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About the Institute
The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

CURRICULUM PLAN IN ENVIRONMENTAL BIOLOGY

A PROPOSAL

Carl E. Bock

3/6/75

Dr. David Rogers
Hale 114

Introduction

The Department of Environmental, Population, and Organismic Biology provides as wide a variety of programs as any in the college; and it interacts with many other academic units (see Figure 1). Therefore, it is a challenge to present a curriculum plan which is functionally simple, straightforward, and at the same time comprehensive. No where is this more true than in the field of Environmental Biology. Experience shows that our finite resources must meet the needs of five distinct groups of students:

1. those non-science majors who wish to gain familiarity with this subject as part of their liberal arts education. This is an important function, given the current public concern in environmental matters.

2. science majors with primary interests outside of the environmental field (e.g., pre-medical students).

3. environmental biology majors planning professional careers. These would be students seeking jobs at the B.A. level in areas such as public health, conservation, ecological consulting, water quality management, etc., as well as those planning research and teaching careers by entering graduate school.

4. students in such fields as engineering, law, and planning, who desire and need familiarity with environmental biology as part of their professional training.

5. graduate students in the department seeking careers as teachers and researchers in colleges and universities.

The Plan — General Rationale

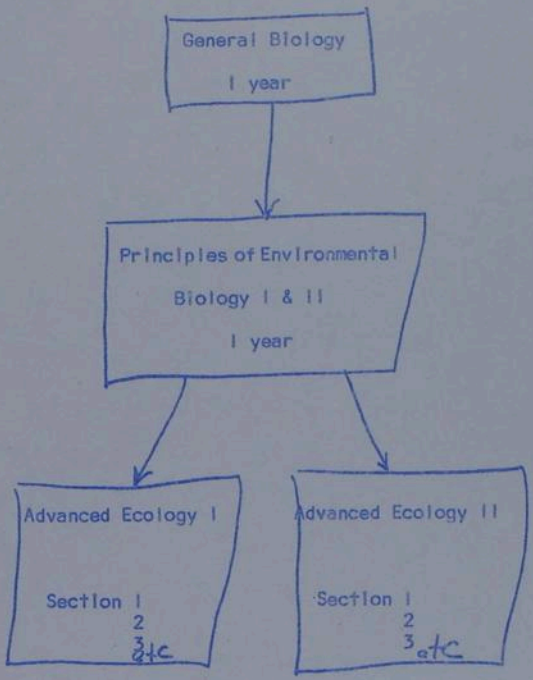
One major difficulty with environmental biology offerings as they exist today is that students suffer from a lack of practical laboratory and field experience, and have insufficient opportunity to interact directly with faculty in discussions, on field trips, in writing papers, etc. In part this is due to extraordinarily high student-faculty ratios in EPO Biology; as the University approached zero population growth, the number of EPO biology majors grew by staggering proportions (from about 300 majors in 1969 to about 1200 in 1974). This has lead, inevitably, to the metamorphosis of most ecology courses into large, formal, lecture classes. While we can hope for some faculty help in the future - via intra-college adjustments - it is clear that we must also revise our curriculum so that our graduating seniors are best prepared to pursue their chosen careers given our limited faculty resources. At the same time we must continue to meet the needs of other student groups.

Discussion with current students reveals a paradox in the structure of our present offerings - namely, that an environmental biology major often graduates without adequate practical training, and also experiences some redundancy in lecture materials presented.

Given ZPG, change can occur only through readjustment and not through growth. Therefore, we propose a curriculum which has as its major track 1) a one-year, intensive, lecture course in the principles of environmental biology and 2) a group of small (20-30 students) laboratory-field-discussion courses at the junior-senior level. The first course would serve the needs of all students in the university interested in ecology. The second would be reserved for majors in environmental biology and other students with related career objectives. Hopefully, the condensation of a number of our present large lecture courses into one would free faculty to teach the much needed, smaller, upper level offerings.

The Plan -- Specifics

At the center of our environmental biology curriculum would be the following:



The specifics of the ecology courses would be as follows:

Principles of Environmental Biology

EPO Biology 341-2 (3-3). 1 year.

Lectures class, meeting 3 times per week, for one year. Open to any student in the university with interests in ecology.

Subjects covered --

1. ecological survey of plant, animal, and microbial groups.
2. evolution
3. population ecology
4. ecological genetics
5. community ecology
6. ecosystem ecology
7. human ecology and environmental problems.

Facility: large lecture room with facilities for slides, movies, demonstrations.

Offered: every year, as many sections as necessary and/or possible of ±250 to 300 students each.

Advanced Ecology I

EPO Biology 441/541

A series of sections of 20-30 students each, covering topics of basic ecology. Each section to be taught by 1 faculty member and 1 teaching assistant. Classes would involve laboratory experience, field trips, discussions, and preparation of scientific papers.

Prerequisite EPO 341-342 or equivalent; open to environmental biology majors and graduate students, or by consent of instructor.

The sections would differ in subject emphasis, depending upon 1) faculty involved during a given semester and 2) current student needs and interests.

Advanced Ecology I (contd.)

Examples of subjects:

-- montane plant ecology

-- tundra ecology

-- mammalian bioenergetics

-- insect ecology

-- topics in mathematical ecology

-- field techniques in vertebrate ecology.

Facilities: small, well-equipped laboratories and small classrooms; storage facilities for equipment crucial.

Advanced Ecology II

EPO Biology 442/542

Same as 441/541, except subject emphasis in the fields of human ecology and environmental problems.

Examples of subjects*

-- water pollution

-- energy

-- environmental law

-- preparation of environmental impact statements

*hopefully some of these could be taught by personnel outside the department -- e.g., from Law or Engineering.

Proposed Major in Environmental Biology:

	Hours
General Biology, 4-4 1 year	8
Principles of Environmental Biology I & II (3-3), 1 yr.	6
Genetics, 1 semester	4
Introductory physiology, 1 semester	4
Advanced Ecology I & II at least 3 sections	9
Electives (400 level)	6-16 hours

Recommended, depending upon special interests and/or professional goals (see figure 1):

-- Behavior
-- Biology of special groups
-- Advance Physiology
-- Evolution
-- Structural Biology
-- Population Biology -- Advanced Genetics
-- other sections of 441 or 442

Ancillary courses - 1 year each of Physics, Mathematics, and Chemistry.

Can We Do It?

It is to be hoped that by team-teaching EPO 341-342, we can free ecology faculty to teach at least two sections of 441/541 or 442/542 per year. A normal load might be 2 sections per semester if the faculty member is not heavily involved in 341-342 or some other large lecture course.

Frankly, some of us will be best suited for 341-342, while others will excel in the small sections of the second-level courses.

There are two ways in which we can facilitate this plan. First, many of our courses currently falling into the category of "special groups" (Figure 1) might be included as sections of 441 or 442 without modification. These would be those classes (e.g., herpetology?, biology of fish populations?)

with emphasis on ecology and natural history. Second, these sections also will be listed under 541 and 542, and, except for seminars, can easily become our major graduate offerings in ecology. Having a few graduate students in each small section can only make them more rewarding for all concerned.

Should We Do It?

It is my opinion that if we cannot establish a program such as outlined here, then we have no choice but to cut the number of students allowed to major in EPO Biology. If we are to do justice to any serious student in ecology, then we must provide him/her with the laboratory, field, mathematical, and writing skills which are necessary to do the science. There is no professional alternative. A major virtue of this plan, I feel, is its simplicity and f flexibility. It will be understandable to colleagues, students, administrators, and state legislators. It will establish, once and for all, the role of our department in environmental science on this campus. The power of the plan lies in the nature of Advanced Ecology I & II. A flexible system such as this will always play to the strength of our faculty, both now and in the future. Also, it will allow us to change the curriculum in content without creating the impression, by raising new courses with locked-in titles and numbers, that we cannot make up our minds what we are trying to do. To my knowledge, the "environmental biology" major has changed three times in the past seven years. These were honest attempts to respond to changing student needs and interests, but they naturally lead to confusion. Rest assured we will want to change everything again no matter what plan we adopt now. Why not establish a curriculum so simple and flexible that change will be easy instead of traumatic?

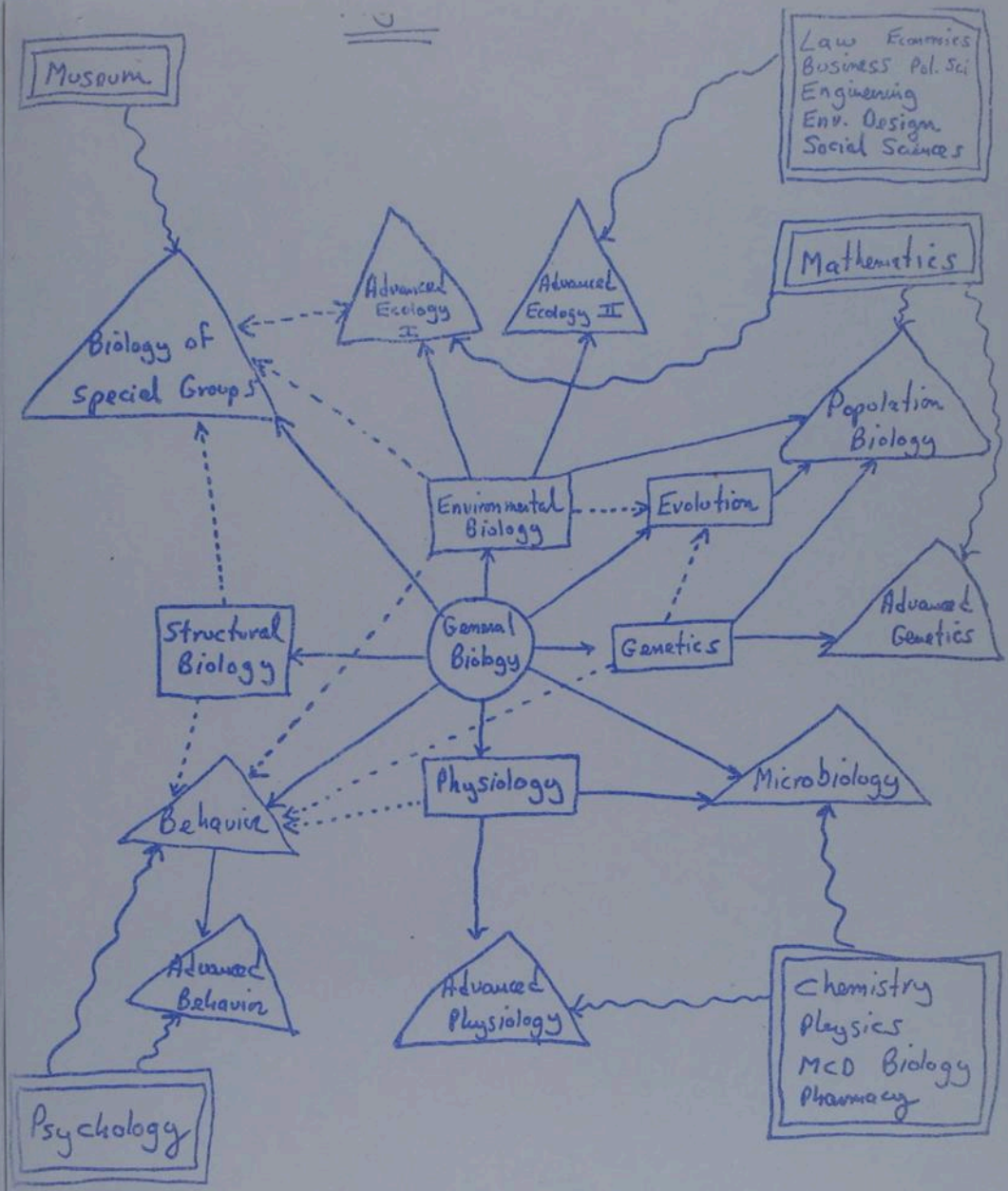
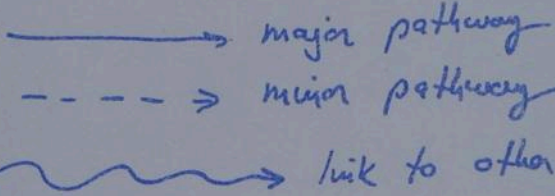


Figure 1 - Legend

○ - 100 level course

□ - 300 " "

△ - 400/500 " "



——→ major pathway

- - - - → minor pathway

~~~→ link to other departments.
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Problem
Class-loading in a new curriculum

Leo Eller - Cit Planning - East Campus -
Field Facilities -

UNIVERSITY OF COLORADO
BOULDER, COLORADO 80302

OCT 28 1974

Department of Environmental, Population and Organismic Biology

Dr. David Rogers
Hale 114

October 25, 1974

Arts & Sciences Building & Space Committee
c/o Assoc. Dean Lewis Sawin

The Department of Environmental, Population and Organismic Biology recommends the following

1. That the projected remodelling of Ramaley Bldg, suggested for 1975-1976, be postponed

2. That, in consultation with the Planning Office, the Department of E.P.O. Biology develop a program for combined construction of an addition to Ramaley phased with remodelling, to be presented to the Regents and transmitted to the CCHE by May, 1975, with funding requested in fall, 1975 for the '76-77 Request Budget, with construction to start in late '76.

   The new construction is to be devoted exclusively to undergraduate instructional laboratories and immediate support facilities, with the remodelling of Ramaley to provide modern additional upper division and graduate instructional laboratories, research laboratories, faculty offices, etc.

   Adoption of this proposal will likely accelerate the clearing of EPO Biology from Denison and Hale.

3. That in fiscal '75-'76 as early as possible spaces in Ekeley East be remodelled as minimally wet labs, with high degree of flexibility, to be used on a temporary (ca. 4 years) basis by EPO Biology for teaching of courses which require minimal service lines especially water, gas, air, and that as soon as it is possible to move into new construction, the space be released by EPO Biology.

Charles H. Norris
Chairman

CHN:ds

now goes to BCPC

approved unanimously by A & S Building & Space 10/25/1974

UNIVERSITY OF COLORADO
OFFICE OF INSTITUTIONAL RESEARCH
REGENT HALL 8A
BOULDER, COLORADO 80502

October 23, 1974

MEMORANDUM

To: Academic Department Heads -- Boulder Campus

From: Mark Meredith MM

Subj: Ten Year Summary of Academic Year Instructional Activity and Faculty Teaching Load Data -- Boulder Campus

Enclosed is a ten year summary of selected instructional activity and faculty teaching load data for your department for the academic years 1964-65 through 1973-74.

The data are presented by level of course, by subject, and department.

This kind of information is in frequent demand from academic administrators and is provided for your reference. A copy of the complete report for all Boulder Campus departments is available in the Dean's office.

Questions concerning these data may be directed to Hazel Perry at extension 6294.

cc: Chancellor Crowe
Vice Chancellor Corbridge

It seems to me that all faculty should have a chance to see this. Is there a volunteer who could do a comparison w/ MCDB, Psych, Chem?

CWT.

HISTORICAL SUMMARY OF INSTRUCTIONAL ACTIVITY
AND LOAD MEASURES BY LEVEL OF COURSE

This document presents a ten-year summary of selected academic year instructional activity and teaching load measures for the Boulder Campus.

The purpose of the report is to provide data useful to academic deans and department heads in evaluating instructional programs, observing changes in selected measures of instructional activity over a period of time, and examining trends of student demand in the various subject areas, departments, and schools/colleges.

The sources of data are the Class Size, Teaching Load studies from 1964-65 through 1967-68, and the Summary of Cost And Load Evaluation (SCALE) from 1968-69 through 1973-74, prepared by the Office of Institutional Research.

Ten activity and load measures contained in the data -- each reported by lower, upper, graduate, and total levels of instruction -- are as follows:

Academic Year

- Credit Hours
- Student Credit Hours
- Weekly Student Hours
- Weighted Average Class Size
- Instructional FTE Faculty
- Student Credit Hours Per FTE Faculty
- Salary Cost Per Student Credit Hour

Averages Per Semester

- Credit Hours Per FTE Faculty
- Weekly Contact Hours Per FTE Faculty
- Weekly Student Hours Per FTE Faculty

Instructional Faculty FTE data reflect the total number of FTE who actually taught course sections, including regular faculty, visiting faculty, teaching associates, teaching assistants responsible for teaching a section, honorarium faculty, and other faculty. Prorated portions of FTE are included for academic administrators (deans and department heads) and for other administrative or research personnel who taught.

The following variations may be noted:

Attributed credit for doctoral thesis is included starting with academic year 1968-69, generating higher figures at the graduate level and in the totals in comparison with previous years.

Changes in instructional activity over the ten year period are reflected in those cases where subject areas or departments are modified or reorganized.

Some of the total figures may not add due to rounding.

HISTORICAL SUMMARY OF INSTRUCTIONAL ACTIVITY AND LOAD MEASURES BY LEVEL OF COURSE

CAMPUS: Boulder SCHOOL/COLLEGE: Arts & Sciences DEPARTMENT: Biology(3) SUBJECT:

		1964-65(2)	1965-66(2)	1966-67(2)	1967-68(2)	1968-69(2)	1969-70	1970-71	1971-72	1972-73	1973-74
ACADEMIC YEAR -- COMBINED FALL & SPRING DATA	Lower Div. Credit Hours	146	136	146	119	113	141	131	102	138	167
	Upper Div. Credit Hours	130	130	133	148	184	279	323	352	525	613
	Graduate Credit Hours	67	71	97	102	393	439	651	775	760	1057
	Total Credit Hrs. Taught (CH)	343	337	376	369	690	859	1105	1235	1425	1837
	Lower Div. Stu. Credit Hrs.	5561	5530	8302	6961	7410	9601	8937	8918	9707	10991
	Upper Div. Stu. Credit Hrs.	4028	3502	2615	3516	4222	4710	5797	8233	9331	10397
	Graduate Stu. Credit Hrs.	400	403	541	663	1024	1092	1692	1867	2127	1919
	Total Stu. Credit Hrs. (SCH)	9989	9435	11458	11140	12656	15403	16426	19024	21172	23307
	Lower Div. Wkly. Stu. Hours	8693	8619	12647	10505	10940	14841	13788	13332	14719	16888
	Upper Div. Wkly. Stu. Hours	6892	5824	4096	5493	6501	8010	9041	12757	13754	15034
	Graduate Wkly. Stu. Hours	565	576	812	842	1075	1048	1634	1823	2197	1528
	Total Weekly Stu. Hours (WSH)	16150	15019	17555	16840	18516	23899	24463	27914	30698	33450
	Lower Div. Avg. Class Size (1)	38.1	40.7	56.9	58.5	65.6	68.1	68.2	87.0	70.1	65.8
	Upper Div. Avg. Class Size (1)	37.1	35.1	30.7	34.7	44.9	35.1	39.0	48.2	52.0	56.0
	Graduate Avg. Class Size (1)	9.4	9.7	8.7	11.8	11.2	11.3	15.7	17.1	15.1	14.7
	Total Weight Avg. Class Size (1)	33.9	34.4	39.8	40.8	45.9	44.5	45.3	53.7	49.3	53.6
	Lower Div. Instruct'l FTE	10.69	8.66	10.58	10.17	9.7	10.6	8.43	7.53	11.26	12.01
	Upper Div. Instruct'l FTE	8.66	8.81	9.93	10.84	10.1	12.8	11.55	13.89	14.63	14.78
	Graduate Instruct'l FTE	5.77	4.83	6.23	7.74	10.9	11.7	15.55	11.34	13.71	12.65
	Total Instructional FTE Faculty	25.12	22.30	26.74	28.75	30.6	35.1	35.53	32.83	39.65	39.44
	Lower Div. Avg. SCH Per FTE	520	639	785	685	769	903	1060	1184	862	915
	Upper Div. Avg. SCH Per FTE	465	398	263	324	421	368	502	593	638	703
	Graduate Avg. SCH Per FTE	69	83	67	86	95	93	109	165	155	152
	Total Avg. SCH Per FTE Faculty	398	423	429	388	415	438	462	579	534	591
	Lower Div. Sal. Cost Per SCH	15	11	10	11	11	8	7	6	9	9
	Upper Div. Sal. Cost Per SCH	19	24	36	32	25	32	22	19	19	17
	Graduate Sal. Cost Per SCH	180	145	134	147	135	150	131	94	97	103
	Total Avg. Salary Cost Per SCH	23	22	22	26	26	26	25	20	22	21
AVERAGES PER SEMESTER	Lower Div. CH Per FTE Fac.	6.8	7.8	6.9	5.8	5.8	6.7	7.8	6.8	6.1	7.0
	Upper Div. CH Per FTE Fac.	7.5	7.4	6.7	6.8	9.1	10.9	14.0	12.7	17.9	20.7
	Graduate CH Per FTE Fac.	5.8	7.3	7.8	6.6	18.0	18.8	20.0	34.2	27.7	41.9
	Total Avg. CH Per FTE Faculty	6.8	7.5	7.0	6.4	11.3	12.2	15.6	18.8	18.0	23.3
	Lower Div. WCH Per FTE Fac.	13.8	15.4	15.0	14.6	15.1	18.0	20.4	19.1	15.7	17.2
	Upper Div. WCH Per FTE Fac.	14.4	14.7	10.7	11.0	10.9	12.7	14.2	13.5	14.6	14.8
	Graduate WCH Per FTE Fac.	8.5	9.8	9.6	7.8	7.9	7.6	7.9	11.8	12.4	13.8
	Total Avg. Wkly. Contact Hrs/FTE	12.6	13.7	12.2	11.4	11.2	12.6	12.9	14.2	14.1	15.2
	Lower Div. WSH Per FTE Fac.	421.0	479.4	558.1	511.5	567.0	698.0	818.0	885.0	653.5	703.5
	Upper Div. WSH Per FTE Fac.	405.9	373.4	230.4	272.0	324.5	312.5	391.0	459.0	470.0	503.5
	Graduate WSH Per FTE Fac.	42.7	50.1	60.0	50.5	50.0	45.0	52.5	80.5	80.0	80.5
	Total WSH Per FTE Faculty	317.7	333.2	325.2	293.3	303.5	340.0	344.0	425.0	387.0	424.0

(1) Excluding all independent study and thesis course registrations, e.g., all classes greater than one person.
(2) 1968-69 and years previous include totals for Bacteriology, Biology, Botany, and Zoology.
(3) In 1973-74, Biology became the Department of Environmental, Population, and Organismic Biology

Policy for our dept.

We encourage faculty and students to become involved professionally in matters that affect the biological endeavors ~~and~~ of the state, nation and world- we support those who have an opportunity to make a scientific impact on some facet of the problems of humanity.