841. Physiology of the Algae
Fall of even-numbered years. 3(3-0)
Approval of department.
Further knowledge of algae, including phytochemistry, biochemistry, and aspects of the ultra-structure of the various algal divisions. Discussion of uses of algae for the study of classical physiological and developmental problems.

844. Seminar in Plant Pathology
Fall, Winter, Spring. 1(1-0)
Approval of department.

850. Agrostology
Fall of even-numbered years. 3(1-4)
One year of botany or approval of department. Comprehensive treatment of the systematic evolution, ecology, and geographical significance of the grass family; including pertinent aspects of genetics, cytology, anatomy, and physiology.

855. Effects of Ionizing Radiations on Plants
Spring of odd-numbered years. 3(0-0)
Approval of department.
Study of the effects upon plant growth and development of various aspects of radiation; direct and indirect effects, genetics, evolution, and environmental implications related to modes of action at the cell, organism, and population levels.

863. Advanced Environmental Physiology
Winter. 3(3-0) 413 or approval of department.
The plant in relation to its environment; energy exchange; coupling between CO2 assimilation and transpiration; hydrodynamics of the stationary and nonstationary states; transport of ions, carbohydrates, and hormones; stress physiology.

865. Advanced Growth and Development
Fall. 3(3-0) 415 or approval of department.
Advanced treatment of the physiological processes of growth and development. Mechanism underlying these processes and the roles played by hormones, light, etc., in controlling them will be analyzed.

571. Biology of Nematodes
Winter of even-numbered years. 4(2-0)
Approval of department. Interdepartmental with and administered by the Department of Entomology. Ontogeny, taxonomy, morphology, pathology, and ecology of nematodes, with special reference to plant-parasitic and phyto-pathogenic species.

581. Pathogenesis and Disease Resistance
Winter of odd-numbered years. 4(3-2)
405 and 415, or approval of department. Lectures, readings, and discussions on mechanisms of pathogenicity and infectivity; physiology and biochemistry of disease development; tumorogenesis; metabolic consequences of infection; nature of disease resistance; and parasitism.

883. Plant Disease Control
Fall of even-numbered years. 3(2-2)
405.
Principals and methods in controlling plant diseases. Considerable emphasis is placed on the chemistry of fungicides, and their role in controlling plant diseases. Other factors affecting disease epidemiology are covered.

885. Plant Diseases in the Field
Spring. 4 credits. 405 and approval of department.
Diagnosis, distribution, and sequential development of plant diseases in the field.

900. Selected Topics in Plant Pathology
Fall, Winter, Spring. 2 to 5 credits. Approval of department.
Topics will be selected from the following areas: parasitism, plant viruses, ecology, genetics, nematology, fungal action, and soil microbiology.

909. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Research for thesis at the master's degree level in one of the following fields: anatomy, cytology, ecology, genetics, lichenology, morphology, mycology, pathology, physiology, and taxonomy.

918. Advanced Genetics
Winter of odd-numbered years. 3(0-0)
Approval of department.
Role of the gene in differentiation and development, with special emphasis upon the genetic mechanisms responsible for the control of phenogenesis.

920. Advanced Plant Taxonomy
Spring of even-numbered years. 4(4-0)
201, 204, 401, 441.
Consideration of the recent scientific developments affecting plant classification.

930. Advanced Plant Ecology
Winter of odd-numbered years; Summer of even-numbered years. Given at W. K. Kellogg Biological Station summer term. 3(2-4)
Approval of department.
Fundamental theories and modern research horizons.

952. Plant Physiology and Biochemistry I
Winter of odd-numbered years. 3(3-0)
Approval of department. Interdepartmental with and administered by the Biochemistry Department.
Selected topics concerning photosynthesis and related processes.

955. Plant Physiology and Biochemistry II
Winter of even-numbered years. 3(3-0)
Approval of department. Interdepartmental with and administered by the Biochemistry Department.
Metabolic pathways of unique significance to plants.

956. Advanced Plant Physiology IV
Spring of even-numbered years. 3(3-0)
Approval of department.
Factors influencing vegetative and reproductive physiology.

999. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Research for dissertation at the doctor's degree level in one of the following fields: anatomy, cytology, ecology, genetics, lichenology, morphology, mycology, paleobotany, pathology, physiology, and taxonomy.

BUILDING CONSTRUCTION
See Packaging

BUSINESS LAW, INSURANCE AND OFFICE ADMINISTRATION

College of Business

201. Shorthand I
Fall, Winter, Spring, Summer. 3(4-0) 234 or 1 term typewriting.
Gregg shorthand theory, dictation and transcription for students with no previous training.

202. Shorthand II
Fall, Winter, Spring, Summer. 3(3-1) 201, 234 or 1 term shorthand and typewriting.
Development of theory and transcription competency; speed building.

234. Typewriting I
Fall, Winter, Summer. 2(2-2) 235 or 1 year typewriting.
Mastery of keyboard; building speed and accuracy; elementary typewriting problems.

235. Typewriting II
Fall, Winter, Spring. 2(2-2) 234 or approval of department.
Improvement of speed and accuracy; arrangement of business letters, tabulation and manuscripts; production typewriting.

236. Advanced Typewriting
Fall, Winter, Spring. 3(3-1) 235 or 1½ to 2 years typewriting.
Instruction in specialized typewriting problems to develop high-level competency.

304. Advanced Shorthand
(204.) Fall, Winter, Spring. 3(3-1) May re-enroll for a maximum of 6 credits. 205, 235.
Continuation of 202.

308. Secretarial Administration I
Winter, Spring. 4(4-0) 336, 304.
Sophomore.
Development of proficiency in transcription skills.

309. Secretarial Administration II
Fall, Winter, Spring. 4(4-2) 336.
Sophomore.
Machine dictation-transcription; duplication and copying processes; machine calculations; records management.
341. Survey of Business Law
Fall, Winter, Spring. 4(4-0) Junior.
Not open to business administration students.
Examines the development of the law; courts, court procedures and civil remedies, torts, crimes; contracts, agents, sales, negotiable instruments, real and personal property, including bailments and liens. Textbook and lectures rather than case approach.

350. Principles of Risk and Insurance
(AFA 350, 296) Fall, Winter, Spring, Summer. 4(4-0) Juniors or approval of department.
Risk and risk meeting systems with emphasis on the insurance mechanism. Fundamentals principles, legal relationships, types of carriers and organization; principal types of coverage and industry regulation.

370. Administrative Office Management
Fall, Winter, Spring, Summer. 3(3-0) Juniors.
Analysis of office function and relationship to business organization; information handling and data processing; office design and layout; responsibilities of office administrators.

395. Principles of Urban Real Estate Administration
(AFA 395) Fall, Winter, Spring, Summer. 3(3-0) AFA 301 or approval of department.
Examines urban economics and city growth. Examines physical, locational, legal, social and economic factors. Role of markets, governments and finance. Theories and techniques of valuing urban real estate.

396. Personal Risks and Insurance
350 or Junior in Business Administration.
AFA 396 Fall, Winter, Summer. 4(4-0) AFA 350 or Junior in business administration.

397. Social Insurance Topics
AFA 397 Fall, Winter, Spring. 3(3-0) AFA 395.
Systematic study of the legal, actuarial, social and economic aspects of social insurance. Federal and State programs. Problems, solutions and potential alternatives.

400H. Honors Work
Fall, Winter, Spring, Summer. 1 to 15 credits. Approval of department.
Independent and informal study in law, office administration or office communications.

416. Secretarial Administration III: Seminar
Winter, Spring. 4(4-0) Seniors or approval of department.
Analysis of the role of the executive secretary.

440. Law and Society
Fall, Winter, Spring. 3(3-0) Seniors or approval of department.
Legal reasoning and legal institutions. Court systems and court procedures. Relationships of citizen and businessman to governmental agencies. Tort, crimes.

441. Contracts and Sales
Fall, Winter, Spring. 3(3-0)
Contracts, including concept of freedom of contract and limitations. Sales. Case study method.

442. Agency, Partnerships and Corporations
Winter. 4(4-0).
The law dealing with agency and business organizations. Case study method.

443. Negotiable Instruments, Secured Transactions, Property
Spring. 3(3-0) 441.
The law of negotiable instruments, secured transactions, and property. Case study method.

445. Real Estate Law
Winter. 3(3-0) 441 or 445.

446. Interstate and International Business Law
Spring. 3(3-0) 440.

447. Hotel Law
Winter, Spring. 4(4-0) 440.
Legal aspects of the hospitality industry.

448. Business Risks and Insurance
(AFA 446) Fall, Winter, Spring. 5(5-0) 350 or Seniors in business administration.
Business insurance as it relates to business risks and decision making. Emphasis on business exposures, coverages and problems of the risk manager.

447. Management of Insurance Enterprise
AFA 447 Spring. 5(5-0) 350 or approval of department.
Organizational requirements and functional operations of insurance enterprise with emphasis on methods of ratemaking, reserves, financial statement and investment requirements, loss adjustment, underwriting, and marketing. Statutory limitations on management freedom.

848. The Legal Environment of Business
Fall, Summer. 4(4-0)
Critical examination of the environment in which business operates. Analysis of the component elements of the legal environment of business and the structural framework in which law functions.

849. Legal Environment of International Business
Spring, Summer. 4(4-0)
Commercial and financial transactions in international business, foreign agencies, branches, subsidiaries. Aspects of labor relations, anti-trust, taxation, and transportation as related to foreign operations. Litigation and arbitration in the international business community.

871. Seminar: Office Administration
Winter, Summer. 3 credits. May re-enroll for a maximum of 6 credits. Approval of department.
Problems, practices, and policies involved in office administration. Methods of establishing, analyzing, standardizing, and controlling administrative systems and procedures in the office.