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ABSTRACT

This publication is the result of the Illinois Annual Agriculture Articulation Conference of 1977. It consists mainly of introductory course descriptions for college courses in agriculture. The intent of the publication is to improve articulation between two and four year colleges and universities in Illinois that offer agriculture degrees. The introductory courses outlined here are designed to be taken by agriculture majors in the freshman and sophomore years at all state and community colleges and universities. These courses include agricultural economics, agricultural education, agricultural mechanization, animal science, crop (plant) science, horticultural science, and soil science. Each course outline lists course credits, prerequisites, objectives, texts, and topics with suggested time schedules in periods. (MR)

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G. Robert Darnes

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STATEWIDE ARTICULATION IN  
INTRODUCTORY COURSES  
IN  
AGRICULTURE



Prepared by  
REPRESENTATIVES OF  
ILLINOIS PUBLIC COMMUNITY COLLEGES AND  
STATE UNIVERSITIES  
Revised June 1, 1977

Illinois Community College Board  
518 Iles Park Place  
Springfield, Illinois 62718  
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June, 1977  
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STATEWIDE ARTICULATION IN  
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Representatives of Illinois Public  
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Editor

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## PREFACE

As early as 1957, the four four-year Illinois agriculture colleges and Joliet Junior College recognized the need for agriculture articulation through annual meetings. The first of these continuous annual conferences was held on the University of Illinois Campus. Soon after the passage of the Illinois Community College Act in 1965 and the rapid emergence of many new public junior colleges, problems began to appear in the articulation of courses in agriculture between two and four year colleges in Illinois.

In cooperation with the office of the Illinois Community College Board, several leaders discussed this matter and it was agreed to sponsor a statewide conference which would address itself specifically to these curriculum problems. A planning committee composed of Dr. C. D. Smith, Assistant Dean of College of Agriculture at the University of Illinois; Dr. Harvey S. Woods, Chairman of Agriculture Department at Illinois State University; Dr. Thomas E. Deem, then Dean of Arts and Sciences at Lake Land College; Mr. William Martinie, Chairman of Agricultural Occupations at Illinois Central College; and Dr. G. Robert Darnes, Associate Director, Illinois Community College Board, met in Normal to identify problems and to make preliminary plans for such a meeting. This State-wide Articulation Conference in Agriculture was held March 20-21, 1969.

As the introductory chapters will testify, detailed articulation patterns have been developed between the two and four year institutions in agriculture. The office of the Illinois Community College Board was pleased to have assisted in this planning effort. This bulletin, published by the Illinois Community College Board, is a summary of those deliberations.

In preparing the FOREWORD, Dr. Frank P. Gardner, Dean of the School of Applied Sciences at Western Illinois University, served as the editor. For developing the first chapter - PROGRESS AND ARTICULATION OF AGRICULTURE, Dr. Frank P. Gardner and Dr. Cecil B. Smith, Assistant Dean of the College of Agriculture at the University of Illinois, compiled this information and served as editors.

Although the statewide agricultural organization is rather an informal one, its deliberations have been very productive and have been accepted by all agricultural personnel at both two and four year institutions. This group has given outstanding leadership in the State of Illinois for statewide curriculum planning. The technique for successful achievements developed and accepted by this organization has served as guidelines for not only other subject areas within the state but also for other states.

Representatives from both two and four year institutions have continued to meet and this revision is the result of deliberations of the 1977 Illinois Annual Agriculture Articulation Conference.

Dr. G. Robert Darnes  
Associate Director  
Illinois Community College Board

Dr. Fred L. Wellman  
Executive Director  
Illinois Community College Board

## FOREWORD

The rapid development of the public comprehensive community college system in Illinois has brought unparalleled opportunities in higher education to its citizens. Thousands can now avail themselves of post-high school education who otherwise would have found it difficult if not impossible.

The admission of transfer students from a community college to a four-year institution is more complex than that of entering freshmen. Transfer students enrolling in programs at senior institutions offering degrees in Agriculture submit a transcript of academic credits earned at the institution they attended previously. The number of credits they have earned in Agriculture college parallel courses varies depending upon the community college attended.

In 1970, 23 community colleges in Illinois offered programs in Agriculture. All 23 of these schools offered occupational training and some 15 community colleges offered baccalaureate-oriented courses in Agriculture. Most of the students in these courses plan to transfer to a senior institution in Illinois (University of Illinois at Champaign-Urbana, Southern Illinois University at Carbondale, Illinois State University, and Western Illinois University) or in other states.

Articulation between two and four year institutions is essential in the system of higher education in Illinois. With 50 public community college campuses in Illinois from which lower division (freshman and sophomore) credits may be obtained, and four senior institutions offering baccalaureate programs in Agriculture, the complexity of the problem is readily apparent, and the importance of close coordination and cooperation between the institutions offering programs in Agriculture is extremely important. Ideally, effective articulation occurs when a student who has been pursuing a college parallel program in a community college, and does not change his major or objective, can transfer to a four year college with a minimum or no loss of credit. The outlines of introductory courses in Agriculture provided herewith have been adopted by all community colleges and senior institutions in Illinois offering Agriculture and are evidence of the liaison and articulation that has occurred.

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## CHAPTER I

### PROGRESS IN ARTICULATION IN AGRICULTURE

Historically, serious efforts on a formal basis to improve articulation in Agriculture between the two- and four-year institutions in Illinois began with a conference held at Southern Illinois University in 1966. Representatives from Joliet, Canton, and Wabash public community colleges and the University of Illinois, Southern Illinois University, Illinois State University and Western Illinois University senior institutions were in attendance. The primary consideration of the conference was concerned with the qualifications of community college teaching staff. Responses from the conferees indicated that the instructor should hold a Master's degree in the subject matter taught.

The 1967 conference on Articulation in Agriculture gave primary attention to the role of public community colleges, stressing the occupational and continuing education function as well as the baccalaureate function.

By the time of the 1969 conference, held at Illinois State University, Normal, it was apparent that more specific guidelines for offering and accepting transfer course credits in Agriculture were needed. The major question at that time was "What courses in Agriculture should be taught during the first two years of a baccalaureate degree and, what should be the content of such courses?" The consensus was that certain courses in Agriculture could be offered during the first two years to motivate and hold the student's interest in Agriculture. This philosophy contrasts with that of those who advocate that students in baccalaureate programs in Agriculture should take only general education courses at the community colleges, then transfer to the senior institutions for courses in their area of specialization.

At this conference agreement was reached on the question of what courses might be offered during the first two years. Five introductory courses in the following areas were agreed upon: Agricultural Economics, Agricultural Mechanization, Animal Science, Plant or Crop Science, and Soil Sciences. There was unanimous agreement that these were the courses most suitable at the freshman or sophomore level. A sixth course, Feeds and Feeding, or Animal Nutrition, was suggested by the junior college representatives, but senior college representatives maintained that it belonged at the upper division.

Also at this same conference it was agreed that in order to enhance articulation and to assure successful advancement to the specialized courses at the senior institutions, topical outlines should be developed for use by all institutions offering or interested in offering any of the five introductory courses. The students could therefore elect to enroll in any of these courses and be assured of their transferability.

These agreements did not imply that all community colleges would offer all or any of the five courses. Local conditions such as funding, staff, and facilities would naturally be a consideration.

This revised edition is the result of the efforts of standing committees and annual conferences on Agriculture curriculum in both two- and four-year institutions.



CHAPTER II

COURSE OUTLINES

INTRODUCTORY AGRICULTURAL ECONOMICS

INTRODUCTORY AGRICULTURAL EDUCATION

INTRODUCTORY AGRICULTURAL MECHANIZATION

INTRODUCTORY ANIMAL SCIENCE

INTRODUCTORY CROP (PLANT) SCIENCE

INTRODUCTORY HORTICULTURAL SCIENCE

INTRODUCTORY SOIL SCIENCE

## INTRODUCTORY AGRICULTURAL ECONOMICS

Credit: 3 or 4 semester; 4 or 5 quarter

No Prerequisite

- Objectives: 1. To develop a basic understanding of the principles of economics and their application to agricultural problems.
2. To develop an understanding of the role of agriculture in the United States and world economies.

Suggested Text: Snodgrass and Wallace, Agriculture, Economics, and Resource Management.

Alternative Text: Sjo, John, Economics for Agriculturalists.

<u>Topics</u>	<u>Periods</u>
I. Economics and Economic Growth	3
II. Principles of Economics	15
A. Production Principles	
B. Production Costs, Supply and Revenue	
C. Principles of Profit Maximization	
D. Principles of Consumption and Demand	
E. Price Elasticity Concepts	
F. Principles of Market Price Determination	
III. Agricultural Inputs	5
A. Natural Resources	
B. Human Input	
C. Capital	
IV. Marketing Agricultural Products	4
A. How the Marketing System Developed	
B. Functional, Institutional and Commodity Approaches to Marketing	
C. Costs of Marketing Agricultural Products	

V. Agricultural Problems and Policies	6
A. Goals of Policies and Programs	
B. Price and Income	
C. Resource Use	
VI. World Food Situation	5
A. Population Growth	
B. World Food Production Trends	
C. Trade in Agriculture Products	
D. The Role of Agriculture in Economic Growth	
VII. Characteristics of Agriculture	<u>2</u>
	Total 40
	Range 40 - 50

Committee for this course (1977):

James S. Wehrly, Chairman  
 William A. Bennett  
 Ralph A. Benton  
 Lyle P. Fettig  
 Larry L. Fischer  
 Ronald W. Heisner  
 Bruce W. Henrikson  
 William B. Johnson  
 Donald M. Nelson  
 Bill L. Rich  
 Cecil D. Smith  
 Rodney L. Winter  
 Harvey S. Woods

Western Illinois University  
 Black Hawk East  
 Black Hawk East  
 University of Illinois  
 John Wood Community College  
 Kishwaukèe College  
 Parkland College  
 Joliet junior College  
 Parkland College  
 Lake Land College  
 University of Illinois  
 Black Hawk East  
 Illinois State University

## INTRODUCTORY AGRICULTURAL EDUCATION

Credit: 2 or 3 semester; 3 to 4 quarter

No Prerequisite

Purpose: The general purpose of the course is to enable the student to understand the vocational teaching profession and the role of the teacher.

Objectives: At the close of the course, the student will be able to:

1. Present an agriculture occupations total program.
2. Determine the teacher's role and responsibility in an educational system.
3. Assess the opportunities in the teaching profession.

Text and Suggested References:

Text: Phipps, Lloyd J., Handbook on Agricultural Education in Public Schools, Interstate Publishing Co., Danville, IL.

References: Agricultural Education Magazine  
A.V.A. Journal  
Ill. F.F.A. Magazine  
Career Journal  
IVA Informer  
National F.F.A. Magazine  
Official F.F.A. Manual  
F.F.A. Advisors Handbook  
F.F.A. Student Handbook  
Other professional journals

Special Activities:

1. Field Trips to local high schools, secondary, area vocational centers and community colleges.
2. F.F.A. Contest and Award Programs.
3. Resource persons - such as a successful agriculture teacher and F.F.A. officers.
4. Mini-teach a unit.

### Topics

- I. Need and Objectives for Vocational Education in Agriculture
- II. Vocational Teaching as a Career
- III. Scope of Vocational Education
  - A. Service Areas
  - B. Legislative Acts
- IV. Job Opportunities in Teaching and Related Areas

- V. Community School Concept
- VI. Responsibilities of a Teacher of Agriculture
- VII. What Makes a Good Teacher
- VIII. The Total Program of Vocational Agriculture Education
  - A. K - 8
  - B. High School Program (9 - 12)
  - C. Post Secondary (13 - 14)
  - D. Adult Education
- IX. F.F.A. Programs
- X. Facilities and Equipment
- XI. Instructional Methods and Materials
- XII. Vocational Guidance (Careers)
- XIII. Issues and New Developments in Vocational Education

Qualifications of Instructors

The qualifications of the instructor of any course to be accepted should be:

1. B.S. degree in Agriculture with certification to teach high school Vocational Agriculture (Agricultural Occupations).
2. Three (3) years experience in high school teaching of Agricultural Occupations.
3. Masters degree in Agriculture with specialized training for teaching.

Committee for this course (1977):

William M. Martinie - Chairperson  
 Robert D. Cottingham  
 Eldon R. Aupperle  
 Rollan R. Bonneau  
 Max H. Kuster  
 G. Donovan Coil  
 Kenneth E. James  
 Paul E. Hemp  
 Eugene S. Woods  
 Brian G. Felander  
 Bill L. Rich  
 Paul E. Curtiss  
 H. Edward Breece

Illinois Central College  
 Joliet Junior College  
 Black Hawk College, East  
 Kishwaukee College  
 Joliet Junior College  
 University of Illinois  
 Illinois State University  
 University of Illinois  
 Southern Illinois University - Carbondale  
 Spoon River College  
 Lake Land College  
 Parkland College  
 Western Illinois University

## INTRODUCTORY AGRICULTURAL MECHANIZATION

Credit: 3-4 semester; 4-5 quarter

No Prerequisite

Objectives: 1. To provide an introduction to:

- a. Agricultural Power and Machinery
- b. Agricultural Electrification and Application
- c. Agricultural Structures
- d. Soil and Water Conservation

2. To develop basic skills using:

- a. Surveying equipment
- b. Drawing instruments
- c. Measuring devices
- d. Electrical wiring

3. To develop abilities in mathematical applications (solving technical problems in a logical and legible manner).

4. To provide opportunities for motivation of student interest in agricultural mechanization.

5. To develop a vocabulary of agricultural mechanization principles and applications.

Suggested Text: Engineering Applications in Agriculture, Bowers, Jones, and Olver.

Suggested Auxiliary Texts or References:

1. Practical Farm Buildings, James Boyd.
2. Farm Field Machinery, Marshall Finner.
3. Selected FOS and FOM manuals by Deere and Co.

### Topics

### Periods

I. Agricultural Power and Machinery

10 - 16

A. Engines

B. Power Transmission to include Hydraulics

C. Tillage Machinery

D. Calibrations	
E. Harvesting Equipment	
II. Agricultural Electrification and Application	10 - 16
A. Circuits	
B. Motors	
C. Controls	
D. Materials Handling and Processing	
III. Agricultural Structures	10 - 16
A. Sketches and Drawings	
B. Loads	
C. Construction Materials	
D. Layout and Design	
IV. Soil and Water Conservation	10 - 16
A. Surveying and Mapping	
B. Conservation Structures	
1. Erosion Control	
2. Reservoirs	
3. Drainage	
4. Irrigation	

Committee for this course (1977):

Dwight Mobley, Chairman  
Donald Moudy  
Donald Whitten  
Cletus Mitchell  
E. F. Olver  
William A. Doerr  
Harold Gates  
Lanny Anderson  
Brian Telander

Wabash Valley College  
Kishwaukee College  
Lincoln Land Community College  
Kankakee Community College  
University of Illinois  
Southern Illinois University--Carbondale  
Kishwaukee College  
Black Hawk College East  
Spoon River College

## INTRODUCTORY ANIMAL SCIENCE

Credit: 3 or 4 semester; 4 or 5 quarter

No prerequisite

It is recommended by the articulation committee that the maximum semester or quarter hours be included in the course.

- Objectives:
1. To demonstrate the application of the science of genetics, physiology, and nutrition to the improvement of the animal industries.
  2. To acquaint the student with the management and production practices of these industries.
  3. To familiarize the student with the products of these industries and their contribution to mankind and his environment.

Suggest Texts: Campbell and Lasley, The Science of Animals That Serve Mankind - 2nd edition

H. H. Cole and Magnar Ronning, Animal Agriculture

<u>Topics</u>	<u>Periods</u>
I. Introduction	2 - 4
A. Scope and importance	
B. History, growth, and development of the animal industries	
C. Careers and opportunities	
II. Breeds	1 - 3
Beef, Dairy, Horses and other companion animals, Poultry, Sheep, and Swine	
III. Breeding and Selection	7 - 9
A. Principles of genetics	
B. Selection systems	
C. Improvement program	
D. Mating systems	
IV. Anatomy and Physiology	8 - 10
A. Skeletal and muscular systems	
B. Respiratory and circulatory systems	



C.	Endocrine systems	
D.	Reproductive systems	
1.	Male	
2.	Female	
a.	Milk secretion	
b.	Physiology of egg laying	
E.	Digestive system	
V.	Nutrition	7 - 9
A.	Nutrients and food analysis	
B.	Requirements	
C.	Feedstuffs	
VI.	Growth	1 - 2
A.	Measurements of growth	
B.	Factors affecting growth	
VII.	Environment	2 - 4
A.	Temperature	
B.	Humidity	
C.	Light	
D.	Space	
E.	Adaptation	
VIII.	Health and Sanitation	3 - 5
A.	Sanitation Program	
B.	Disease Control Program	
C.	Parasite Control Program	
D.	Public Health	
IX.	Product	8 - 10
A.	Meat	
B.	Milk	

C. Eggs	
D. Wool	
X. Marketing	2 - 4
A. Systems	
B. Grading and Classification	
XI. Production, Technology, and Economics	4 - 6
A. Performance standards	
B. Livestock enterprises	
1. Contract farming	
2. Vertical integration	
3. Independent farming	
C. Enterprise Cost Analysis	

It is recommended by the committee that an increased number of masters degrees or equivalent instructors in animal science be used to instruct the Introductory Animal Science course.

Committee for this course (1977):

John W. Litchfield, Chairman  
 Paul C. Harrison  
 Howard H. Olson  
 Loren K. Robinson  
 Dan E. Hoge

Kishwaukee College  
 University of Illinois  
 Southern Illinois University -Carbondale  
 Western Illinois University  
 Black Hawk College East

## INTRODUCTORY CROP (PLANT) SCIENCE

Credit: 4 semester or 5 quarter

No Prerequisite

- Objectives:
1. To develop an appreciation of the importance of crops on world food production.
  2. To develop an understanding of the basic principles of plant growth and the influence of man and the environment.
  3. To develop an appreciation of the theoretical and practical application of Agronomic principles.
  4. To be able to interpret and apply scientific data.

Suggested Texts: Martin and Leonard, Principles of Field Crop Production  
Burger, Lab Studies in Field Crop Science  
Janicks, et al, Plant Science - An Introduction to World Crops  
Delorit and Ahlgren, Crop Production  
Leopold, Plant Growth and Development (Series in Psysiology)  
Peter M. Ray, The Living Plant  
Arthur W. Calsoton, The Green Plant

### Topics

### Periods

- I. Importance of Crop Plants - Food, Feed, Fiber, Shelter and Aesthetic
- A. World food and population outlook
- B. Contribution
1. To man and his welfare
  2. To GNP
  3. To state gross product
  4. To balance of trade, etc.
- C. Historical significance
- D. Economics
1. Social
  2. Comparative advantages
  3. Markets

2 - 4

- 4. Transportation
- 5. Population
- II. Origin, Classification, Distribution and Identification 4 - 6
  - A. Theories of origin
  - B. Classification
  - C. Distribution
  - D. Identification of seeds and vegetative plants
- III. Factors of Crop Growth and Distribution 4 - 6
  - A. Environmental
    - 1. Gasses
    - 2. Light
    - 3. Moisture
    - 4. Temperature
  - B. Edaphic
    - 1. Physical
    - 2. Chemical
    - 3. Biological
- IV. Growth and Development of Crop Plants 4 - 6
  - A. Botany of plants
    - 1. Anatomy
    - 2. Morphology
  - B. Physiology
    - 1. Structure
    - 2. Function
  - C. Growth regulation and development - plant regulators in Agriculture today and in the future
- V. Ecological Physiology 4 - 6
  - A. Mineral, water and CHO nutrition
  - B. Role of water
  - C. Water Management
  - D. Essential elements
  - E. Photosynthesis and storage

VI. Crop Propagation	4 - 6
A. Asexual propagation - vegetative	
B. Sexual propagation - seed	
1. Seed quality	
2. State laws	
3. Crop Improvement Association (Certified Seed)	
C. Stand establishment - seeding methods, etc.	
VII. Cropping Systems and Practices	2 - 4
A. Monoculture	
B. Rotation	
C. Double Cropping	
D. Orchards, Forests, etc.	
VIII. Preparation and Tillage of Growing Medium	2 - 4
A. Preparation of Seedbed	
B. Cultural practices	
C. Minimum-tillage	
D. Zero-tillage	
E. Other rooting media	
IX. Crop Improvement	2 - 4
A. Introductions	
B. Selections	
C. Genetics	
D. Breeding	
E. Hybridization	
X. Crop Protection	2 - 4
A. Insects	
B. Diseases	
C. Weeds, etc.	
XI. Harvesting, Storing and Marketing Practices	2 - 4

XII. Other Important Crops of the World

1 - 3

- A. Fiber
- B. Oil
- C. Grain
- D. Drug
- E. Forage
- F. Sugar, etc.

Laboratory suggested: Use of live plants or a series of demonstrations from seed to seed development.

Example: Seed identification and vegetative identification of crops.

Seed germination experiments.  
Factors affecting seed germination.

Emergence and seedling development of monocots and dicots.

Morphology of Grasses.

Morphology of Legumes.

Fertilization and Seed Formation

Committee for this course (1977):

Garry E. Greenwood, Chairman  
Farrell J. Olsen, Vice Chairman  
Roland G. Pettit, Vice Chairman -  
Donald O. Mersinger  
Darrell A. Miller  
David T. Nolan  
G. Kyle Wittler

Lewis and Clark Community College  
Southern Illinois University - Carbondale  
Spoon River College  
Wabash Valley  
University of Illinois  
Black Hawk College, East Campus  
Parkland College

## INTRODUCTORY HORTICULTURAL SCIENCE

Suggested course description: An introduction to the principles and practices involved in the development, production, and use of horticultural crops (fruits, vegetables, greenhouse, turf, nursery, floral, and landscape).

Credit: 3 semester or 4 quarter hours

No prerequisite

- Objectives:
1. To develop an awareness of the significance of horticulture to mankind.
  2. To provide the student with a working knowledge of the fundamental principles of plant growth.
  3. To develop the ability to apply the fundamentals to the solution of practical problems in horticulture.

Suggested Texts: Janick, Horticultural Science  
Denisen, Principles of Horticulture  
Denisen and Nichols, Laboratory Manual in Horticulture  
Edmond, Senn and Andrews, Fundamentals of Horticulture

<u>Topics</u>	<u>Periods</u> (without labs)
I. Introduction	2 - 4
A. Scope and Importance	
B. Historical perspective	
C. Careers and opportunities	
II. The biology of Horticulture	8 - 10
A. Classification of horticultural plants (Botanical, Horticultural, Ecological, etc.)	
B. The structure of horticultural plants	
C. Plant growth and development	
D. Environmental factors affecting plant growth and development (light, temperature, nutrient supply, moisture, atmosphere)	
III. The technology of horticulture	16 - 20
A. Controlling the plant environment	
B. Directing plant growth	
C. Biological competition	
D. Mechanisms of propagation	





## INTRODUCTORY SOIL SCIENCE

Credit: 4 semester or 5 quarter

Prerequisite: 1 course  
in Chemistry. Geology  
Suggested.

- Objectives:
1. To develop an understanding and knowledge of the basic and applied chemical, physical and biological concepts in Soils.
  2. To develop an understanding of the origin, classification, and distribution of soils and their relationship to man and food production.
  3. To develop an understanding of the management and conservation of soils.

Suggested Texts: Foth, Fundamentals of Soil Science, 4th. ed., Wiley  
Brady, The Nature and Properties of Soils, 8th. ed.,  
McMillan

J. J. Hassett, W. L. Banwort, Stipes, Palmer and Troeh  
Introductory Soil Science Laboratory Manual,  
2nd. ed., Iowa State

<u>Topics</u>	<u>Periods</u>
I. Introduction	2 - 3
A. Definition of soil	
B. Soil as a natural body	
C. Soil components - air, water, inorganic and organic solids.	
II. Physical Properties	8 - 10
A. Soil separates	
B. Texture	
C. Aggregation and structure characteristics	
D. Temperature	
E. Color	
F. Moisture	
G. Pore space	
H. Bulk density	
I. Particle density	

J. Aeration	
K. Drainage	
L. Surface Area	
M. Soil water	
III. Chemical Properties	7 - 9
A. Morphology of cla.	
B. Chemistry of clays	
C. Ionic exchange	
D. Acidity, alkalinity (pH) and salinity	
E. Reactions in liming and acidification	
IV. Biological Properties	5 - 7
A. Soil organic matter	
B. C:N	
C. N transformation	
D. Soil organisms	
E. Sulfur transformation	
V. Genesis and Classification	4 - 6
A. Profile	
B. Soil forming factors	
C. Soil survey methods	
D. Soil survey reports	
E. Soil distribution	
F. Classification systems (briefly with emphasis on nomenclature and soil orders)	
1. Older classification systems	
2. New classification systems	
VI. Soil Fertility	8 - 10
A. Nutrient availability	
B. Macro and micro nutrients	
C. Fertilizer sources, m <sup>fg</sup> , - availability	

D. Application and placement

E. Fertilizer requirements

VII. Conservation and Management

5 - 7

A. Drainage

B. Erosion mechanisms and control

C. Irrigation

D. Land use classification

E. Manuring - plant and animal

Laboratory Topics

Suggested minimum requirements - lab exercise or field trips for each major area in lecture. Include one (1) land use selection exercise.

Possible Lab Exercise

Possible Field Trip

Texture  
Structure  
Bulk density and pore space  
Moisture  
Temperature  
Ionic Exchange  
Acidity, alkalinity - pH  
Nutrient availability  
Soil O.M.  
N Transformation

Structure  
Color  
Origin, Classification  
Conservation and  
Management

Committee for this course (1977):

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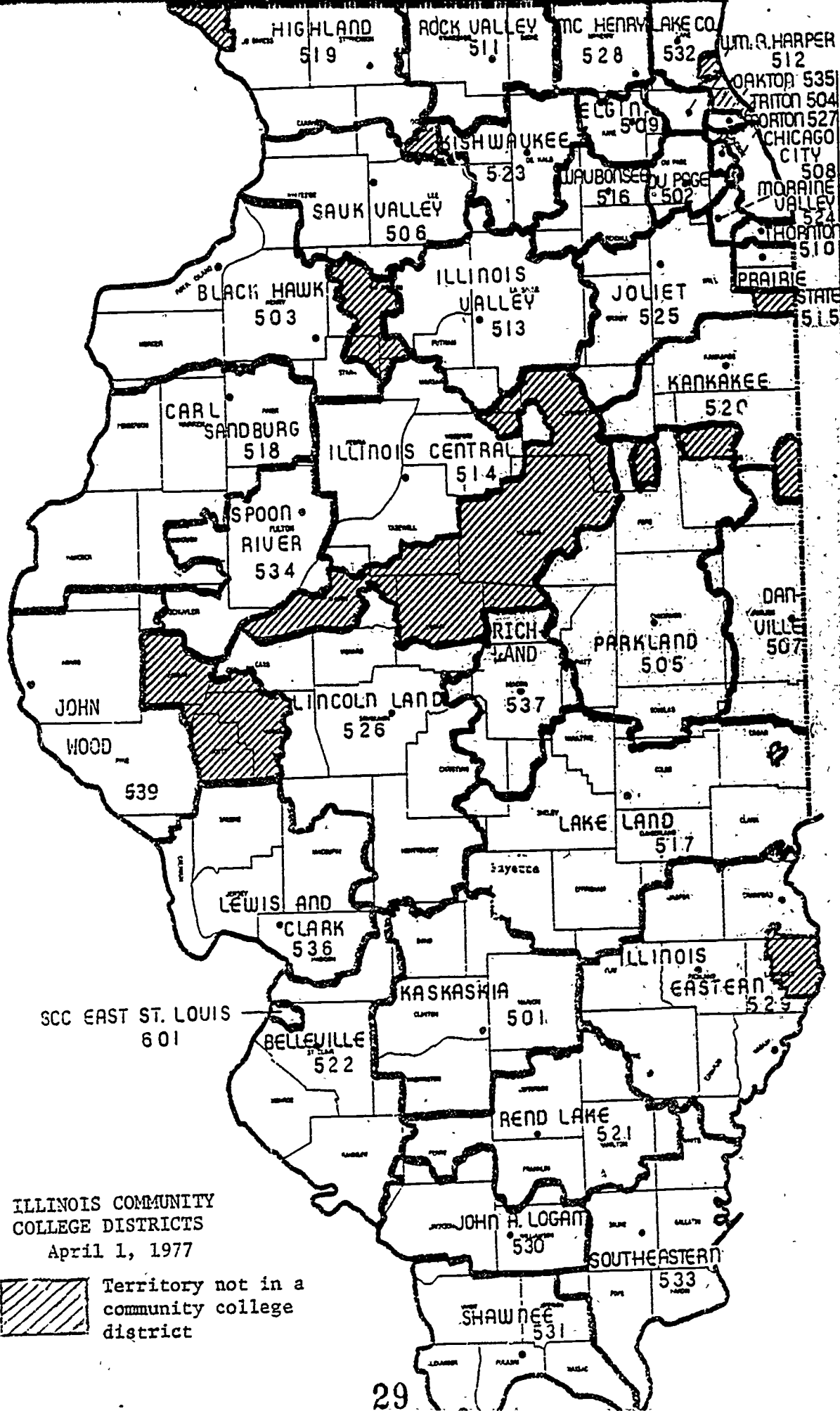
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ILLINOIS COMMUNITY COLLEGE DISTRICTS  
April 1, 1977



Territory not in a community college district