University apparently galvanized a number of faculty to rethink the importance of educational administration in the overall mission of the University. Accordingly, in April of 1980, the University Faculty Senate approved the Ed.D. program in Educational Leadership on an experimental basis.

Given the tradition of the University of Delaware, any Ed.D. program could aptly be described as innovative and unique. In any ways, however, the program reviewed here reflects the philosophy and practices commonly considered to constitute good practice in comparable programs nationally. On the other hand, this particular Ed.D. program does embody some distinctive characteristics that are worthy of note.

The Ed.D. Program at the University of Delaware

Among the innovations in the program's design are the following:

1. Non-traditional admission criteria. Instead of relying heavily upon Graduate Record Examination scores and cumulative index, as traditional programs normally do, this Ed.D. program emphasizes the "track record" of applicants in their chosen professional field of educational leadership. References, an interview with faculty, previous

academic history, and a writing sample produced under controlled conditions are important sources of data in admissions decisions in this program.

2. The use of "mentor groups". These are cadres of students which are formed into strongly cohesive social units together with their mentor professors and which stay together throughout the duration of the program. A vital aspect of the program, mentor groups lay the groundwork for long-term professional association and mutual support. The desirability of such "networking", and its likely salutary impact on the quality of schooling in Delaware, is supported by recent research (such as the work of Boyer, Goodlad, andSizer).

3. The "Summer Institutes". Required of all students and an integral part of the program, the Institutes are organized around the study of contemporary issues and feature outside speakers. The institutes appear to be an alternative to the traditional year of on-campus residency, which is increasingly being recognized by universities with Ed.D. programs as of problematic benefit for experienced administrators (for which this program was designed).

4. The "Executive Position Paper". An alternative to the traditional dissertation (which is normally thought to demonstrate the student's ability to design, conduct, and report research) the executive position paper offers the student the challenge of identifying a problem encountered in practice, conducting a search of relevant literature and empirical data, and developing a plan of action intended to solve the problem.

The program of studies consists of 54 semester hours of which 24 comprise a core of studies in leadership taken with the three mentors of the program. Six semester hours are taken outside of the School of Education, six within the School (including an obligatory seminar on "consumer" aspects of research), six semester hours are given for attendance at the two required summer institutes, and twelve semester hours are credited to the preparation and completion of the executive position papers.

Among the many strengths of the program at the time of the review are at least the following:

1. Solid leadership emanating from the College of Education that is having impact on the educational infrastructure throughout the state. This professional-level program of graduate studies appears to be communicating to members of the educational leadership in the state that the University of Delaware does indeed take seriously its obligation and commitment to offer professional education relevant to the professional practice of educational administration.

2. A highly competent faculty with strong credentials in teaching, scholarship, and service and demonstrating extensive and continuing involvement in the practice of educational administration.

3. An exciting atmosphere, fueled by an energetic group of skilled and caring professors backed by a caring and committed Dean of the College and Chairperson of the Department.

4. An impressive group of graduates, who appear to be bound for top-level leadership positions in education, both within and outside of the State of Delaware.

5. The development of a unique, caring, humane, and positive support system for graduate students through the use of the "mentor groups". Such a network serves to sustain students during the period of

study, assist them to create practical responses to real problems, and nurture them in meaningful ways after graduation. Recent research strongly suggests that such networking is essential to the development of leadership for effective schools.

The University, at all levels, can be justifiably proud that so much has been accomplished in developing the Ed.D. program in the short period of its experimental existence. The reviewers were impressed repeatedly with the dedication of everyone involved in this program - administration, faculty, students, and cooperating practitioners from the field - to make this innovative program successful and pay off for education in Delaware.

Responses to the Four Questions Addressed by the Review

1. Is there a need for an Ed.D. program in Delaware? Our response is an unqualified "yes". First, given the utter lack of alternative opportunities available to upward-mobile Delaware educational leaders, the Ed.D. program is highly appropriate to the overall educational mission of the University. Further, the great popularity of the so-called external degree programs (that flourished especially in Delaware before the development of this program) attests to the need (or, at least, demand) on the part of school administrators for such a program. But the clearest demonstration of need is found in the number of applications for admission being made by experienced educational administrators.

Consider, for example, that 208 applications were received from experienced school administrators during the 1981-83 period to fill 50 vacancies. This gave an acceptance rate of about 24 percent. In contrast, most comparable programs in the United States have been so hard-pressed to maintain projected admissions that they long ago ceased requiring administrative experience as a qualification for admission. In sum, it seems obvious that the Ed.D. program is meeting a substantial bona fide educational need and, in view of the substantial pool of potential students already certificated and engaged in administrative practice, that need will continue unabated for some time to come.

2. Is the Ed.D. program at the University of Delaware meeting the need? Our answer is unqualifiedly affirmative, and not merely because it appears to meet the professional educational needs of its students. It presents strong evidence of establishing and maintaining high professional and academic standards. But, more than that, it has been carefully designed and implemented to bring some fresh approaches to the solution of problems in the field of professional practice that have heretofore seemed intractable.

3. Should the Ed.D. program be continued? Again, we unqualifiedly say "yes", it should be given permanent status. This program is exciting, innovative, pioneering, and worthy of continued support. We say this not only because it seems likely that the program will have beneficial impact on education as a whole in Delaware, but also because it may yet have something important to say to other universities about the professional education of educational leaders.

4. Should changes be made in the Delaware Ed.D. program? As we have elaborated above, these reviewers very strongly believe that (1) there is substantial need for this program at the University of Delaware, (2) the program is meeting this need admirably, and (3) there is no doubt that the program should be given permanent status in the

University. On the other hand, it is an experimental program, innovative, and in its developmental stages; not surprisingly, therefore, there are areas for possible improvement that should be addressed.

Auditability. As an overall comment, the reviewers feel strongly that the full range of the program, from admission to the final acceptance of the executive position papers should be rendered auditable; that is, verifiable against specified standards. For a program to be capable of being audited the following conditions should be present:

1. clear objectives, policies and procedures;
2. specific criteria that can be used to measure the achievement of those objectives, policies and procedures;
3. a data base which can be used to assess the compliance of the actions of the persons involved with the objectives, policies and procedures;
4. a clear management control system which assures compliance to all aspects of the program that utilizes internal and external reviews of an objective nature;
5. the presence of periodic reports/reviews which have identified problem areas and underlying causes;
6. records which can be supplied to demonstrate improvement based upon the above being implemented over time.

These conditions do not now exist as it pertains to the Ed.D. in Educational Leadership program in the College of Education at the University of Delaware. It is hoped that with the review and recommendations, the program can become auditable.

In addition the following areas in our opinion require attention.

Admission Standards/Practices. As described in the Implementation Report, selection for admission to the program is based on

1. an assessment of the applicant's academic record, professional experience, and career goals,
2. a writing example, and
3. a group interview.

We judge that this process is followed meticulously as described in the Implementation Report and believe that it has netted a group of able students who are marked for continued success in their profession. This program specifically does not require scores on the Graduate Record Examination (GRE) or any other examination as a criteria for admission. In view of the nationwide debate over the usefulness of the GRE as applied to the particular kinds of individuals being dealt-with here, we think that is a wise decision and strongly support it as an experimental procedure. We feel, however, that it would be very useful in the future to have some sorts of comparative data as an aid in assessing the program over the long term with reference to the quality of individuals that it attracts.

Similarly, while mentors evaluate and score the transcripts of applicants, cumulative grade point indices or similar data are not recorded or used as reference points. Further, while a writing exam is administered and scored, validation of that exam in some way should be done and cumulative standard data from it would be useful in conducting future analyses of the program's experience.

There is no reason to be concerned about the caliber of the students who have already been admitted to the program. Further, we certainly

strongly endorse the view that traditional practices such as establishing fixed cut-off points on GRE scores would be inappropriate for the admission of students to the program. In addition, we unambiguously applaud the use of multiple criteria as the basis for admission. But we also think and recommend that efforts be undertaken to validate the admissions procedures that are used and that data be systematically collected so that the process can be better and more clearly understood in the future.

Faculty. A review of the qualifications, experience, and publications of the faculty indicates they have strong credentials in management theory, organization development, supervision and curriculum. However, in the area of research, statistical procedures, and quantitative theory, the mentors have relied on other faculty. The faculty groups having primary responsibility for the program (called the "mentor" group) should be expanded to include persons with special interests and competence in systems of analysis, both quantitative and non-quantitative.

In addition, the program should have one additional full-time person who specializes in school law, and/or finance, and/or school plant management. The program has had to depend upon adjuncts for these courses. This has led to uneven offerings and expertise in a critical component of any sound program in educational management at the Ed.D. level in comparable colleges of education elsewhere. Absence of such faculty also precludes "executive position papers" being done in these areas.

Curriculum. The curriculum appears to be adequate for the Ed.D. program. As explained to the reviewers, the purpose of the program is to provide advanced managerial training to school leaders in Delaware. As envisioned by the Dean and professors, the degree would assist practitioners do a better job in their respective positions in Delaware. As such, the customary research component is missing in the Delaware Ed.D. program. The rationale is that the three hours of "consumer research" is all that is required. If this were true, the reviewers would have fewer qualms about the research component as it stands in the Delaware Ed.D. program. However, a check on the career aspirations of the graduates of the program do not conform to those envisioned by the planners of the program. At least four of the five students interviewed indicated that at some point in the future they would desire to teach at the college or university level. In addition, most said they felt competent to teach applied research.

It should be obvious that most of the people admitted to the Delaware program are upwardly mobile. The Ed.D. will provide access to top level managerial positions and perhaps ultimately to collegiate teaching/research positions. If this turns out to be true, then the Ed.D. candidates in the Delaware program are not adequately prepared to conduct research studies with only three semester hours of consumer-oriented research.

The professor-mentors indicated that with career counseling they felt they could control this variable within their program. If a student had any idea he/she would ultimately end up at a college or university, he/she would be counseled to take a more rigorous set of courses in research/statistics. This would appear a partial remedy.

However, no institution can control the ultimate destiny of its graduates. It can only try and prepare them for what they might do. This problem should be seriously considered as the courses are reconsidered for the program.

Our concern for the meagerness of research offerings in the program's curriculum goes beyond concern for future career aspirations of the students, however. As we shall discuss below, the capstone experience of the Ed.D. program is the preparation of the "executive position paper". The expectation is that, in the executive position paper, the student will demonstrate the ability to develop a reasoned and logical analysis of a problem, informed from the literature and perhaps from original data, upon which to construct a plan of administrative action. What seems missing, however - and the existing executive position papers tend to demonstrate this - is the development of skills in some system of analysis with which the student can think about significant problems. Traditionally, this is what courses in research design (both quantitative and non-quantitative), data analysis (commonly statistics but we do not exclude ethnographic or historical methods), and research methods courses have sought to provide. We strongly urge some rethinking of this issue be done with a possible view to introducing two or more alternative curriculum components that will equip students with some theory and techniques of methods of analysis. In so commenting, we strongly emphasize that we are not suggesting a mandate that students be required to take the traditional 9-12 semester hours in statistics and measurement methods so commonly found in Ph.D. programs. This is an innovative program and it is trying to solve new problems. But exciting work is being done in the field of educational administration today using ethnography and related forms of observational field studies. These may well be adaptable to the needs of a practice-oriented program of studies.

We realize that we are urging more course work in an already full program. We think, however, that there may be enough overlapping and duplication in extant theory and leadership courses that they could be trimmed to make room for some courses in methods of problem analysis.

The Executive Position Papers. The outcome of the curriculum in the Delaware Ed.D. program is the expectation that each student will complete three executive position papers instead of the traditional dissertation.

Much time of the reviewers was spent on questions pertaining to this expectation as well as in reading the completed position papers. To begin with there were no definitive guidelines as to the format or content of the position papers. Graduates interviewed felt that the expectations were ambiguous. They indicated they did not know exactly what was expected in these papers. The reviewers asked for whatever guidelines the students were given. One draft developed by Professor Wilson in 1983 was provided the reviewers. The draft identified what was expected and indicated some generalizations regarding research design, data sources and methods of data collection and analysis. The impression was distinctly given that the paper would be empirically oriented, despite assurances that the papers were not necessarily empirical data centered studies.

An examination of ten executive position papers completed over the past two years indicated that nine utilized a survey data gathering

collection methodology. One could be classified as a quasi-experimental paper. In at least four papers employing the survey methodology, the response rate to the surveys ranged from approximately 27% to 41%, clearly an inadequate base upon which to generalize findings. The papers also suffered from the use of unvalidated instruments, findings that surpassed the constraints of the study, and incomplete or awkward reporting of data.

Three of the position papers appeared rigorous enough to be roughly equivalent to the traditional dissertation. One was quite sophisticated. At best the executive position papers have capitalized upon the traditional strengths of the dissertation and have extended the findings in an applied and unique field setting. At worst they "ape" the traditional dissertation, but contain little of its logic, conventions or safeguards.

The abandonment and rejection of the traditional dissertation as one kind of "orthodoxy" as been replaced by a new "orthodoxy," i.e., the executive position paper. While it is certainly true that not all problems can be "fit" into the classical five-chapter dissertation, it is also true that the same problems cannot all be fit into a series of three position papers.

The reviewers are intrigued by the concept of the position papers. They make a "clean break" with the past. Certainly they emphasize the difference between the Ph.D. and Ed.D. at Delaware.

The reviewers feel that the executive position paper concept should be clearly defined. If the problem an Ed.D. student is pursuing is definitely amenable to statistical analysis, then quasi-experimental methods may be the choice and the traditional dissertation format may be appropriate. However, if the study is a policy or analytical analysis, the position paper may be the best format. Ethnographic studies may take yet another form. The point is that the form should match the mode of inquiry. Thus, Ed.D. candidates should be schooled in modes of inquiry in completing their executive position papers, or in selecting an alternative to the position paper.

While it is understood that a position paper may not be a dissertation, we should be discussing format and applicability to problem situations, and not substantive rigor. An Ed.D. candidate should be able to demonstrate advanced conceptual capability learned as the result of his/her studies at Delaware. A position paper should not be a lesser form of that conceptual ability, but a comparable one. The variance should be one of style and format and not quality. This statement cannot be made about all of the position papers completed in the Delaware Ed.D. program at the time of the review.

It is necessary to define this part of the Ed.D. program at Delaware simply because this is one of the most visible components and lasting products of the scholarly process. Immediate steps should be taken to bring the ambiguous nature of this problem to an end. We believe it can be done without impairing the very innovative and creative concept of a position paper as envisioned in the Delaware Ed.D. program.

Facilities and Support. The facilities and support system for the Ed.D. appear to be adequate. There is an excellent library, though some students have difficulty who live far from the University. The professor mentors have expressed a desire to use one of the classrooms

nearby the program's offices for a resource center for the program. This certainly appears to be a reasonable request.

Summary

The College of Education and the professor mentors are to be congratulated for beginning a truly innovative effort to bridge the long standing gap between theory and practice in the preparation of school administrators.

The mentor concept is both a strength and a potential weakness. While the mentor groups provide a kind of "safety net" for the student, they may also unnecessarily insulate the students from faculty members elsewhere in the College of Education. Consideration should be given to having at least two additional rotating faculty members elsewhere in the College of Education function in various mentor groups. This would provide a total of five where three now carry the full responsibility. Such additional members may bring to bear additional insights and strengths which might match the research interests of the doctoral students.

In addition, certain other quality control procedures should be considered to fully insure that whatever research/study methods are adopted by the doctoral students in the completion of their executive position papers are fully utilized. The use of regular outside readers and mentor members may well be the antidote to this chore.

The reviewers believe the Ed.D. program with continued support and development will have a sound and healthy future.

Notes

¹Letter dated January 25, 1985 from Richard B. Murray to the reviewers.

²Ibid.

³Implementation Report, pp. 3-5.

Approved 5-1-86
Ed. Aff. Comm

April 11, 1986

Proposal for a Bachelor of Sciences Degree in Biological
Science with a Concentration in Biotechnology

ABSTRACT

The proposed BS degree in Biological Sciences with a Concentration in Biotechnology is expected to attract approximately 10-20 students to the School per year. The program is intended to provide these students with a high level of conceptual understanding and technical proficiency in biotechnology. It draws on the existing strengths within the School, primarily in the teaching of intense upper level lecture and laboratory courses. Faculty will work with students and industry to facilitate Co-op experiences. The curriculum allows students to take 21 credits of General Education courses in Groups A, B, C.

Rationale for the Proposal

The purpose of the Concentration in Biotechnology is to formalize the School's offerings in technological training for placement of students in industry or professional or advanced graduate degree programs.

Benefits to the students in the program.

Students would be encouraged early in their undergraduate careers to consider a Concentration in Biotechnology. The relationship of the requirements of the Concentration to career goals would be defined through careful advisement of students by selected faculty. Certification of completion of the Concentration in Biotechnology would appear on the student's transcript and will be readily identifiable by prospective employers and graduate/professional schools.

Benefits to Local Industrial Employers.

Individual faculty contacts and the School's Co-op program show that potential employers are extremely interested in identifying talented undergraduates to enter permanent jobs at the baccalaureate level. DuPont's Haskell Labs and the

Experimental Station, Merke, Sharpe and Dohme, and Turumo are examples of local employers who regularly place students in paying Co-op positions with a high potential for subsequent permanent placement. The proposed Concentration in Biotechnology would allow prospective employers to make this identification in a formal way by reading the student's transcript. Individual faculty members will still play a key role in placement, through advisement and written letters of recommendation.

Benefits to the School.

With a formalized Program, it should be possible to train and place students more efficiently than at present. The number of students graduating and obtaining satisfactory placements through the Concentration in Biotechnology is expected to increase, from about ten per year, to approximately twice that number. Advertisement of this program should increase the attractiveness of the Biological Sciences major to the serious student.

Admission and Advisement

The concentration will be advertised to all prospective and incoming freshman. Student advisement, Co-op placement, and job placement will be handled by designated faculty with the assistance of designated School of Life and Health Science office staff. Since enrollment in the various techniques courses must be limited, formal admission into the program will occur at the end of the Sophomore year.

Additional Required Resources

Most of the courses associated with the Concentration are already in place and have been meeting the needs of BA degree students. B305 Cell Biology ~~has not yet been offered~~ *is now being offered (8/82)*, but it has been approved and resources made available for its first offering. B667 Informational Macromolecule Laboratory has been approved, and support for it will be available. As the number of

students in the program increases, it will become necessary to increase enrollment in the various techniques courses, either by increasing the number of students per section or by offering these courses each year or every semester. At such time, serious consideration will need to be given to acquiring professional technical personnel to support these offerings.

Potential Resources

Many of the technique laboratory courses were initiated by University and Unidel funding. These courses are established, and their funding, for current enrollment levels, is met by the School of Life and Health Sciences instructional budget. A formal curriculum entitled "Concentration in Biotechnology" would make it easier to be persuasive with potential patrons outside the University.

Undergraduate Student Interest in a Concentration in Biotechnology

A undergraduate questionnaire was administered during Fall 1985 to Juniors and Seniors through the B303 Genetic and Evolutionary Biology lab, a required course in the School. This was a reasonable target group, since the number of students is large enough (86 of 140 students responded), and represents a cross-section of our majors, unselected for interest in Biotechnology. On the question of type of program, a four year BS came up the favorite. On the level of commitment to the proposed program, 15 students said they would definitely be in it. It is concluded that a latent but substantial interest in such a program exists in the current student body. A copy of the questionnaire and student responses is attached.

Research and Coop Experience

Students would be strongly encouraged to obtain a Peter White Fellowship and to work in faculty research labs and/or on (paid) Co-op positions over summer or winter sessions.

Summary.

The Curriculum for a Concentration in Biotechnology is attached. All requirements for a BS within the School can be met in four years. Students are expected to take two out of four intense laboratory courses in their junior-senior years, in addition to B 604 Recombinant DNA Laboratory in winter session of either their junior or senior year. Students will be advised as incoming freshman that a Concentration in Biotechnology is an option, and will be encouraged to plan carefully for it. The Concentration in Biotechnology is intended to identify early in their academic careers a group of students who are already motivated and who have specialized interests and abilities. A broad conceptual background is provided through lecture courses. The laboratory techniques courses provide a "hands on" exposure to many of these important concepts. Graduates with a B.S. in Biological Sciences with a concentration in Biotechnology should have an advantage in gaining entrance to professional or graduate schools, or employment in creative positions within the biotechnology industry.

Comments

The Concentration in Biotechnology will probably select students from the top half of Biology majors, since it will require a combination of academic skills and laboratory ability to do well in the concentration. These are the same students that both graduate/professional schools and employers desire.

A B.S. DEGREE IN BIOLOGICAL SCIENCES WITH A
CONCENTRATION IN BIOTECHNOLOGY

The Program would include the following:

REQUIRED COURSES

B 207,208	Introductory Biology (8)
B 301	Cell and Molecular Biology (4)
B 303	Genetic and Evolutionary Biology (4)
B 305	Cell Biology (4)
B 371	Microbiology (4)
B 653	Recent Advances in Molecular Biology (2)
B 604	Recombinant DNA Laboratory (4)

TOTAL CREDITS 30

REQUIRED "CONCENTRATION" COURSES FROM OTHER DEPARTMENTS

C 527	Introductory Biochemistry (3)
	or
C 641-C642	Biochemistry (6)

TOTAL CREDITS 3-6 (33-36)

ADDITIONAL LECTURE/LABORATORY EXPERIENCES

Student would take two of the following Lecture/Laboratory experiences.

- . MAMMALIAN CYTOGENETICS
 - . B 492 Human and Mammalian Cytogenetics (3)
 - . B 493 Mammalian Cytogenetics Laboratory (3)
- . IMMUNOBIOLOGY
 - . B 671 Immunobiology (3)
 - . B 667¹ Immunochemistry Laboratory (4)
- . MACROMOLECULAR TECHNIQUES
 - . B 667² Informational Macromolecules Lab (4)

¹This course has already been taught (85B;87B) using the 67 number. A permanent number (B601) has been requested.
²A permanent number (B609) has been requested for this new course.

OPTIONAL COURSES (Students will select two
courses from the
following list)

B 602	Molecular Biology of Animal Cells	(3)
B 603	Nucleoprotein Interactions	(3)
B 608	Genetic Toxicology	(3)
B 617	Electron Microscopy	(3)
B 631	Eukaryotic Microbiology	(3)
B 654	Biochemical Genetics	(3)
B 658	Developmental Genetics	(3)
B 667	Plant Cell Biology ¹	(3)
B 667	Microbial Physiology ¹	(3)
B 673	Immunogenetics	(3)
B 679	Virology	(3)

¹These courses have been taught on an experimental basis.
Permanent numbers will be requested.

**CURRICULUM FOR A CONCENTRATION IN BIOTECHNOLOGY:
A FOUR YEAR B.S. DEGREE PROGRAM IN BIOLOGICAL SCIENCES**

FRESHMAN YEAR

FALL

B 207 (4)
C 103 (4)
M 221 (3)
elective (3)

WINTER

SPRING

B 208 (4)
C 104 (4)
E 110 (3)
elective (3)

SOPHOMORE YEAR

C 321/325 (4)
B 371 (4)
elective (3)
elective (3)
elective (3)

C 322/326 (4)
B 301 (4)
elective (3)
elective (3)
elective (3)

Schedule I

JUNIOR YEAR

PS 201 (4)
B 653 (2)
elective (3)
303 (4)

B 604 (4)

PS 202 (4)
C 527 (3)^a
B 492, 493 (6) B
elective (3)

SENIOR YEAR

B 671 (3)
B 305 (4)
elective (3)
elective (3)

B 667 Imchem(4)
elective (3)
elective (3)

Schedule II

FALL

PS 201 (4)
B 653 (2)
elective (3)
B 303 (4)

WINTER

JUNIOR YEAR

B 604 (4)

SPRING

PS 202 (4)
C 527 (3)^a
B 492, 493 (6)
elective (3)

SENIOR YEAR

B 667 Macro(4)
B 305 (4)
elective (3)
elective (3)

elective (3)
elective (3)

Schedule III

JUNIOR YEAR

PS 201 (4)^b
B 653 (2)
B 303 (4)
B 305 (4)

B 604 (4)

PS 202 (4)^b
C 527 (3)^a
elective (3)
elective (3)

SENIOR YEAR

FALL

B 667 Macromol (4)
elective (3)
B 671 (3)
elective (3)

WINTER

SPRING

elective (3)
elective (3)
B 667 Imchm (4)

^aMany students may wish to take C 641, 642 Biochemistry in place of C 527. They should be encouraged to do so if their schedule of electives will allow it.

^bOr schedule PS 201, PS 202 in the senior year.

None of the proposed schedules would require a biology major to take more than 49 credits in the major.

This program is based upon the assumption that students would need to take seven elective courses to satisfy the General Education group requirements, four language courses, one second writing course and two additional 600 level courses in Biological Sciences for a total of fourteen elective courses.

This program would also require that Mammalian Cytogenetics B 492, 493 Lecture and Laboratory and B 667 Immunochemistry be taught in different alternate years. Students entering in year I would take cytogenetics as juniors and immunochemistry as seniors. Students entering in year II would take immunochemistry as juniors and cytogenetics as seniors. Electives would be adjusted to balance course load.

Students may need to take other courses to accumulate 124 credits for graduation and should always maintain at least a 15 credit course load since they always pay for 15 credits each semester. There are a number of one credit courses, e.g., Physical Education, Marching Band, etc. that can always be taken if the course load for a semester is at 14 credits hours.

A Co-op experience in a local industry or medical/research institution would be strongly encouraged for the summer following the junior year, or winter session of the senior year.

DEGREE: BACHELOR OF SCIENCE
 MAJOR: BIOLOGICAL SCIENCES
 CONCENTRATION: Biotechnology

Suggested Curriculum CREDITS*

University Requirements

E 110 Critical Reading and Writing 3¹

Major Requirements

Within the Department

B 207 Introductory Biology 4¹
 B 208 Introductory Biology 4¹
 B 301 Cellular and Molecular Biology 4²
 B 303 Genetic and Evolutionary Biology 4³
 B 305 Cell Biology 4^{3,4}
 B 371 Introduction to Microbiology 4²
 B 604 Recombinant DNA Laboratory 4³
 B 653 Recent Advances in Molecular Biology 2³

Two of the following groups of courses.

Group

I B 492 Human and Mammalian Cytogenetics 3^{3,4}
 B 493 Mammalian Cytogenetics Laboratory 3^{3,4}
 II B 667 Immunochemistry 3^{3,4}
 B 671 Immunobiology 3^{3,4}
 III B 667 Informational Macromolecules Laboratory 4^{3,4}

Select two Biology Courses from the Following:

B 602 Molecular Biology of Animal Cells 3^{3,4}
 B 603 Nucleoprotein Interactions 3^{3,4}
 B 608 Genetic Toxicology 3^{3,4}
 B 617 Electron Microscopy 4^{3,4}
 B 631 Eukaryotic Microbiology 3^{3,4}

CREDITS*

B 654 Biochemical Genetics 3^{3,4}
 B 658 Developmental Genetics 3^{3,4}
 B 667 Plant Cell Biology 3^{3,4}
 B 667 Microbial Physiology 3^{3,4}
 B 673 Immunogenetics 3^{3,4}
 B 679 Virology 3^{3,4}

Within the College

C 103 General Chemistry 4¹
 C 104 General Chemistry 4¹
 C 321 Organic Chemistry 3²
 C 322 Organic Chemistry 3²
 C 325 Organic Chemistry Laboratory 1²
 C 326 Organic Chemistry Laboratory 1²
 C 527 Introductory Biochemistry or 3^{3,4}
 C 641-C 642 Biochemistry 6^{3,4}
 PS 201 General Physics 4³
 PS 202 General Physics 4³
 M 221 Calculus I 3¹

Skill Requirements

Writing: A writing course involving 3^{3,4}
 significant writing experience
 including two papers with a
 combined minimum of 3,000 words
 to be submitted for extended
 faculty critique of both
 composition and content. This
 course must be taken in a
 student's junior or senior year.
 Appropriate writing courses are
 normally designated in the
 semester's Registration Booklet.

Foreign Language: Completion of the 0-121-4
 intermediate-level course (112) in a
 given language or satisfactory
 performance on a placement test in the
 language of the student's choice.

CREDITS

Breadth Requirements**

21¹-4

A total of twenty-one credits from Groups A, B and C is required with a minimum of six credits in each group. The six credits from each group could be from the same department.

Group A. Understanding and appreciation of the creative arts and humanities.

Group B. The study of culture and institutions over time.

Group C. Empirically based study of human beings and their environment.

ELECTIVES

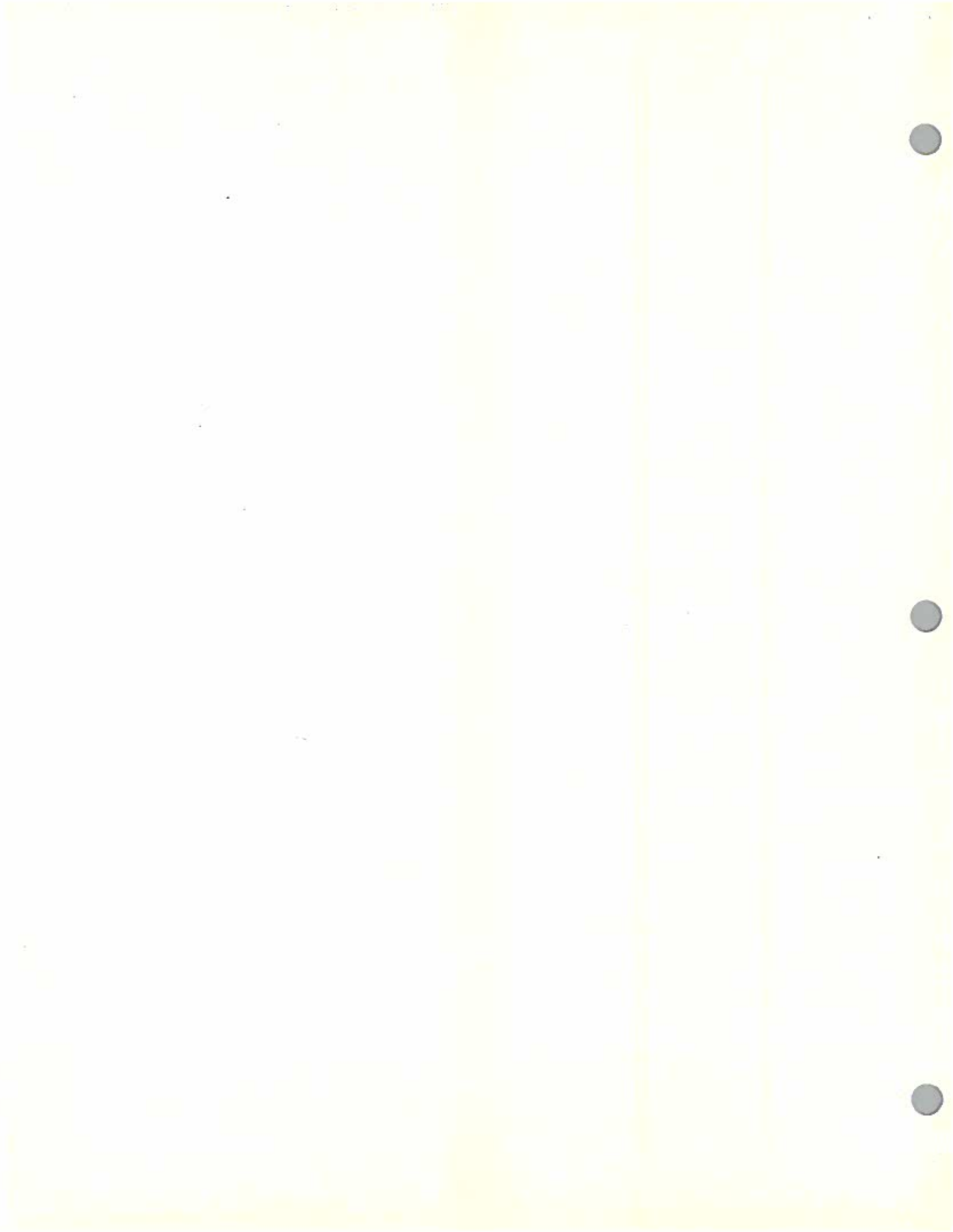
Electives

After required courses are completed, sufficient elective credits must be taken to meet the minimum credit requirement for the degree.

CREDITS TO TOTAL A MINIMUM OF 124

* Superior figures indicate year or years in which the course is normally taken, i.e., ¹freshman year, ²sophomore year, etc.

** A course may be applied both towards the major requirement and a breadth requirement, but credits are counted only once toward the total credits for graduation.

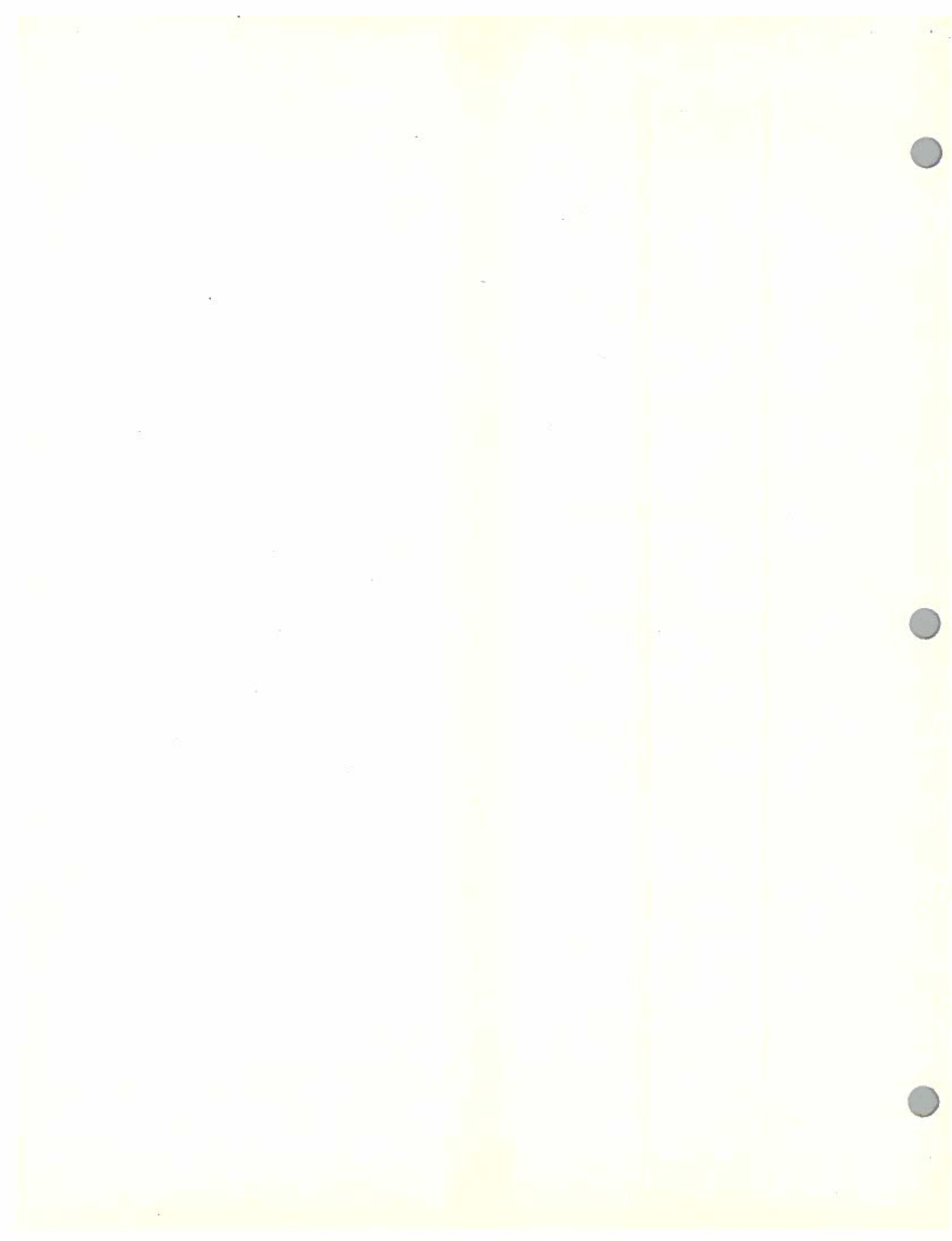


Biotechnology Questionnairefor B303 Students

The School of Life and Health Sciences is considering the implementation of a Biotechnology Program for undergraduate majors. We want to explore the feasibility of a Biotechnology Program at the University of Delaware. The main purpose of this Biotechnology Program would be to place biology majors in technical positions with local employers following graduation. The purpose of this questionnaire is to assess the level of interest of current Junior/Senior biology students in such a program. Please return the questionnaire at the end of the lab period.

The core of the program would be a choice of three out of five intensive laboratory courses on the Junior/Senior level: Electron Microscopy and Cell Biology, Mammalian Cytogenetics, Macromolecules, Recombinant DNA Technology, Immunochemistry. In responses 1, 2, and 3 please identify the three courses of greatest interest to you (only one selection per response).

	Total Interest
1) A) Electron Microscopy and Cell Biology	46
B) Mammalian Cytogenetics	65
C) Macromolecules	23
D) Recombinant DNA Technology	61
E) Immunochemistry	54
2) A) Electron Microscopy and Cell Biology	
B) Mammalian Cytogenetics	
C) Macromolecules	
D) Recombinant DNA Technology	
E) Immunochemistry	
3) A) Electron Microscopy and Cell Biology	
B) Mammalian Cytogenetics	
C) Macromolecules	
D) Recombinant DNA Technology	
E) Immunochemistry	
4) What would be the reasonable length of study and degree granted for this program?	
A) 4 yr BA with an emphasis in Biotechnology	19
B) 4 yr BS in Biotechnology	40
C) 5 yr BA with an emphasis in Biotechnology	4
D) 5 yr BS in Biotechnology	8
E) 5 yr Combined BA/BS and MS in Biotechnology, or a 2 year MS in Biotechnology beyond the Bachelors	13
5) How important do you consider a co-op position in a local company or a research project in a lab in the School to be for your professional development?	
A) Essential; should be required	0
B) Beneficial; highly recommended	5
C) Useful; should be mildly encouraged	56
D) Unimportant, need not be encouraged	23
6) If a Biotechnology Program were available, rate your interest in participating for a degree.	
A) Would definitely be in the program for a degree	15
B) Interested, but need more information and time to decide	50
C) Totally uninterested--the program as described clearly does not meet my needs.	19



Revised September 2, 1986

Proposed Curriculum

**Bachelor of Applied Sciences
Engineering Technology and Management**

A. Communications (9 Semester Hours)

Courses will be selected to provide training in oral and written communications. Specific requirements are:

Critical Reading and Writing (E 110) or equivalent

A second writing course

An oral communications course

B. Social Sciences and Humanities (15 Semester Hours)

Courses will be selected to provide a student with an appreciation and understanding of our cultural heritage, interpersonal relationships, inter-relationships between technology and society and a value system for sound decision-making. Courses must be selected from a minimum of three of the following areas: Anthropology, Black American Studies, Criminal Justice, Economics, Education, Foreign Language, Geography, History, Philosophy, Political Science, Psychology, Sociology or Women's Studies. Specific requirements are:

EC 151 and 152 or equivalent

C. Basic Sciences and Mathematics (28 Semester Hours)

Courses will be selected to provide a student with fundamental knowledge about nature and its phenomena and mathematics including calculus.

Specific requirements are:

General Chemistry (8 SH) - C 103/104 or equivalent

General Physics (8 SH) - PS 201/202 or equivalent

Mathematics (12 SH) - M 115/221/222 plus a statistics course
or equivalent

D. Technical Sciences (15 Semester Hours)

Courses will be selected that deal with the application of engineering science subject matter. Specific requirements are one course in each of the following areas:

Electricity

Fluid Mechanics

Statics

Thermodynamics.

In addition a course must be selected from one of the following areas:

Dynamics

Electronics

Materials Technology

Strength of Materials

E. Technical Skills (30 Semester Hours Maximum)

Courses will be selected that provide skills and knowledge of appropriate methods, procedures and techniques and may include computer use, graphics, problem solving, processes, construction techniques, instrumentation techniques, production methods, field operations, plant operations, safety and maintenance.

The following guidelines will be adhered to:

1. A maximum of 30 hours will be permitted in this category.
2. Selection of courses must be consistent with specialization.
3. A maximum of six hours of drafting and one course (or 2 SH) in Computer Aided Drafting can be applied toward degree requirements.
4. A maximum of eight hours of surveying and topographic mapping can be applied toward the degree requirements.
5. A maximum of six hours of construction, production and other techniques, methods or operations i.e., construction, operation and production techniques, can be applied toward degree requirements.
6. After matriculation in the program, course work will normally be limited to instrumentation and computer use.

Specific requirements are:

- a. one course in instrumentation or microprocessors
- b. a minimum of (six credit hours) dealing with computer use
 - i. A microcomputer course dealing with one or more of the following: word processing, spread sheets, statistical packages and an introduction to basic.
AEC 635 (AEC 267 - new number) or its successor or equivalent
 - ii. A mainframe computer course requiring students to write original programs FORTRAN to solve practical engineering problems.

AGE 101 or equivalent

F. **Technical Specialization (9 Semester Hours Minimum)**

Courses will be selected that involve technical design and electives. A minimum of 9 hours are required. At least one course that emphasizes use of the computer as a problem-solving tool will be required. Students must complete 48 semester hours in course work assigned to technical skills, technical science and technical specialization categories.

Given the growing number of interdisciplinary problems facing society, it is strongly recommended that a course dealing with the broad discipline of earth and life sciences be taken.

G. **Technical Management (15 Semester Hours Minimum)**

Courses will be selected that enhance the student's ability to understand the operation and management of companies and/or their production units.

Minimum requirements are:

AEC 201 - Records and Accounts or

ACC 207/208 - Accounting I and Accounting II or equivalent are recommended for those persons with a strong interest in management principles. Accounting credits will not exceed 6 of the 15 credit hours. AEC 201 will not substitute for ACC 207.

ACC 207 - will substitute for AEC 201

A minimum of 130 SH will be required for a degree in the BAS/ETM program.

Program Status

1. Approved by College of Agricultural Sciences May, 1986.
2. Approved by the University Studies Committee in November, 1986.
3. To be presented to the Faculty Senate for final approval in early spring.
4. Goal is to admit students for semester beginning in September, 1987.

DEGREE:

BACHELOR OF
APPLIED SCIENCES

MAJOR:

ENGINEERING
TECHNOLOGY
AND
MANAGEMENT

HOST: DEPARTMENT OF
AGRICULTURAL
ENGINEERING

UNIVERSITY OF
DELAWARE AND
INSTIT: DELAWARE TECHNICAL
AND COMMUNITY
COLLEGE

REQUIREMENTS FOR GRADUATION

Baccalaureate Degree: Each student must satisfy the following general requirements for graduation in addition to the academic requirements of the particular college and curriculum chosen:

One semester of Freshman English (E 110)

The attainment of a scholastic average of C (a cumulative index of 2.0) in all work taken at the University

The satisfaction of the residence requirement by completing either the first 90 credits or the last 30 credits, full or part time, at the University of Delaware.

Honors Baccalaureate Degree: Within the requirements of the baccalaureate degree, the Honors degree is awarded to those students achieving a 3.4 cumulative grade index and satisfying the following: 30 credits of designated Honors courses, a senior thesis or project, and a written examination in the major subject. Individual department requirements may vary.

Associate Degree: See the ASSOCIATE DEGREE PROGRAMS section for requirements for the associate degree.

UNIVERSITY PARALLEL PROGRAMS

Delaware residents have the option of beginning their undergraduate studies in the University Parallel Programs offered at the Wilmington, Dover and Georgetown Branches of Delaware Technical and Community College. Applicants submit the regular admission application to the University of Delaware. Courses in the Parallel Program are offered by the University; instruction is by the University faculty; and credits earned are regular University undergraduate credits.

Although students admitted to the University Parallel Programs are considered as regular University undergraduates, normally such students will be required to complete the first year of studies at Delaware Technical and Community College, and are encouraged to complete the first two years of the baccalaureate degree in the Parallel Program, earning the Associate in Arts or Associate in Science degree.

1986-87 FALL SEMESTER GEORGETOWN PARALLEL PROGRAM

ARH - ART HISTORY

Monuments & Mthds In Hist Of Art 03 Hrs.
W 1900 2200

B - BIOLOGICAL SCIENCES

General Biology 03 Hrs.
TR 1130 1245 Curtis, L.
Ecological Adaptation & Evolutn 03 Hrs.
MW 0830 0945 Curtis, L.
General Biology Lab 01 Hrs.
T 1530 1730 Curtis, L.
Introductory Biology I 04 Hrs.
MW 1130 1245 Curtis, L.
R 1530 1830 Curtis, L.

C - CHEMISTRY

General Chemistry 04 Hrs.
TR 1000 1115 Kopy, C.
F 0800 1000 Kopy, C.
TR 1000 1115 Kopy, C.
F 1000 1200 Kopy, C.
TR 1900 2200 Kopy, C.

CJ - CRIMINAL JUSTICE

Introduction To Criminal Justice 03 Hrs.
T 1900 2200 Lloyd, R.

CIS - COMPUTER AND INFORMATION SCIENCES

General Computer Science 03 Hrs.
TR 1600 1900 Kopy, C.

E - ENGLISH

Preparatory English 03 Hrs.
MW 1600 1715 Smith, H.
* COURSE GRADED PASS/FAIL ONLY. NO DEGREE CREDIT GIVEN FOR E015.

Critical Reading & Writing 03 Hrs.
MW 0830 0945 Hummel, M.
MW 1130 1245 Hummel, M.
TR 0830 0945 Lemoncelli, R.
TR 1430 1545 Lemoncelli, R.
T 1900 2200 Lemoncelli, R.

Great American Writers 03 Hrs.
TR 1300 1415 Lemoncelli, R.

Introduction To The Novel 03 Hrs.
MW 1000 1115 Hummel, M.

* Written Communications In Business 03 Hrs.
M 1900 2200 Hummel, M.

FR - FRENCH

Elementary French I 03 Hrs.
M 1900 2200 Corder, L.

GEO - GEOLOGY

General Geology 04 Hrs.
MW 1300 1415
W 1530 1730

H - HISTORY

Western Civ To 1648 03 Hrs.
MW 0830 0945 Williams, W.

GEORGETOWN PARALLEL PROGRAM

United States History 03 Hrs.
MW 1130 1245 Williams, W.
W 1900 2200 Williams, W.

M - MATHEMATICAL SCIENCES

Intermediate Algebra 03 Hrs.
MW 1130 1245 Hall, N.
W 1300 1415

* NO DEGREE CREDIT GIVEN FOR M010

Elem Math And Statistics 03 Hrs.
MW 1000 1115 Hall, N.
M 1300 1415

Pre-Calculus 03 Hrs.
TR 0830 0945 Passmore, N.
W 1430 1545

Calculus I 03 Hrs.
MW 1900 2200 Hall, N.

Analytic Geometry & Calculus A 04 Hrs.
TR 1430 1630 Passmore, N.

Math For Elementary School I 03 Hrs.
MW 1600 1715 Hall, M.

MU - MUSIC

Appreciation Of Music 03 Hrs.
MW 1300 1415 Mulford, R.
Music In American Culture 03 Hrs.
M 1900 2200 Mulford, R.

PHL - PHILOSOPHY

Clear Thinking 03 Hrs.
MW 1000 1115 Norton, M.

PSY - PSYCHOLOGY

General Psychology 03 Hrs.
R 1900 2200 Greenly, S.

SC - SCIENCE

Physical Science With Lab 04 Hrs.
TR 1300 1415
T 1530 1830

SOC - SOCIOLOGY

Introduction To Sociology 03 Hrs.
TR 0830 0945 Nyce, H.

Social Deviance 03 Hrs.
TR 1130 1245 Nyce, H.

Social Problems 03 Hrs.
TR 1000 1115 Nyce, H.

SP - SPANISH

Elementary Spanish I 03 Hrs.
MW 0830 0945 Roberts, M.
M 1000 1115

ST - STATISTICS

Introduction To Statistics I 03 Hrs.
TR 1000 1115 Passmore, N.

AGE - AGRICULTURAL ENGINEERING

Agricultural Waste Mngmnt Systems 03 Hrs.
R 1900 2200

ACC - ACCOUNTING

Accounting I 03 Hrs.
TR 1130 1245

1986-87 SPRING SEMESTER GEORGETOWN PARALLEL PROGRAM

ARH - ART HISTORY

Design & Expression in Visual Arts 03 Hrs.
W 1900 2200 Galbraith, M

B - BIOLOGICAL SCIENCES

General Biology 03 Hrs.
MW 0830 0945 Curtis, L
Ecological Adaptation & Evolution 03 Hrs.
MW 1430 1545 Curtis, L
General Biology Lab 01 Hrs.
T 1530 1730 Curtis, L
Introductory Biology II 04 Hrs.
MW 1130 1245 Curtis, L
R 1530 1630

C - CHEMISTRY

General Chemistry 04 Hrs.
TR 1000 1115 Kopy, C
F 0830 1100

CJ - CRIMINAL JUSTICE

Problems Of Law Enforcement 03 Hrs.
T 1900 2200 Lloyd, R

CIS - COMPUTER AND INFORMATION SCIENCES

General Computer Science 03 Hrs.
TR 1600 1900 Kopy, C
MW 0000 0000

E - ENGLISH

Critical Reading & Writing 03 Hrs.
TR 1000 1115 Hummel, M
Approaches To Literature 03 Hrs.
R 1900 2200 Hummel, M
Great English Writers II 03 Hrs.
TR 0830 0945 Hummel, M
Introduction To Drama 03 Hrs.
MW 1000 1115 Lemoncelli, R
Introduction To The Novel 03 Hrs.
TR 1130 1245 Lemoncelli, R
Short Story 03 Hrs.
MW 1430 1545 Lemoncelli, R

FR - FRENCH

Elementary French II 03 Hrs.
M 1900 2200 Wharton, L

H - HISTORY

Western CIV:1648-Present 03 Hrs.
MW 0830 0945 Wilkins, W
United States History 03 Hrs.
MW 1130 1245 Wilkins, W
W 1900 2200 Wilkins, W

M - MATHEMATICAL SCIENCES

Elem Math. And Statistics 03 Hrs.
MW 1000 1115 Hall, N
M 1130 1245
Pre-Calculus 03 Hrs.
TR 1130 1245 Passmore, N
W 1600 1715

Calculus I 03 Hrs.
TR 1630 1745 Passmore, N
Finite Math With Applications 03 Hrs.
M 1900 2200 Hall, N
Analytic Geometry & Calculus A 04 Hrs.
TR 1400 1600 Passmore, N
Analytic Geometry & Calculus B 04 Hrs.
MW 1400 1600 Hall, N
Math For Elementary School II 03 Hrs.
MW 1600 1715 Hall, N

PHL - PHILOSOPHY

Contemporary Moral Problems 03 Hrs.
MW 1000 1115 Norton, M

PSC - POLITICAL SCIENCE

American Political System 03 Hrs.
M 1900 2200

PSY - PSYCHOLOGY

Child Psychology 03 Hrs.
R 1900 2200 Greeny, S

SC - SCIENCE

Physical Science With Lab 04 Hrs.
MW 1300 1415 Kopy, C

SOC - SOCIOLOGY

Social Deviance 03 Hrs.
TR 0830 0945 Nyce, H
Juvenile Delinquency 03 Hrs.
TR 1300 1415 Nyce, H

SP - SPANISH

Elementary Spanish II 03 Hrs.
MW 0830 0945 Roberts, M
M 1000 1115

ST - STATISTICS

Introduction To Statistics II 03 Hrs.
TR 1000 1115 Passmore, N

AGE - AGRICULTURAL ENGINEERING

Intro Ag Engineering Technology 03 Hrs.
T 1900 2200 Jester, R

ACC - ACCOUNTING

Accounting II 03 Hrs.
TR 1130 1245 Kimble, C

EC - ECONOMICS

Introduction To Macroeconomics 03 Hrs.
TR 1300 1415 Kimble, C

EDD - EDUCATIONAL DEVELOPMENT

Children's Literature 03 Hrs.
R 1600 1900 Townsend

EC - ECONOMICS

Introduction To Microeconomics 03 Hrs.
TR 1300 1415

EDS - EDUCATIONAL STUDIES

Human Development & Ed Practice 03 Hrs.
T 1600 1900 Welch, R
Sociological Foundations Of Educ 03 Hrs.
W 1600 1900 Jefferson, O

PE - PHYSICAL EDUCATION

Tennis 01 Hrs.
ARR Nelson, L
Racquetball 01 Hrs.
ARR Nelson, L
Physical Education 01 Hrs.
ARR Nelson, L
ARR Nelson, L

U - UNIVERSITY COURSE

Survival Skills For Coll Student 01 Hrs.
W 1430 1545
* COURSE GRADED PASS/FAIL ONLY
Survival Skills For Coll Student 01 Hrs.
R 1000 1115
* COURSE GRADED PASS/FAIL ONLY

PS 201
PS 202

1986-87 FALL SEMESTER WILMINGTON PARALLEL PROGRAM

ARH - ART HISTORY

Design & Expression In Visual Arts 03 Hrs.
MW 1000 1115 Yantz, J

B - BIOLOGICAL SCIENCES

General Biology 03 Hrs.
MW 1300 1415
General Biology Lab 01 Hrs.
W 1430 1630
Introductory Biology I 04 Hrs.
MW 1000 1115 Tucker, S
F 0930 1230

C - CHEMISTRY

General Chemistry 04 Hrs.
TR 1130 1245 Kallal, C
R 1430 1730

CJ - CRIMINAL JUSTICE

Introduction To Criminal Justice 03 Hrs.
TR 1430 1545 Morowitz, A

E - ENGLISH

Preparatory English 03 Hrs.
MW 1000 1115 Bonner, J
* COURSE GRADED PASS/FAIL ONLY NO DEGREE CREDIT GIVEN
FOR EDIS
Preparatory English 03 Hrs.
MW 1300 1415 Bonner, J
* COURSE GRADED PASS/FAIL ONLY
Preparatory English 03 Hrs.
TR 0830 0945 Robinson, J
* COURSE GRADED PASS/FAIL ONLY
Preparatory English 03 Hrs.
TR 1130 1245 Goldstein, P
* COURSE GRADED PASS/FAIL ONLY
Critical Reading & Writing 03 Hrs.
MW 1000 1115 Robinson, J
MW 0830 0945 Bonner, J
MW 1430 1545 Bonner, J
TR 1000 1115 Robinson, J
TR 1300 1415 Goldstein, P
Introduction To Drama 03 Hrs.
MW 0830 0945 Robinson, J

H - HISTORY

Western CIV To 1648 03 Hrs.
TR 1300 1415 White, M
United States History 03 Hrs.
TR 1000 1115 White, M
TR 1430 1545 White, M P

M - MATHEMATICAL SCIENCES

Intermediate Algebra 03 Hrs.
MW 0830 0945 Anderson, J D
F 0830 1030
* NO DEGREE CREDIT GIVEN FOR M010
Intermediate Algebra 03 Hrs.
MW 1130 1245 Wilburne, J
F 0830 0930
MW 1300 1415 Anderson, J
F 1030 1130
TR 0830 0945 Anderson, J
F 1200 1300
Pre-Calculus 03 Hrs.
TR 1000 1115 Anderson, J D
F 0830 0930

KENT PARALLEL PROGRAM

COLL. DEPT. COURSE SEC. BL. START/END TIME BLDG. ROOM INSTRUCTOR

1986-87 FALL SEMESTER KENT PARALLEL PROGRAM

ARH - ART HISTORY

Design & Expression in Visual Arts 03 Hrs.
T 1900 2200

B - BIOLOGICAL SCIENCES

General Biology 03 Hrs.
TR 1300 1430 Tucker, S
General Biology Lab 01 Hrs.
T 0900 1100 Tucker, S
Introductory Biology I 04 Hrs.
TR 1600 1715 Tucker, S
R 0900 1200

CJ - CRIMINAL JUSTICE

Introduction To Criminal Justice 03 Hrs.
M 1900 2200

E - ENGLISH

Preparatory English 03 Hrs.
MW 1600 1715 Tucker, L
* NO DEGREE CREDIT GIVEN FOR ED15.
Critical Reading & Writing 03 Hrs.
MW 1300 1415 Tucker, L
TR 1300 1415 Tucker, L
Approaches To Literature 03 Hrs.
TR 1700 1830 Tucker, L

H - HISTORY

United States History 03 Hrs.
M 1900 2200 White, M

M - MATHEMATICAL SCIENCES

Intermediate Algebra 03 Hrs.
R 1430 1545 Wilburne, J
* NO DEGREE CREDIT GIVEN FOR M010
Pre-Calculus 03 Hrs.
TR 1600 1715 Wilburne, J
F 1300 1400
Calculus I 03 Hrs.
MW 1600 1715 Wilburne, J
F 1130 1230

MU - MUSIC

Appreciation Of Music 03 Hrs.
W 1900 2200

PHL - PHILOSOPHY

Clear Thinking 03 Hrs.
MW 1300 1415 Norton, M

PSC - POLITICAL SCIENCE

American Political System 03 Hrs.
R 1900 2200

PSY - PSYCHOLOGY

General Psychology 03 Hrs.
MW 1730 1845

1986-87 FALL SEMESTER

KE
COLL.

COLL. DEPT. COURSE SEC. BL. START/END TIME BLDG. ROOM INSTRUCTOR

SOC - SOCIOLOGY

Introduction To Sociology 03 Hrs.
MW 1430 1545 Nyce, N

SP - SPANISH

Elementary Spanish I 03 Hrs.
TR 1730 1845
F 1600 1715

ACC - ACCOUNTING

Accounting I 03 Hrs.
W 1900 2200

EC - ECONOMICS

Introduction To Microeconomics 03 Hrs.
MW 1730 1845

PE - PHYSICAL EDUCATION

Tennis 01 Hrs.
ARR
Sailing 01 Hrs.
ARR Nelson, L
Hiking 01 Hrs.
ARR Nelson, L

U - UNIVERSITY COURSE

* U187 GRADED PASS/FAIL ONLY.
Cell Survival Skills 01 Hrs.
F 1300 1415
F 1100 1215

COLLEGE	DEPT	COURSE	COURSE TITL	STAFF	STRT TIME	BLDG	ROOM	CREDIT
---------	------	--------	-------------	-------	-----------	------	------	--------

ARH - ART HISTORY

Monuments & Mithas in Hist Of Art 03 Wra
T 1900 2200 Yantz J

Ecological Adaptation & Evolution	03 Mrs.
TR 1300 1415	Tucker, S
General Biology Lab	01 Mrs.
T 0900 1100	Tucker, S
Introductory Biology II	04 Mrs.
TR 1600 1715	Tucker, S
R 0900 1200	

Problems Of Corrections MW 170: 1845 Tull. H 03 Wm.

Critical Reading & Writing	03 Mrs.
MW 1600 1715	Christensen, B
Approaches To Literature	03 Mrs.
MW 1430 1545	Christensen, B
Short Story	03 Mrs.
TR 1300 1415	Christensen, B

United States History
M 1900 2200

Elem Math And Statistics			03 Hrs.
MW	1300	1415	Wilburne, J
F	1200	1415	
Pre-Calculus			03 Hrs.
MW	1600	1715	Wilburne, J
F	1300	1415	
Calculus I			03 Hrs.
M	1900	2200	Wilburne, J

Appreciation Of Music
W 1900 2200
03 Mrs.
Mullford, R

Contemporary Moral Problems MW 1430 1545 03 Mrs. Norton, M.

Intro To International Relations
TR 1730 1845

General Psychology
R 1900 2200
03 Hrs.
Lanahan, M.

Physical Science Without Lab			03 Hrs.
TR	1600	1715	

1986-87 SPRING SEMESTER						
COURSE	DEPT	COURSE SEC NO	COURSE TITLE SECTS	START-END TIME	BLDG ROOM	CRSE DFTS INSTRUCTOR

Social Deviance 03 Hrs.
MW 1300 1415 Nyce, H

Elementary Spanish II 03 Mrs.
MW 1900 2015 Remond, H

Accounting II 03 Hrs.
MW 1900 2015 Kimble, C

Introduction To Macroeconomics 03 Hrs.
MW 1730 1845 Kimble, C

Tennis 01 Hrs.
ARR Delap. J

Skills For College Students		01 Hrs.
R	1200 1300	Nonon. M

55 201

TRANSFER APPLICANTS

Students with current or previous attendance at other colleges and universities who now seek admission to the University of Delaware should present secondary school credentials similar to those outlined in the preceding section. The minimum requirement for Delaware residents to be considered for transfer admission is a C average (2.0 index) in all previous college work. To be considered for admission, out-of-state transfer applicants are expected to have achieved a higher average in previous college work. The requirements for residents and nonresidents may be higher than these in certain programs or if enrollments are limited. Students must be in good standing and eligible to return to the institution from which transfer is sought. The transfer applicant's total academic credentials are considered: previously achieved grade index, type of institution attended, and performance in specific courses relating to the proposed field of study.

The University of Delaware accepts credits only from those institutions that are fully accredited by the appropriate regional accrediting association. These credits must be at the baccalaureate level, applicable to a degree program offered by this University as approved by the appropriate dean, and passed with a grade of C or better. Acceptance may vary from one program to another. Transfer students must complete either the first 90 credits or the last 30 credits as admitted students, full or part time, at the University of Delaware to receive a degree.

A transfer applicant must arrange for the Registrar of the former college to forward to the Admissions Office an official, complete transcript. Students are charged a nonrefundable fee of \$10 for processing and evaluating transcripts.

Work taken elsewhere is not included in the overall scholastic index used to determine eligibility for graduation; candidates for the baccalaureate degree must achieve at least a 2.0 (C) index for work taken at this University.

TRANSFER OF CREDIT

Students already enrolled at the University of Delaware who wish to receive credit for work to be taken at another institution must complete a Post Admission Advance Standing form. Permission must be obtained for the particular course or courses for which credit is desired. It is recommended that the adviser or dean be consulted prior to taking such work, although the written approval and transfer transaction may be processed after the completion of the course. Specific instructions for obtaining such approval may be obtained from the Registration Office. The credits and quality points for work taken elsewhere will not be included in the calculation of the student's University of Delaware cumulative index but are included in the student's higher education index.

Students from Delaware State College and Delaware Technical and Community College who wish to transfer to the University of Delaware should consult the Admissions Office and their own department chairs and college deans for transfer of credit information.

Transfer of Credit Matrix

DELAWARE STATE COLLEGE

DELAWARE TECHNICAL AND COMMUNITY COLLEGE

UNIVERSITY OF DELAWARE

1985-1988

Introduction

This document contains the February 22, 1985, revisions and additions of courses available for transfer credit among Delaware State College, Delaware Technical and Community College, and the University of Delaware. These transfer agreements take effect for Fall, 1985. Students who wish to transfer course credits should consult this document and the college/departement advisor appropriate to their choice of major.

Special Instruction for Transfer of Credit between Delaware Technical and Community College and the University of Delaware

Following generally accepted policy regarding the transfer of credit from a quarter hour system to a semester hour system, the Matrix which follows indicates course *content* equivalencies only. The actual semester hour equivalents will be assigned on a three-to-two basis; i.e., three quarter hours will be accepted as two semester hours of credit. Questions concerning exact degree requirements will be addressed when the enrollee meets with the college/departement advisor.

TRANSFER OF CREDIT MATRIX

July 1985

Agriculture Engineering (3)

DELAWARE TECHNICAL & COMMUNITY COLLEGE		DELAWARE STATE COLLEGE		UNIVERSITY OF DELAWARE	
Course Number & Title		Course Number & Title		Course Number & Title	
EL 253 Electrical Machinery I (6) and EL 254 Electrical Machinery II (6) and EL 255 Indus. Power System I (6) and EL 256 Indus. Power System II (6) and EL 258 Electrical Control System (5) OR EL 248 Machine and Controls (4) and EL 143 Electricity III (5) OR EL 262 Three Phase Circuits (6) and Transformers				AGE 266 Electrical Power (22 VAR) [1]	
EL 144 Electronics I (6) and EL 244 Electronics II (6) and EL 245 Electronics III (6) and EL 246 Industrial Electronics (6) and EL 249 Digital Electronics I (6) and EL 252 Digital Electronics II (6)				AGE 266 Indus. Electronics (24 VAR) [1,4]	
EI 231 Process Instrumentation I (4) and EI 232 Process Instrumentation II (4)				AGE 403 Instrumentation (3) AGE 266 Industrial Instrument. (2)	

TRANSFER OF CREDIT MATRIX

July 1985

Business Administration

DELAWARE TECHNICAL & COMMUNITY COLLEGE		DELAWARE STATE COLLEGE		UNIVERSITY OF DELAWARE	
Course Number & Title		Course Number & Title		Course Number & Title	
BA 221 Principles of Marketing (4) and BA 222 Problems in Marketing (4)		BUS 215 Marketing (3) 42-42b Marketing Management		BU 301 Intro. to Marketing	
BA 231 Principles of Management (4)		BUS 310 Management (3)		BU 309 Management & Org. Behavior (3)	
BA 244 (Wilmington) Finance (4) (subject to review at proposed revision of BA 244)		BUS 300 Business Finance (3)		BU 311 Business Finance (3)	
BA 211 Business Decisions with Computer Applications				BU 211 Quantitative Methods in Business (3)	
IN 141 Org. & Mgmt. Principles (3)				BU 309 Mgmt. & Org. Behavior (3)	
(All other B.A. & I.N. courses not otherwise specifically comparable)*				BU 166* Special Problems or (3) BU 266* Special Problems (3)	

* These courses carry academic credit but do not apply toward a degree in Business Administration or Accounting at Delaware.

July 1985

TRANSFER OF CREDIT MATRIX

Communication

DELAWARE TECHNICAL & COMMUNITY COLLEGE		DELAWARE STATE COLLEGE		UNIVERSITY OF DELAWARE	
Course Number & Title		Course Number & Title		Course Number & Title	
RH 121 Human Relations				COM 361 Interpersonal Communication	
RH 124 Oral Communication				COM 350 Public Speaking	
RH 229 Intercultural Communication				COM 320 Analysis of Intercultural Communication	
HS 146 Introduction to Group Dynamics				COM 356 Small Group Communication	

TRANSFER OF CREDIT MATRIX

July 1985

Engineering (2)

DELAWARE TECHNICAL & COMMUNITY COLLEGE		DELAWARE STATE COLLEGE		UNIVERSITY OF DELAWARE	
Course Number & Title		Course Number & Title		Course Number & Title	
		PH 305 Heat and Thermodynamics (3)		MAE 7 Thermodynamics I (3)	
AE 141 Technical Drafting I (4) and AE 142 Technical Drafting II (4)		EG 132 Engineering Graphical Analysis (2)		EG 132 Engineering Graphics Analysis (2)	
AD 17U Introduction to CAD (4)		EG 132 Engineering Graphical Analysis (2)		EG 132 Eng. Graphics Analysis (2)	
AE 211 CAD I (2) and AE 212 CAD II (2)		EG 132 Engineering Graphical Analysis (2)		EG 132 Eng. Graphics Analysis (2)	
CI 144 Surveying I (3) CI 145 Surveying II (3) CI 246 Surveying III (3) CI 245 Topographical Mapping (3) (any two of the above)				CE 223 Surveying (3)	
EL 249 Digital Electronics I (6)		EE 202 Intro. to Digital Systems (3)		EE 202 Intro. to Digital Systems (3)	
EL 252 Digital Electronics II (6)		EE 225 Logical Design of Digital Circuits (3)		EE 225 Logical Design of Digital Circuits (3)	
EL 111 Basic Electricity (5) EL 133 Electrical Circuits (5) EL 241 Network Analysis (5)		EE 205 Linear Circuit Theory I (4)			
EL 141 Electricity I (6) EL 142 Electricity II (6)		EE 205 Linear Circuit Theory I (4)			

TRANSFER OF CREDIT MATRIX

July 1985

English (2)

DELAWARE TECHNICAL & COMMUNITY COLLEGE		DELAWARE STATE COLLEGE		UNIVERSITY OF DELAWARE	
Course Number & Title		Course Number & Title		Course Number & Title	
RE 128 American Literature: Post Civil War (3)		307 American Literature II (3)		E 341 American Lit. Civil War - World War II (3)	
		309 The English Renaissance (3)		E 325 The Age of Sidney & Spenser (
		311 Advanced Composition (3)		E 301 Problems in Composition (3)	
JR 140 Newspaper Fundamentals (3)		315 Journalism (3)		E 307 News Writing and Editing (3)	
		316 American Lit. of Afro-American Life (3)		E 441 Studies in American Lit (3)	
		310 Modern Novel (3)		E 471 Studies in Fiction (3)	
		401 Victorian Literature (3)		E 336 Victorian Poetry (3)	
		402 Contemporary Literature (3)		E 339 Twentieth Century British Literature (3)	
		404 Teaching English in the High School (3)		E 384 Methods of Teaching English (
		204 Principles of Linguistics (3)		E 490 Linguistic Theory (3)	
RE 123 Technical Writing (3)		408 Technical & Scientific Writing & Editing (3)		E 410 Technical Writing (3)	
RE 151 Technical Writing & Oral Communications (4)				E 312 Written Communications*in Business (3)	
RE 124 Oral Communications (3)		200 Public Speaking (3)		COM 350 Public Speaking (3)	

STUDENT CLASSIFICATION

A student's classification (college and class year) is assigned at the time of admission. Normally, a student with 27 or less credits earned toward the degree will be classified as a freshman; those with 28 to 61 credits will be classified as sophomores; those with 62 to 94 credits will be classified as juniors; and those with 95 or more credits will be classified as seniors. Students who register for less than 12 credits in the fall or spring semester are considered part-time students. In these cases the class year designation is replaced by the designation "degree candidate" (DC).

A NORMAL COURSE LOAD:
Full-time Undergraduates

A normal schedule consists of four or five major courses subject to the following credit limitations:

For freshmen, a normal load may not exceed 17 credits excluding basic military science and courses in physical education. A reduced schedule of four major courses plus physical education and military science may be suggested for some freshmen by faculty advisers. (See also section on Summer/Winter Sessions.)

For upperclass students not on probation, a normal load should not exceed 18 credits, unless prescribed by the curriculum.

Students on academic probation should not register for more than four major courses, excluding basic military science and physical education.

Registration as a Listener is counted the same as registration for credit for the purpose of determining course load. (See also section on Progress Toward Degree.)

A NORMAL COURSE LOAD:
Part-time Undergraduates

A student registered for fewer than twelve credits during a regular semester is considered to be a part-time student. Part-time students admitted to the University's undergraduate or graduate divisions are considered degree candidates (DC). All other students attending on a part-time basis are considered continuing education students (CEND), i.e., not pursuing a formal degree. (See also section on Summer/Winter Sessions.)

Registration as a Listener is counted the same as registration for credit for the purpose of determining course load.

2. A full-time undergraduate student is one who is registered at the end of the late registration period in any semester for 12 or more credits. Students are admitted to the University as either full- or part-time degree candidates. Following matriculation, this status is determined each semester based on the number of credits for which the student is initially registered at the end of the late registration period.

FACULTY AND PROFESSIONAL STAFF

Research and Education Center

GEORGE W. CHALOUPIKA, B.S. (DELAWARE), *Director of University Research and Education Center.*
GEORGE W. MALONE, M.S. (MASSACHUSETTS), *Associate Scientist.*
KENNETH M. HASTINGS, B.S. (DELAWARE), *Farm Superintendent.*
EDWARD L. WISK, M.S. (DELAWARE), *Associate Scientist.*
RALPH V. LOWE JR., B.S. (DELAWARE), *Research Associate II.*
JENNINGS C. FOSKEY, A.A. (DELAWARE TECHNICAL AND COMMUNITY COLLEGE, GEORGETOWN), *Research Associate I.*
EDWIN A. ODOR, D.V.M. (AUBURN), *Senior Scientist.*

Cooperative Extension

RICHARD E. FOWLER, Ph.D. (MARYLAND), *Director of Cooperative Extension.*
DEBORAH J. AMSDEN, M.S. (DELAWARE), *Home Economics Agent.*
RICHARD A. BARCZEWSKI, M.S. (VIRGINIA), *Agricultural Agent.*
DEAN C. BELT, M.S. (DELAWARE), *Agricultural Agent.*
MARCUS R. BUTTERFIELD, M.S. (NEW HAMPSHIRE), *State 4-H Leader.*
GEORGE W. CHALOUPIKA, B.S. (DELAWARE), *Poultry Specialist.*
MARY ANN FINCH, M.S. (MISSOURI), *State Leader Home Economics.*
SARAH R. FOULKE, M.S. (DELAWARE), *Home Economics Agent.*
CARL L. GERMAN, M.S. (SOUTHERN ILLINOIS), *Crops Marketing Specialist.*
JOY L. GOODEN, B.S. (DELAWARE), *4-H Agent.*
MARK GRAUSTEIN, M.S. (DELAWARE), *Entomology Specialist.*
JOHN ROSS HARRIS JR., B.S. (DELAWARE), *Environmental Quality Specialist.*
LLOYD LEE HETTE, B.S. (DELAWARE), *4-H Agent.*
ROBERT HOCHMUTH, M.S. (MARYLAND), *Agricultural Agent.*
CLAUDIA H. HOLDEN, B.S. (DELAWARE STATE), *Home Economics Agent.*
RONALD C. JESTER, M.S. (PURDUE), *Farm Safety Specialist.*
GARY B. JOHNSTON, B.S. (DELAWARE), *Field Crops Assistant.*
WALTER E. KEE JR., M.S. (DELAWARE), *Vegetable Crops Specialist.*
MARK G. KOOKER, M.S. (DELAWARE), *Assistant Farm Management Specialist.*
MARGUERITE KRACKHARDT, M.S. (COLORADO STATE), *EFNEP Coordinator; also Assistant Professor of Food Science and Human Nutrition, College of Human Resources.*
DANIEL S. KUENNEN, M.S. (SOUTHERN ILLINOIS), *Community Resource Development Area Agent.*
MARK J. MANNO, M.S. (VIRGINIA POLYTECHNIC INSTT), *Urban 4-H Agent.*
JAMES R. MOORE, B.S. (DELAWARE), *4-H Agent.*
ROBERT P. MULROONEY, M.S. (DELAWARE), *Plant Pathology Specialist.*
PATRICIA T. NELSON, Ed.D. (COLUMBIA), *Family and Child Development Specialist.*
O. SUE SNIDER, Ph.D. (MISSOURI), *Nutrition Specialist.*
DAVID V. TATNALL, M.S. (DELAWARE), *Ornamental Horticulture Agent.*
RICHARD W. TAYLOR, Ph.D. (CONNECTICUT), *Soil Fertility and Crops Management Specialist.*
H. DON TILMON, Ph.D. (PURDUE), *Farm Management Specialist.*
ROBERT UNLATOWSKI, B.S. (DELAWARE), *Field Crops Assistant.*
GERALD F. VAUGHN, M.S. (DELAWARE), *Community and Research Economics Specialist.*
S. DERBY WALKER JR., M.S. (DELAWARE), *Agricultural Agent.*
FRANCIS J. WEBB, M.S. (DELAWARE), *Crops Specialist.*
JOANNE WHALEN, M.S. (DELAWARE), *Pest Management Specialist.*
ROXANNE H. WHITTAKER, M.S. (OHIO), *Home Economics Agent.*
THOMAS H. WILLIAMS, M.E.E. (DELAWARE), *Agricultural Engineering Specialist.*
DAVID H. WOODARD, B.S. (DELAWARE), *Agricultural Program Leader.*

INDUSTRIAL ADVISORY COMMITTEE

Val DeRocili
George & Lynch Inc.
R. D. #3 Box 600
Gumboro, DE 19966

Everett Bennett
Bennett Machine Co.
1601 S. DuPont Blvd.
Milford, DE 19963

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Greenwood, DE 19950

Colleen Denny
42 Fisher Ave.
Milford, DE 19963

Robert Zimmerman
21 S. Shore Dr.
Dover, DE 19901

David Newnom
608 Brookside Dr.
Seaford, DE 19973

Michael Makowski
123 McFee St.
Lewes, DE 19958

William Harris
342 Wolf Rock Rd.
Paradise, PA 11562

Steve Small
Messick & Gray
R. D. #3 Box 150E
Bridgeville, DE 19933

Tom Beston
1338 New Rodgers Rd.
Apt. N-6
Levittown, PA 19056

A. Communications (9 UD SH minimum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
RE 121	ENGLISH I	3	E 110	2
RE 122	ENGLISH II	3	E 167	2
RE 123	TECH REPORT WRITING	3	E 410	2
RE 124	ORAL COMMUNICATIONS	3	COM 350	2
RH 121	HUMAN RELATIONS	3	COM 361	2

SUBTOTAL

B. Social Sciences/Humanities (15 UD SH minimum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
RH 123	ECONOMICS I	3	EC 151	2
RH 223	ECONOMICS II	3	EC 152	2
RH 122	POLITICAL SCIENCE	3	PSC 105	2
RH 127	SOCIOLOGY	3	SOC 201	2
RH 205	INDUSTRIAL PSYCHOLOGY	3	PSY 324	2

SUBTOTAL

C. Basic Sciences/Mathematics (28 UD SH minimum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
RM 121	TECH MATH I	4	----	
RM 122	TECH MATH II	4	M 115	3
RM 226	CALCULUS A	4	M 241	3
RM 237	PROBABILITY/STATISTICS	5	ST 205	3
RP 121	PHYSICS I	4	----	
RP 122	PHYSICS II	4	PS 201	4

SUBTOTAL

D. Technical Sciences (15 UD SH minimum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
REQ	ELECTRICITY			
REQ	FLUID MECHANICS			
REQ	STATICS			
REQ	THERMODYNAMICS		AGE 311	3
SEL	STRENGTH OF MTLs			
SEL	ELECTRONICS			
SEL	DYNAMICS			

SUBTOTAL

D. Technical Sciences (15 UD SH minimum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
EL 141	ELECTRICITY I	6	AGE 266	
CI 130	HYDRAULICS/HYDROLOGY	4	AGE 266	
AD 132	BUILDING STATICS	4	AGE 266	
AD 125	STRUCTURES & MTLs	5	AGE 266	
EL 144	ELECTRONICS I	6	AGE 266	
		(25)		(16)

SUBTOTAL

E. Technical Skills (30 UD SH maximum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
AD 141	ARCH DRAFTING I	4	AGE 109	2
AD 142	ARCH DRAFTING II	4	AGE 166	3
AD 170	INTRO TO CAD	4	AGE 209	2
CI 144	SURVEYING I	3	AGE 113	2
EC 110	BASIC FOR ET	4	AGE 166	3
ME 101	MANUFAC PROCESSES I	3	AGE 266	2
EC 270	TROUBLESHOOTING MICROS	4	AGE 266	3

SUBTOTAL

F. Technical Specialization (9 UD SH minimum)

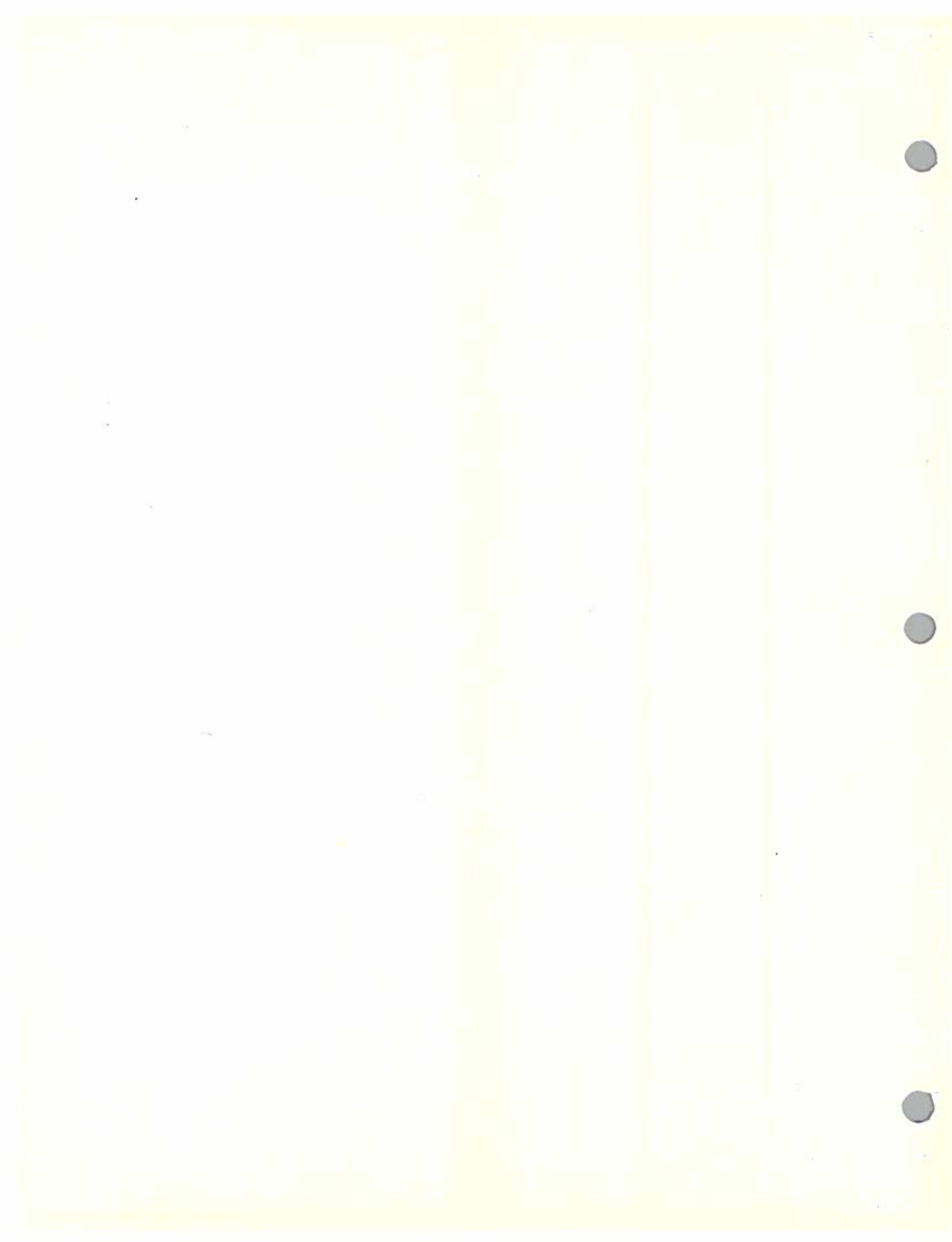
DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
EL 142	ELECTRICITY II	6	AGE 266	4
EL 244	ELECTRONICS II	6	AGE 266	4
EL 249	DIGITAL ELECTRONICS I	6	AGE 266	4
EL 252	DIGITAL ELECTRONICS II	6	AGE 266	4

SUBTOTAL

G. Technical Management (15 UD SH minimum)

DTTC Course #	DTTC Course Title	DTTC Hours	UD #	UD SH
AD 244	CONTRACTS & SPECS	3	AGE 366	2
AD 248	CONTRACT ADMIN	3	AGE 366	2
CI 224	COST EST & PLANNING	3	AGE 306	2

SUBTOTAL



UNDERGRADUATE ADMISSIONS STANDARDS FOR THE UNIVERSITY OF DELAWARE

1. Admission Guidelines for Freshmen

- A. Applicants to the University must be graduates of accredited secondary schools or have equivalent credentials.
- B. Students should have graduated in the uppermost percentiles of their high school classes (at least the upper half).
- C. All applicants are required to submit Scholastic Aptitude Test (SAT) scores. Applicants are also encouraged to submit scores on either the College Board Achievement Tests or Advanced Placement Tests in their areas of interest for placement and advisement purposes.
- D. Applicants should have a firm grasp of basic academic skills and a strong commitment to academic achievement and learning. As this cannot ordinarily be measured directly, some form of indirect evidence is generally needed. While in some cases, alternate forms of evidence of ability and seriousness of academic purpose may be appropriate, the most easily interpreted evidence is a strong high school record with a wide range of courses.

The following courses are required:

	<u>Units</u>
1) Four years of college preparatory English, including courses with extensive writing components.	4
2) At least two years of college preparatory mathematics (more is suggested for Science, Engineering and Business and Economics Majors).	2
3) At least two years of science, including one year of a laboratory science.	2
4) Three years of social sciences, at least two in history.	3
5) At least two years of study in the same foreign language.	2
6) Academic electives, three years. Elective units should be taken in academic fields--in English, mathematics, foreign languages, history and social studies or science. Electives <u>do not</u> include, for example, sport activities or driver education.	3
Total Academic Units	16

The University urges high school students to take as many mathematics and foreign language courses as possible, with special attention to the selection of those courses in the twelfth grade.

II. Admission Decisions

Students will be admitted after careful evaluation of individual applications. The University reaffirms its commitment to the recruitment, admission and retention of minority students and others who enhance the cultural diversity of the University. Admission will not be guaranteed, either to a college or a major, on the basis of specific class rank, test scores, or pattern of high school subjects.

The University is committed to the principle of equal opportunity in education and seeks a diverse student body. It encourages applications from persons who may not meet all the requirements set forth in this document, but who demonstrate the potential for success at the University of Delaware. Particular attention will be given to applicants who have been out of school for several years, foreign students, handicapped students, veterans, and students whose secondary education, family income level, or background have prevented them from meeting all the requirements for admission. Applicants denied admission may apply for reconsideration.

III. Transfer Students

Minimum requirements for consideration for transfer admission include: a C average (2.0) G.P.A. in all previous college work for Delaware residents, a 2.5 G.P.A. in all college work for nonresidents.

Some majors are more competitive and require a higher G.P.A. and specific course work for admission. Competitive majors include engineering, business administration, accounting, economics, computer science, physical therapy and communication.

Transfer students should be eligible to return to their previous institutions.

IV. Application Deadlines

The application deadlines shall be those stated in the Viewbook.

V. Review of Admissions

Admissions to the University shall be monitored throughout the admission cycle each year by the deans of the colleges. An annual review, including a discussion of exceptional cases, shall be conducted between the Dean of Admissions and the deans of the colleges.

VI. Implementation

These Undergraduate Admissions Standards should be implemented by the Dean of Admissions as soon as practicable. A three-year lead time is recommended to meet the needs of Delaware high schools.

Memorandum

January 16, 1987



MEMO TO: Ann Clark
Life and Health Sciences

FROM: Janet Hall *Janet Hall*
Institutional Research and
Strategic Planning

RE: A & S Faculty Senate Proposed Admissions Course Requirements

Enclosed are some tables related to the information you requested on the percentage of Delaware high school graduates at the University with two or more years of study in a foreign language.

Attachment 1 summarizes the various proposed admissions course requirements. Attachment 2 looks at the Fall 1986 new freshmen by residency and determines the number who would have met these proposed course requirements. Attachment 3 does the same, but breaks the students down by race. Attachment 4 contains the specific data you requested, namely the number of Fall 1986 freshmen who took two or more years of a single foreign language, and who took at least one year of a foreign language. For completeness, I have included information on each of the other specific course requirements (English, Math, Science and Social Science (History/Social Studies)).

A few caveats are necessary. Although the Admissions system records only academic high school courses, there are some criteria which cannot be determined from the file, namely:

1. the content of the recorded English courses, i.e. "extensive writing components";
2. the content of the mathematics courses, other than Calculus which is recorded separately;
3. the content of the social studies courses, i.e. "history";
4. whether or not foreign language courses categorized as "other" are the same language; only French, Spanish, German and Latin are identifiable.

For the analysis done here, I have counted each student's high school course grades in groups of English, mathematics, foreign language (determining if the student has at least two units of French, Spanish, German or Latin), laboratory sciences (Biology, Chemistry and Physics), other science (content unknown) and social studies. I have assumed that counts of grades in these groups meeting or exceeding the proposed Arts and Science course requirements mean the student would fulfill the criteria.



Ann Clark
January 16, 1987
Page 2

Not every student matriculated at the University as a first-time freshman in the fall can be located by social security number on both the Admissions and Student Records System files. Thus, the counts here will be slightly lower than the "official" counts; however, the percentages should be a reliable indicator.

Residency is determined by multiple criteria; not all students reported as "Residents" actually graduated from Delaware high schools. Resident-connected students are those non-residents admitted under resident criteria.

Because of the quantity of data on Attachment 4, it was necessary to reduce it. I hope it is readable! If you have any questions or comments, please call me.

JH/cp

Enclosures

cc: M. F. Middaugh

Attachment 4

FALL 1998 ENTERING FRESHMEN BY RESIDENCY STATUS ANALYSIS USING PROPOSED ENTRANCE REQUIREMENTS (PERCENTS RELATIVE TO A & S TOTAL POPULATION)

	A6	A5	BE	ED	EG	HR	MR	PG	TOTAL
Total Population									
Resident	38	100.0	148	100.0	171	100.0	24	100.0	1081
Nonresident	48	100.0	248	100.0	184	100.0	42	100.0	2143
Resident-connected	2	100.0	12	100.0	7	100.0	2	100.0	46
TOTAL	88	100.0	408	100.0	262	100.0	68	100.0	3270
Math: A & S-Proposed Course Requirements									
Resident	25	89.4	129	85.1	101	83.5	27	91.7	838
Nonresident	40	83.3	224	90.0	148	90.2	36	85.7	1938
Resident-connected	1	50.0	10	83.3	6	85.7	2	100.0	44
TOTAL	66	76.7	363	88.0	255	87.3	65	94.1	2880
Language: 2 or More Courses, Same Lang.									
Resident	28	80.6	133	89.9	106	87.6	29	96.7	919
Nonresident	42	87.5	241	96.6	158	96.3	40	95.2	2077
Resident-connected	1	50.0	11	91.7	6	85.7	2	100.0	55
TOTAL	71	81.7	385	94.3	270	92.5	71	97.8	3051
Language: 3 or More Courses									
Resident	32	88.9	143	96.6	118	95.9	30	100.0	1001
Nonresident	46	95.8	248	98.0	163	98.4	41	97.9	2149
Resident-connected	1	50.0	12	100.0	6	85.7	2	100.0	51
TOTAL	79	91.9	403	97.3	285	97.6	73	99.3	3202
English: 4 or More Courses									
Resident	35	97.2	164	97.3	119	98.3	28	94.7	1014
Nonresident	45	93.8	240	96.4	157	95.7	41	97.6	2099
Resident-connected	2	100.0	12	100.0	7	100.0	2	100.0	46
TOTAL	82	95.3	396	96.8	283	96.9	71	99.3	3160
Math: 3 or More Courses									
Resident	35	97.2	164	97.3	117	96.7	28	94.7	1014
Nonresident	47	97.9	248	96.6	164	100.0	42	100.0	2150
Resident-connected	2	100.0	12	100.0	7	100.0	2	100.0	46
TOTAL	84	97.7	404	96.9	288	98.6	72	99.5	3210
Science: 2 or More Courses									
Resident	35	97.2	165	98.0	120	99.2	30	100.0	1018
Nonresident	46	95.8	248	98.0	164	100.0	42	100.0	2150
Resident-connected	2	100.0	12	100.0	7	100.0	2	100.0	46
TOTAL	83	96.5	405	98.0	291	99.7	74	100.0	3214
Science: 2 or More Courses									
Resident	35	97.2	165	98.0	120	99.2	30	100.0	1018
Nonresident	47	97.9	248	98.0	163	98.4	42	100.0	2150
Resident-connected	2	100.0	12	100.0	7	100.0	2	100.0	46
TOTAL	84	97.7	405	98.0	290	99.3	74	100.0	3214



DRAFT

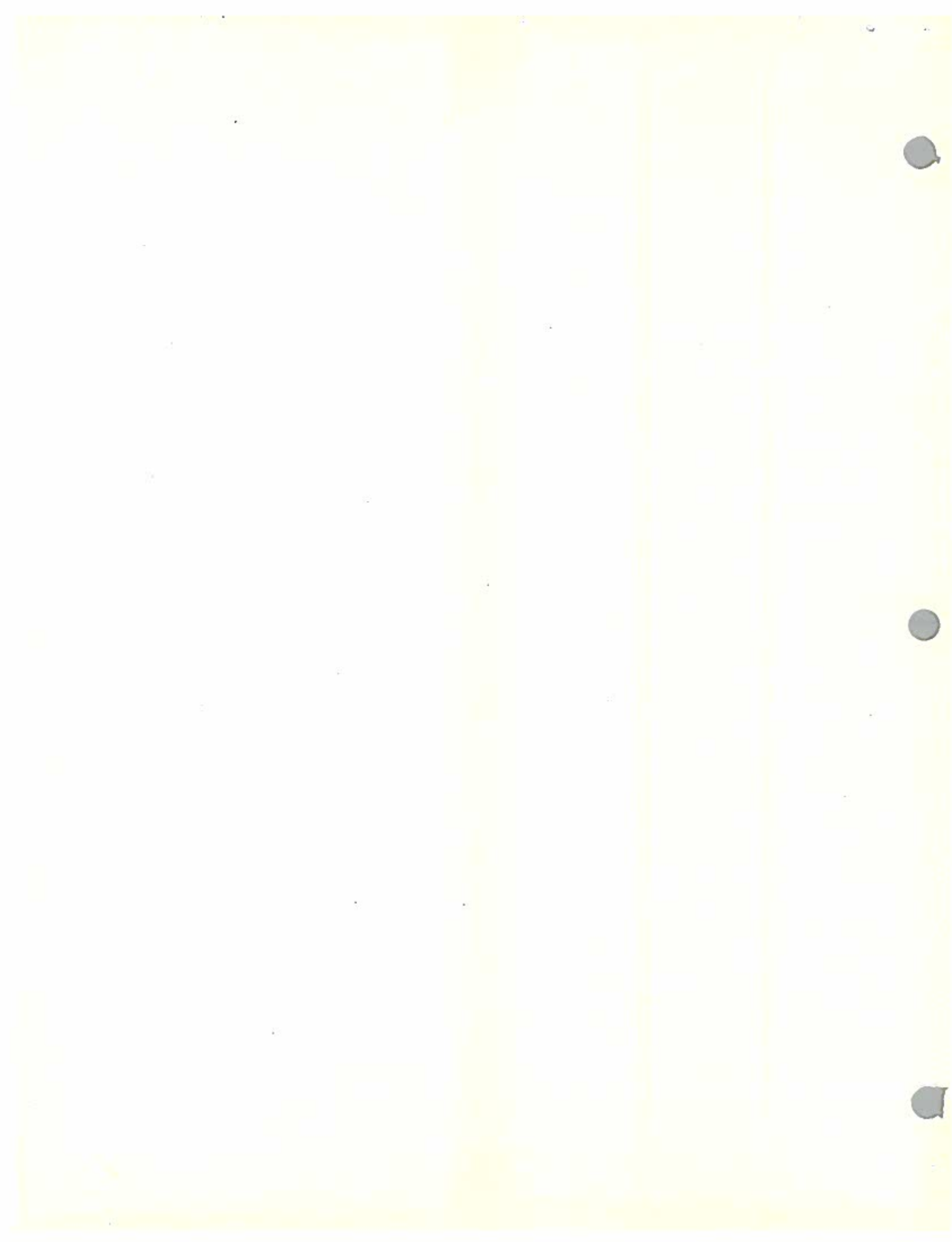
January 13, 1987

AMOROUS RELATIONSHIP POLICY

Romantic relationships between an employee of the University and a student whom he or she directly instructs, evaluates, or supervises creates an unacceptable conflict of interest. Consensual relationships between two people of unequal power levels create difficulties that do not exist in consensual romantic relationships between two people of equal power status. Within the University community, a romantic relationship between a student and an employee has inherent in it a potential abuse of power which undermines the atmosphere of trust and objectivity on which the educational process depends. Even in those situations where the employee is not directly responsible for the student, the employee should be aware that a potential conflict exists since she or he may at some later date be in a position to instruct or evaluate that student.

Any amorous involvement between a University employee and a student may result in formal action against the employee if the student initiates a complaint. Even though the relationship is consensual, the employee, because of his or her professional responsibility, will be held accountable for unprofessional behavior.

Students who instruct, evaluate, or supervise other students are required to maintain the same standards of professional ethics required of University employees.



1. Terminations

(a) Generally

A clear understanding of the terms of the contract between the faculty member and the University is a prerequisite for a harmonious relationship. Within the terms of his contract, a faculty member at the University of Delaware is assured that an appointment will be terminated only for adequate cause--incompetence, gross irresponsibility, or moral turpitude--except for retirement because of age or termination caused by extraordinary financial circumstances.

(b) Termination Procedure

Faculty members shall be terminated for cause only after being afforded a hearing before the Senate Committee on Faculty Welfare and Privileges. Faculty members shall be informed in writing at least four weeks prior to the hearing of the reasons for the proposed termination, shall have the opportunity to be heard in their own defense, and shall be permitted to be advised and represented by persons of their own choosing. This committee shall render its advisory decision to the appropriate administrative officer within fourteen (14) working days after the hearing. In the case of termination for cause, the burden of proof in the proceedings rests with the party or parties bringing the charge.

(c) Suspension

In the case of proposed termination for moral turpitude, faculty members may be temporarily suspended in the event that their continued presence at the University would constitute a clear and present danger to the health, morals, or safety of members of the University community until the final decision is rendered.

(d) Effective Date

Termination for cause shall become effective after one year's notice of the final decision to terminate; however, the effective date for termination involving gross irresponsibility or moral turpitude may be immediate.

(e) Certain Administrative Officers Holding Faculty Rank

Where the termination procedure is initiated against a person holding faculty rank for events that occurred while such person was serving as any of the following administrative officers: