

LSC Use Only
Number: _____
Action: _____
Date: _____

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Number: 92-14
Action: App
Date: 1/19/93
Senate App 2/2/93

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. Title/Author of Change

Course/Program Title: BI 251 FIELD BOTANY
Suggested 20 Character Course Title: FIELD BOTANY
Department: BIOLOGY
Contact Person: DR. JERRY L. PICKERING, EX. 2356

II. If a course, is it being Proposed for:

X Course Revision/Approval Only
_____ Course Revision/Approval and Liberal Studies Approval
_____ Liberal Studies Approval Only (course previously has been approved by the University Senate)

III. Approvals

Robert P. Hendron
Department Curriculum Committee

[Signature]
Department Chairperson

[Signature]
College Curriculum Committee

[Signature]
College Dean *

Director of Liberal Studies
(where applicable)

Provost (where applicable)

*College Dean must consult with Provost before approving curriculum changes. Approval by College Dean indicates that the proposed change is consistent with long range planning documents, that all requests for resources made as part of the proposal can be met, and that the proposal has the support of the university administration.

IV. Timetable

Date Submitted
to LSC: _____

Semester to be
implemented: _____

Date to be
published
in Catalog: _____

to UWUCC: _____

Part II. Description of Curriculum Change

1. Catalog Description:

BI 251 Field Botany

2-31-3sh

Prerequisites: BI 104 or BI 110

The collection, preservation, identification, and distribution of selected herbaceous and woody plants of western PA. Emphasis on taxonomic principals, the use of keys and manuals, and the recognition of local flora.

2. Course Syllabus: BI 251-FIELD BOTANY

I. Catalog Description

BI 251 Field Botany

~~3~~-31-3sh

Prerequisites: BI 104 or BI 110

The collection, preservation, identification, and distribution of the selected herbaceous and woody plants in western PA. Emphasis on taxonomic principals, the use of keys and manuals, and the recognition of local flora.

II. Objectives

The goals of BI 251-Field Botany are:

1. To have students learn the methods used in the collection, identification, classification and preservation of plants.
2. To have students be able to recognize major western PA plant communities and the dominant plants associated with these communities.
3. To present to students the basic philosophy of plant systematics.
4. To have students be able to identify plants on the basis of family characteristics.
5. To have students get an understanding of the factors which affect the distribution of plant species.
6. To have students understand the history of plant systematics and how the discipline developed as a science.
7. To have students understand the need to protect endangered plant species and the means by which plants are protected.
8. To have students understand the diversity of characteristics that are used in the identification and classification of plant taxa.
9. To have students gain an appreciation of the value and beauty of plants.

III. Detailed Course Outline

FIELD BOTANY TENTATIVE LECTURE SCHEDULE

<u>WEEK</u>	<u>TOPIC</u>
1	Introduction, Herbarium Methods
2	Floristic Keys & Manuals, Flora of N.A. History of Plant Systematics
3	Classification & Identification of Ferns & Fern Allies
4	Classification & Identification of Gymnosperms
5	Classification & Identification of Gymnosperms cont. Exam 1
6	Anthophyta Classification , Anatomy & Morphology of Anthophyta, Diagnostic Traits
7	Class Liliatae (monocots) Identification & Classification, Subclasses Alismatales & Arecidae
8	Class Liliatae, Subclass Commelinidae
9	Class Magnoliatae (dicots) Identification & Classification, Subclass Magnoliidae Exam 2
10	Class Magnoliatae, Subclasses Hamamelidae & Caryophyllidae
11	Class Magnoliatae, Subclasses Dilleniidae & Rosidae
12	Class Magnoliatae, Subclass Asteridae
13 & 14	Plants & People, Endangered Species, Botanical Gardens & Institutes Exam 3, given during final exam period

FIELD BOTANY TENTATIVE LABORATORY SCHEDULE

The majority of the laboratory periods will be spent in the field identifying and collecting various plant taxa. A variety of plant communities (wetlands, lowland forest, upland forest, prairie old field, coniferous forest, bog, and mixed hardwood forest) will be visited to ensure students will be exposed to a diversity of plants. A trip will be made to the Hunt Botanical Institute in Pittsburgh and the photography of plants will be included in lab activities.

WEEK LABORATORY-FIELD TRIP LOCATIONS*

- 1 Herbarium Methods, Univ. Campus
 Lab. will involve the use and techniques needed to make a plant collection and how to use the herbarium. Class will tour the campus and identify selected plants so that students can become familiar with the use of field identification manuals. (red oak, Maidenhair tree, catalpa, horse chestnut, white ash, periwinkle, shepherds purse, common mullein, Asiatic day flower, silver maple, clearweed)

- 2 University Lodge
 Students will collect and identify plants associated with upland and mixed mesophytic forests. (larch, white oak, American chestnut, maple, vibernum, ground pine, wood fern, poison ivy, shagbark hickory, coltsfoot, red maple, hemlock, solomen's seal)

- 3 & 4 Yellow Creek State Park area
 Students will collect and identify plants associated with wetlands and lowland mixed hardwood forest. (alder, birch, vibernum, Elodea, water milfoil, arrow weed, iris, spike rush, sedges, bull rush, wild rice, stinging nettle, naiad, manna grass, bur-reed, common cattail, skunk cabbage, water hemlock, water plantain, milfoil, watercress, water dock, quillwort, sensitive fern, horsetail, bulrush, water lily)

- 5 Lynn Run State Park
 Students will identify plants and gain an understanding of the "ecology" of a mountain bog and the mixed softwood/hardwood forest of the Laurel Mts. (pitcher plant, sundew, cranberry, mountain ash, sour gum, cinnamon fern, trillium, Mt. Laurel, Rhododendron, sphagnum moss, highbush blueberry, wintergreen, rice-cutgrass, reed-canary grass)

- 6 Suncliff
 Students will collect and identify plants associated with a lowland hemlock/hardwood forest and a successional stage of an old field. (hemlock, yellow birch, walking fern, goldenrod, aster, shield fern, marginal fern, sensitive fern, saw grass, scotch pine, hop hornbeam, rock fern, blue cohosh, grape fern, partridge berry, field pussytoes, cohosh, beechdrops, Dutchman's breeches, Indian pipe)

- 7 **Herbarium Work**
 Students will be given time to work on plant identification and preparation of personal plant collection.
- 8 **Northern Indiana County**
 Students will identify and collect plants associated with flood plains and "road sides". (pitch pine, cardinal flower, oswego tea, plain tree, black willow, moth mullen, bindweed, multiflora rose, meadow-rue, common sorrel, New England aster, New York iron weed, sweet cicely)
- 9 **Two Lick Creek area**
 Students will identify and collect plants associated with a mixed mesophytic forest and an old pine plantation. (slender Ladies Tresses, barnyard grass, rough bedstraw, wild mint, white pine, scotch pine, tickseed, clintonia, trout-lily, cut-leafed toadwort, golden rod)
- 10 **University Lodge-Plants in the Winter**
 Students will learn winter twig traits and do woody plant identification based on winter buds/twigs and fruits.
- 11 **Hunt Botanical Institute- trip to Pittsburgh**
 Students will be given a presentation and tour of this "one of a kind" Institute which specializes in collecting rare botanical books (herbals), botanical art, recent botanical literature, and is recognized for having one of the best collection of original Linnean publications.
- 12 **Plants & People**
 This will be a "fun" lab. which will include a variety of the following: grocery botany, poisonous plants, cultivated plants, herbals, rare and endangered plants, medicinal plants
- 13 & 14 **Herbarium work**
 Students will be given time to complete the work on their required plant collection.

*Since this class will be taught during the fall or summer terms different plants will be expected to be known . The plants given for each site is a partial list of the flora that will be seen at each field location whenever the course is taught.

IV. Evaluation Methods

1. Three examinations consisting of lecture and laboratory sections. 200 points (50% of grade)

2. Laboratory quizzes will be given throughout the semester. These quizzes will emphasize field identification information. 100 points (25% of grade)

3. A plant collection of 40 plants. Five (5) of these plants are to be properly mounted on herbarium paper and correctly annotated.

NOTE: The completed plant collection is to be given to the instructor by the end of the last laboratory period. 100 points (25% of grade)

V. Required Textbooks

Cobb, B. A Field Guide to the Ferns. Houghton Mifflin Co. 1956

Newcomb, L. Newcomb's Wildflower Guide. Little, Brown & Co. 1977

Petrides, G. A. A Field Guide to Trees and Shrubs (Northeastern and Central North America). Houghton Mifflin Co., 1975

Smith, J. P., Jr. Vascular Plant Families. Mad River Press, Inc. 1977

Note: Since this is a field oriented course a variety of field guides will be needed in order to cover the diversity of plants identified.

VI. Special Resource Requirements

1. 10X hand lens
2. small spiral field notebook

VII. Bibliography

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- Harlow, W. H. Twit Key to the Deciduous Woody Plants of ~~Western~~ Eastern North America. by author, 1949.
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- Harrington, H. D. & L. W. Durrell. How to Identify Plants. ~~W~~allow Press, Inc. , 1957.
- Henry, L. K. Shale-Barren Flora in Pennsylvania. Proc. of ~~the~~ PA Academy of Scinces 28, 1954: 58-65.
- Henry, L. K. et al. Western Pennsylvania Orchids. Castanea ~~40~~, 1975: 93-168.
- Hitchcock, A. S. (revised by Agnes Chase) . Manual of the ~~Trees~~ of the United States, 2nd Ed. . U.S.D.A. Misc. Publ. #200, 1951.
- Jaques, H. E. . How to Know the Trees. W. C. Brown Co., 1954
- Jennings, O. E. Wildflowers of Western Pennsylvania and ~~the~~ Upper Ohio Basin, 2 vols. Univ. of Pittsburgh Press, 1937.
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Stokes, D. W. . A Guide to Nature in Winter. Little Brown & Co., 1976.

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Wherry, E. T. Some Pennsylvania Barrens and Their Flora: II-The Shale Barrens and Their Endemics. *Bartonia* 34, 1964: 8-11.

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Wilson, E. O. Biophilia. Harvard Univ. Press, 1984.

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Course Analysis Questionnaire

Section A: Details of the Course

A1 A basic understanding of the nature and scope of the diversity of plants should be vital component of every student interested in biology. Students need to know what basic taxonomic principles govern the identification, classification and nomenclature of plants. They should especially be able to identify local plant communities and the plants associated with each of the communities. Although this course will emphasize the systematics and natural history of local herbaceous and woody plants, the principles taught will be applicable to other floristic regions.

This course has been suggested as a required course in the proposed botany track option. It would combine components of the existing courses BI 446/546 (Dendrology) and BI 451/551 (Taxonomy of Plants). In addition, some algae systematics would be included. The course would include components of the Field Botany and Local Floral courses as described in the attached summary of a 1989 survey made by the American Society of Plant Taxonomists (ASPT).

Although this course would be designed for students majoring in biology, environmental health, and biology education it could be taken by non-biology majors who have taken BI 103 & 104 (General Biology I & II). Field Botany is not being proposed to be included in the Liberal Studies course list.

A2 This course would be taught in place of the current BI 446/546 and BI 451/551 courses. At this time the future of these two courses is uncertain in light of the possible changes in the Department's proposed new curriculum. The Department's Botany Track Subcommittee has recommended that Field Botany be a required course in the Botany Track. Since I am the one who teaches these courses I recommend that BI 446/546 and BI 451/551 be dropped from the curriculum.

A3 The approach of this course is not novel in the Department and would be similar in organization and pedagogy to other field courses (field zoology, entomology, ornithology).

A4 No, this course has not been offered at IUP on a trial basis.

A5 No, this would not be a dual-level course.

A6 No, this course may not be taken for variable credit.

A7 Yes, similar courses are offered at the following institutions:
Slippery Rock Univ, Field Botany, 3 sh.; U. of Pitt., Pymatuning,
Field Botany, 4 sh.; Ohio Univ., Plant Systematics & Ohio Flora, 5
sh.; Ohio State Univ., Field Botany, 5 sh., Local Flora, 5 sh.; Univ. of
North Carolina, Field Botany, 4 sh. (for additional information see
the attached summary from the 1989 ASPT survey).

A8 No

B: Interdisciplinary Implications

B1 This course would be taught by one instructor.

B2 No

B3 The content of this course would not be included in any course
offered in another department at IUP.

B4 Yes, there is possible clientele for this course outside of our own
full-time students. People who may be interested in taking this
course could include amateur botanists, biological illustrators,
geoscience majors or conservationists. The School of Continuing
Education could schedule students into this course.

C: Implementation

C1 a. Faculty-The present faculty is qualified to teach this course.

b. Space & Equipment-The current space in the A. G. Shields
Herbarium would be adequate for teaching this course. However,
the addition of electrical outlets on some tables would be helpful.
Although no additional equipment would be needed, in the future it
is hoped that the use of computer aided instruction (CBIV) could be
added to the course. Since the Department has a videodisc player
linked with a computer the purchase of necessary videodiscs is all
that is needed in order to include CBIV in the course.

c. Laboratory supplies-Many of the basic supplies (ie. plant presses, blotters, herbarium sheets, collecting bags) for this course are currently in the Herbarium. However, it is estimated that a supplies budget of between \$200-\$300 would be needed for this course.

d. Library materials-Although Stapleton Library lacks many of the recent field manuals, the books there could be considered adequate for this course. In addition, over the past several years books and journals have been added to the Plant Biology Library in the Herbarium that would supplement the books needed by the students.

e. Travel funds-No travel funds will be included in the budget of this course, however, since this is a field course use of the Biology Department vans is required.

C2 None of the resources for this course are funded by a grant.

C3 This course could be offered every year. I would recommend that it be taught on alternate years during the fall and summer.

C4 One section

C5 No more than twenty-four (24) students could be accommodated in this course because of limited laboratory space and equipment requirements.

C6 No professional society recommends enrollment limits or parameters for a course of this nature. However, the summary from the 1989 ASPT survey does provide some information about how similar courses are taught at other universities.

C7 This course would only be a curriculum requirement if the proposed Botany Track for biology majors is approved by the Department and University. The course will not affect the number of free electives available to biology majors. The addition of course would not result in an increase in the 124-credit program of students in the Biology Department.

Section D: Miscellaneous

Attached is a summary from the 1989 American Society of Plant Taxonomists (ASPT) survey concerning the teaching of plant identification field courses.

I. Introductory plant taxonomy/systematics courses (46 responses)

A. GENERAL COURSE INFORMATION

Course names: Not surprisingly, a variety of course names are used. 48% of the names had "systematics" in the title; 45% had "taxonomy" in the title; and the remainder had miscellaneous names (e.g., Flowering Plants, Classification and Distribution of Plants).

Credit hours: 60% of the courses are for 4 credit hours; 30% for 3 hours; and 10% for 5 hours.

Frequency and season offered: 64% of these courses are offered in the spring, 29% in the fall, and the remainder in the summer. 80% of these introductory courses are offered once a year. One university offered their course three times a year; whereas the remainder are offered biannually.

Enrollment numbers and trends: The average enrollment was 24 students per class with a range of 4 to 85. Universities with Colleges of Agriculture generally had higher enrollments. Over the last five offerings, 56% of the respondents reported stasis in enrollment numbers, 27% reported an increase, and 17% reported a decreasing enrollment trend.

Student profile: Botany or Biology majors average 55.3% of the enrollees with ranges from 1% to 100%. In those Universities with Colleges of Agriculture, Agriculture students taking these courses as electives or requirements averaged 40% of the enrollees. Students taking the courses as electives averaged 32% among the courses surveyed.

B. LECTURES

Course content and hours per week: 95% of the courses surveyed included both descriptive and conceptual aspects of systematics. Only 5% of the respondents described their courses as descriptive or applied in nature. 65% of the courses utilized 2 hours of lecture per week, whereas 33% had 3 hours of lecture.

Percentage of and criteria for grading: The mean percentage of the course grade based on lectures was 54%. The range was 40% to 80%. 90% of the respondents utilized exams to determine grades. Other criteria are the following: 10% used class discussion, 20% had students hand in a graded literature critique or a summary of a book or paper, 5% had some kind of "computer project", 10% used oral reports as grade criteria, and 12% included written research papers in their grading.

Text: Although 17% of the respondents used no text for the lecture portion of their introductory systematics classes, 46% of those who did used Jones & Luchsinger's Plant Systematics. The other books used and percentages (among those who used texts) are as follows:

- Smith's Vascular Plant Families 14%
- Walters & Keil's Vascular Plant Taxonomy 8%
- Cronquist's Evolution and Classification of Flowering Plants 5%
- Porter's Taxonomy of Flowering Plants 5%
- Stace's Plant Taxonomy and Biosystematics 8%
- Radford's Fundamentals of Plant Systematics 11%
- Jeffrey's Introductory Plant Taxonomy 3%

5% of the respondents used two texts; the rest used only one book.

Percentage and criteria for grading: The mean percentage of course grade based on laboratory work was 46%; the range was 20% to 75%. The preferred method of determining grades (74% of the respondents) was exams which includes keying, family ID, and species sight ID. 36% of the respondents based grades on student collections; 50 collections were the average number required (range 5 to 120). 14% used lab books to assign grades and 10% used lab reports; less than 10% used classroom discussion, oral reports or research papers to assign grades.

C. LABORATORY ACTIVITIES

Hours per week and text: Among the respondents, 36% had 4 hours of lab per week, 29% had 3 hours, 17% met for 2 hours, whereas the remainder (18%) had 6 hours or more of lab per week. Not surprisingly, text usage was extremely variable depending on local area. Local or regional floras are used generally in the labs.

Nature of lab activities: The three most common laboratory activities were "keying" exercises (used by 90% of instructors), "family sight ID" (used by 83%), and "collections" (used by 64%). Additional common activities include "key construction" (52%), the use of "floral formulas" (48%), "species sight ID" (45%), and classifying objects or hypothetical organisms (33%). Other activities and their percentages are the following: "experimental methods" (24%), "description writing" (19%), "numerical analyses" (17%), the use of "illustrations" (14%), "research projects" (14%), and the use of computer identification (10%).

Percentage and criteria for grading: The mean percentage of course grade based on laboratory work was 46%; the range was 20% to 75%. The preferred method of determining grades (74% of the respondents) was exams which includes keying, family ID, and species sight ID. 36% of the respondents based grades on student collections; 50 collections were the average number required (range 5 to 120). 14% used lab books to assign grades and 10% used lab reports; less than 10% used classroom discussion, oral reports or research papers to assign grades. Most instructors relied on fresh (86%) or dried (74%) materials; pickled (38%) and frozen (21%) plants were used less frequently.

D. FIELDTRIPS (87% of the courses had organized fieldtrips)

Requirement and Percent course grade based on fieldtrips: 63% of the respondents required fieldtrip attendance, but only one respondent graded participation (10% of final grade) for the fieldtrips.

Time spent in the field: The mean number of hours that students spent on fieldtrips was 13.2 hours (range 2 to 30). The total number of daytrips spent in the field ranged from 1 to 6 with an average of 2.3 daytrips per course. An average of 3.8 fieldtrips were held during regular lab time, with a range of 1 to 14.

Field activities: Besides simple observation of plants, the most common field activities were collecting plants (58% of the courses) and identification review (55%) of species and families. The identification of collections was undertaken in 39% of the courses surveyed, whereas 29% had ID quizzes during fieldtrips. Field-based research projects and "site reports" were undertaken in only 6% of the courses surveyed.

E. COMMENTS

The most common comments on course activities were that 1) fieldwork was imperative in capturing the student's interest and 2) most students responded well to special projects where they could pursue a project concordant with their own interests.

INSTITUTIONS SURVEYED

Ohio State University; George Mason University (VA); Sam Houston State University (TX); Augusta College (GA); University of Florida; Duke University; University of Georgia; Stetson University (FL); University of Oklahoma; Samford University (AL); University of Idaho; Whitman College (WA); Kansas State University; Winthrop College (SC); University of New Hampshire; The Colorado College; New Mexico State University; Furman University (SC); North Carolina State University; St. Mary's College (NC); Sul Ross State University (TX); Lebanon Valley College (PA); University of Texas; Rhodes College (TN); West Virginia University; University of Alberta; University of Wisconsin, Oshkosh; University of Western Ontario; California Polytechnic State University; Texas Tech University; University of Arizona; University of Illinois; University of North Dakota; Montana State University; University of Michigan; Ohio University; University of Maine; Colorado State University; Western Washington State University; University of Akron; University of Maryland; University of Vermont; University of Nebraska, Lincoln; University of California, Santa Cruz, Davis, and Berkeley; University of Kansas; Miami University (OH); University of Louisville; South Dakota State University; University of Wisconsin, Milwaukee; University of Science and Arts of Oklahoma

II. On-campus Field Botany courses (7 responses)

A. GENERAL COURSE INFORMATION

Course names: All courses in this category were entitled "Field Botany."

Credit hours: 86% of the courses are for 4 credit hours; only one course surveyed was for 3 hours.

Frequency and season offered: 57% of these courses are offered in the spring, 29% in the fall, and 14% in the summer. 84% are offered once a year; one university offered their course twice a year.

Enrollment numbers and trends: The average enrollment was 14 students per class with a range of 8 to 25. Over the last five offerings, 84% of the respondents reported stasis in enrollment numbers; 14% reported an increase.

Student profile: The vast majority of students in "Field Botany" courses are Botany or Biology majors (average 94%). The remaining students take it as an Arts & Sciences elective or, rarely (less than 10%) as an Agriculture elective.

B. LECTURES

Course content and hours per week: All instructors surveyed described their courses as conceptual in nature. 43% of the courses utilized 2 hours of lecture per week; 29% had 3 hours of lecture; whereas 28% had 6 hours or more of lecture (this included the summer offering).

Percentage of and criteria for grading: The mean percentage of the course grade based on lectures was 46%. The range was 20% to 65%.

84% of the respondents utilized exams to determine grades. Other criteria used are the following: 14% had students hand in a graded literature critique; 14% had some kind of "computer project"; whereas 14% included a written research paper.

Text: 84% of the respondents used a text for the lecture portion of Field Botany classes. Of those who used texts, 83% used local floras and/or regional vegetational guides. One course used Radford's Fundamentals of Plant Systematics.

C. LABORATORY ACTIVITIES

Hours per week: 67% had 4 hours of lab per week; 14% had 3 hours; whereas the summer course had 6 hours or more of lab per week.

Nature of lab activities: Three laboratory activities were used by all instructors: "keying" exercises, species sight ID, and family sight ID. Other common activities used by two-thirds to three-fourths of the instructors include: collections, key construction, and classification exercises. Infrequently used activities include: research projects, numerical analyses, experimental description writing, floral formulas, and computer identification exercises.

Percentage and criteria for grading: The mean percentage of course grade based on laboratory work was 46%; the range was 35% to 67%. The preferred method of determining grades (57% of the respondents) was collections; only 29% utilized exams. The average number of collections was 40. One course each used a research paper, key quizzes, and sight ID for grades. Laboratory materials were either fresh or dried.

D. FIELDTRIPS (all courses had organized fieldtrips)

Percent course grade based on fieldtrips: The average course grade based on fieldtrips was 12%, with a range of 0% to 60%.

Time spent in the field: The mean number of hours that students spent in the field 39 hours (range 20 to 130). The total number of daytrips spent in the field ranged from 5 to 8 with an average of 6.75 daytrips.

Field activities: Besides simple observation of plants, more than three-fourths of the instructors utilized ID quizzes, ID reviews, and plant collecting. 43% of the courses required site reports; whereas one course required a field notebook.

III. Local flora courses (9 responses)

A. GENERAL COURSE INFORMATION

Course names: One-third of the courses in this category had identification in their title; the remainder used local flora, native plants, or the equivalent.

Credit hours: 44% of the courses are for 4 credit hours; 44% are for 3 credit hours; one course was for 5 credit hours.

Frequency and season offered: 67% of these courses are offered in the spring; the remainder in the fall. Most institutions offer the course once a year with one institution offering the course twice a year, in the spring and summer.

Enrollment numbers and trends: The average enrollment was 58 students per class with a range of 6 to 240. This mean value is misleading. Without the one large class, the average enrollment was 35. Over the last five offerings, 63% of the respondents reported an increase in enrollment numbers; the remainder reported stasis.

Student profile: 87% of the students take "local flora" courses as Arts & Science, Education, or Agriculture electives. Only about 13% of the students are Botany or Biology majors.

B. LECTURES

Course content and hours per week: 63% of the instructors described their courses as both conceptual and descriptive; whereas the remainder described their course as primarily applied or descriptive. 71% of the courses utilized 2 hours of lecture per week; 29% had 3 hours of lecture.

Percentage of and criteria for grading: The mean percentage of the course grade based on lectures was 55%. The range was 40% to 70%. All of the respondents utilized exams to determine grades. Other criteria used are oral reports and classroom discussion.

Text: 89% of the respondents used a text for their "local flora" courses. Of those who used texts, 88% used local, state, or regional floras. One course used Jones & Luchsinger's Plant Systematics in addition to a local flora.

C. LABORATORY ACTIVITIES

Hours per week: 63% had 6 or more hours of lab per week; whereas 12% each had 2, 3, or 4 hours of lab per week.

Nature of lab activities: Three laboratory activities were used by all instructors: "keying" exercises, species sight ID, and family sight ID. Other common activities used by 86% of the instructors were floral formulas, classification exercises, and collections. Infrequently used activities (12% or less of the respondents) include key construction and description writing.

Percentage and criteria for grading: The mean percentage of course grade based on laboratory work was 60%; the range was 30% to 100%.

The preferred method of determining grades (88% of the respondents) was exams; only 25% utilized collections as grade criteria (average number required 95). Miscellaneous lab exercises that were graded included lab reports and sight recognition. Fresh, dried, and pickled material was used in the labs; most used fresh material.

D. FIELDTRIPS (all courses had organized fieldtrips)

Percent course grade based on fieldtrips: Only one course assigned grades based on fieldtrip activities.

Time spent in the field: The mean number of hours that students spent in the field is 26 hours (range 15 to 64). The total number of fieldtrips ranged from 3 to 32 with an average of 12.6 fieldtrips.

Field activities: Besides simple observation of plants, about half of the instructors utilized ID quizzes, ID reviews, and plant collecting.



Date: November 6, 1992
To: Dr. Hilda Richards
Provost
From: William G. Cale *W. G. Cale*
Dean, NS&M
Subject: Curriculum Changes

Attached please find curriculum proposals from the Biology Department. The proposed changes will require no additional resources to implement. The proposed new course, BI 251 Field Botany, would be taught in place of BI 446/546 and BI 451/551 which are recommended to be dropped from the curriculum.