878. Comparative Limnology
   Summer. 6 credits. Approval of department. Given at W. K. Kellogg Biological Station. Interdepartmental with and administered by the Zoology Department.
   Theoretical concepts and methods of analysis of environmental parameters influencing productivity of freshwater. Comparative field investigations of lakes, streams, and other aquatic habitats.

880. Plant Virology
   Fall of odd-numbered years. 3(2-0) 405 or approval of department. External and internal symptomatology, transmission, interactions, purifications, assay and serology of plant viruses.

881. 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 parasites.

883. Plant Disease Control
   Fall of even-numbered years. 3(2-3) 405. Principles 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 developments of plant diseases in the field.

890. 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, fungicidal action, and soil microbiology.

899. Research
   Fall, Winter, Spring. Winter. 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, pathology, physiology, and taxonomy.

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

920. Advanced Plant Taxonomy
   Spring of even-numbered years. 4(4-0) 524. Consideration of the recent scientific developments affecting plant classification.

930. Advanced Plant Ecology
   Winter of odd-numbered years. 3(2-2) Approval of department. Fundamental theories and modern research horizons.

931. Advanced Plant Physiology I
   (943.) Fall of even-numbered years. 3(3-0) Approval of department. Selected topics concerning absorption and inorganic nutrition.

932. Plant Physiology and Biochemistry I
   (941.) 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.

933. Advanced Plant Physiology II
   (945.) Spring of odd-numbered years. 3(3-0) Approval of department. Selected topics concerning the chemistry, physiology and mechanism of action of plant growth hormones.

934. Advanced Plant Physiology III
   (946.) Fall of odd-numbered years. 3(3-0) Approval of department. Selected topics from environmental physiology.

935. Plant Physiology and Biochemistry II
   (947.) Winter of even-numbered years. 3(3-0) Approval of department. Metabolic pathways of unique significance to plants.

936. Advanced Plant Physiology IV
   (948.) 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, pathology, physiology, and taxonomy.

BUILDING CONSTRUCTION

BUSINESS LAW, INSURANCE AND OFFICE ADMINISTRATION BIO

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 shorthand and transcription competency, speed building.

234. Typewriting I
   Fall, Winter, Spring, Summer. 2(2-2) Approval of department. Mastery of keyboard; building speed and accuracy; elementary typewriting problems.

235. Typewriting II
   Fall, Winter, Spring. 2(3-2) 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, Summer. 3(3-1) 235 or 2 terms 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. 262, 235. Continuation of 202.

308. Secretarial Administration I
   Winter. 4(4-0) 234, 303. Sophomore. Development of proficiency in transcription skills.

309. Secretarial Administration II
   Fall, Winter, Spring. 4(4-4) 236, 308. Sophomore. Machine dictation-transcription; duplication and copying processes; machine calculations; records management.

326. Business Writing
   Fall, Winter, Spring, Summer. 4(4-0) Juniors. Study and analysis of business and industrial communication problems; extensive instruction and practice in writing.

341. Survey of Business Law
   Fall, Winter, Spring, Summer. 4(4-0) Juniors. Not open to business administration students. Historical development of the law; courts, court procedures and civil remedies, torts, crimes; contracts, agency, sales, negotiable instruments, real and personal property, including bailments and liens. Textbook and lecture rather than case approach.

350. Principles of Risk and Insurance
   (AFA 330, 296.) Fall, Winter, Spring. 3(3-0) Juniors or approval of department. Risk and risk meeting methods with emphasis on the insurance mechanism. Fundamental principles, legal relationships, types of carriers and organization principles types of coverage and industry regulation.

370. Office Administration
   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.

385. Principles of Urban Real Estate Administration
   (AFA 395.) Fall, Spring. 5(5-0) AFA 391 or approval of department; EC 201. Concepts of urbanism, city functions and city growth. Examine 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
   (AFA 336.) Fall, Summer. 5(5-0) 350 or Juniors in business administration. Personal risk analysis and personal insurance. Emphasis on life, health, automobile, fire and liability insurance. Programming personal insurance. Estate analysis and trusts. Social and economic aspects of personal insurance analyzed.
487. **Management of Insurance Enterprise**

(FA 487.) Spring. 3(3-0) 350 or approval of department.

Organizational requirements and functional operations of insurance enterprise with emphasis on methods of marketing, reserves, financial statement and investment requirements, loss adjustment, underwriting, and marketing. Statistical limitations on management freedom.

492. **Technology Management**

(FA 492.) Spring. 3(3-0) 350 or approval of department.

Management decisions, including economics, technology, and policy. Emphasis on metropolitan and international environments.

495. **Engineering Economics and Financial Management**

(FA 495.) Spring. 3(3-0) 350 or approval of department.

Economic and financial management of projects and facilities. Emphasis on the real estate business. Combined text and case approach.

497. **Environmental Engineering**

(FA 497.) Fall, Winter, Spring, Summer. 3(3-0) 350 or approval of department.

Analysis of insurance problems affecting the public interest. Special emphasis on problems due to changing economic and social conditions. Insurance regulatory, financial, marketing, and social problems are evaluated.

500. **Advanced Chemical Engineering**

(FA 500.) Fall, Winter, Spring. 3(3-0) 350 or approval of department.

Analysis of insurance problems affecting the public interest. Special emphasis on problems due to changing economic and social conditions. Insurance regulatory, financial, marketing, and social problems are evaluated.

501. **Advanced Chemical Engineering Laboratory**

(FA 501.) Winter. 3(3-0) 415.

Advanced laboratory problems, requiring team effort. Experimental work, involving momenta, heat and mass transfer, separation processes, such as distillation, filtration, and drying; reactor kinetics; automatic process control.