920. Design and Analysis of Agronomic Experiments
Spring, 3(3-0) STT 423 or approval of department.
Constructing and analyzing designs for experimental investigations in the biological sciences.

951. Cytogenetics in Plant Breeding
Winter of odd-numbered years. 3(3-0)
BOT 427, BOT 528, or approval of department.
Interdepartmental with the Department of Horticulture
Application of cytogenetic principles to plant breeding. Significance of recombination, role of induced mutations, polyplody, chromosome substitution, and aneuploid analyses as they apply to the field of plant breeding.

952. Plant Breeding Biometrics
Winter of even-numbered years. 4(3-2)
Approval of department.
Biometrical genetics as it applies to plant breeding. Includes studies of path coefficients, partitioning of variance, and the principles of selection in a changing environment.

999. Doctoral Dissertation Research
Fall, Winter, Spring. Summer. Variable credit.

DAIRY SCIENCE

College of Agriculture and Natural Resources

214. Dairy Production
Fall, Spring. 4(3-2)

314. Dairy Herdsman Techniques
Winter. 2(0-4) DRY 214, majors only.
Need health and management procedures, disease prevention and detection, equipment maintenance and record systems for dairy herds.

323. Dairy Cattle Judging
Spring. 3(0-6)
Desired type in dairy cattle. Judging and showing procedures. Competitive judging. Teams selected to represent Michigan State University in national competition.

371. Seminar
Spring. 1(1-0) Juniors
Major issues pertinent to the dairy industry are described by authorities from MSU and the dairy industry of Michigan. Students are provided an opportunity for an exchange in ideas.

413. Dairy Farm Management
Spring. 3(2-2)
Analysis of dairy farm organization and operations. Dairy herd management practices. Dairy housing with emphasis on economical and efficient usage. Use of dairy records in the farm operation.

424. Dairy Cattle Breeding
Spring. 4(2-4) ANS 361.
Applications of population genetics to improving dairy cattle. Use of selection, aids to selection, and systems of mating to formulate breeding plans. Inheritance of economic traits. Breeding improvement programs.

433. Ruminant Nutrition
Winter. 4(3-2) ANS 325. Interdepartmental with Animal Science.
Principles of ruminant nutrition and application to actual feeding practices in commercial dairy and beef operations. Rumen fermentation as related to feed utilization, growth, milk production and milk composition.

444. Mammary Physiology
Winter. 4(3-2) PSL 240. BCH 200. Interdepartmental and administered jointly with the Department of Physiology.

445. Endocrinology and Reproductive Physiology
Fall. 4(3-0) PSL 240. Interdepartmental and administered jointly with the Department of Physiology.
Processes of reproduction and endocrinology with special emphasis on anatomy of reproductive systems, folliculogenesis, gametogenesis, reproductive cycle, fertilization, sex determination, gestation and artificial regulation of these reproductive events for economic benefit.

460. Special Problems
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 10 credits. Approval of department.

IDC. The Impact of Animal Resource Management Upon the World’s Developing Nations
For course description, see Interdisciplinary Courses.

550. Topics in Dairy Science
Fall, Winter, Spring. Variable credit. May reenroll for credit. Approval of department.
Topics from breeding, management, nutrition, or physiology, changing from term to term to include recent technical advances.

899. Master’s Thesis Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

925. Advanced Ruminant Nutrition
Fall of even-numbered years. 4(4-0)
BCH 452, PSL 501 or approval of department.
Microbiology, physiology and biochemistry of ruminant digestion and the absorption and metabolism of rumen fermentation products.

945. Physiology of Mammalian Reproduction
Winter. 4(5-0) DRY 445 or PSL 445 or approval of department. Interdepartmental with the Department of Physiology.
Chemistry and biosynthesis of reproductive hormones. Gonadal, hypothalamic and pituitary development of reproductive potential. Ovulation, fertilization, implantation and placentaion will be studied. Relationships of conceptus, uterus and corpus luteum. Parturition.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

EARTH SCIENCE

See Geology

ECONOMICS

College of Business

Courses are classified as follows:
Labor Economics and Industrial Relations—305, 455, 456, 457.
Money and Banking—318, 330, 470.
International Economics—427.
Public Finance—408, 406, 408.
Price and Value Theory—324, 325, 426.
History of Economic Thought—421, 422.

200. Introduction to Economics
Fall, Winter, Spring. Summer. 4(4-0)
Open to Freshmen. Students may begin sequence with either EC 200 or EC 201.
Problem of unemployment, meaning and determination of national income; the multiplier; the accelerator; fiscal policy; deficit spending; monetary policy; banks creation of money; international aspects of the employment problem.

210. Introduction to Economics
Fall, Winter, Spring. Summer. 4(4-0)
Open to Freshmen. Students may begin sequence with either EC 200 or EC 201.
Problem of resource allocation, price determination (demand, supply), application to agricultural policy; diminishing returns; behavior of the firm (determination of quantity of output, hiring of factors), aspects of international trade.

210. Fundamentals of Economics
Fall, Winter, Spring. 4(4-0) MTH 215 or MTH 229, or concurrently. Students may not earn credit in EC 210 if they have credit in either EC 200 or EC 201.
Introductory course in economic theory, employing mathematics, when useful, as a tool analysis. Covers consumer and business behavior, markets and the price system, income distribution, and elements of employment theory.

IDC. Introduction to Latin America III
For course description, see interdisciplinary courses.

251H. Household, Firms and Markets
Fall. 5(5-0) Honors College students.
Microeconomic theory and its applications to analysis and policy. Substitutes for EC 201, EC 324, and EC 325.

252H. Aggregate Economics and Public Policy
Winter. 5(5-0) Honors College students.

305. Industrial Relations and Trade Unionism
Fall, Winter, Spring. Summer. 5(5-0)
Development, aims, structure, and functions of labor and employer organizations. Their relation to economic, political, and legal institutions and their impact on society. Primary issues in collective bargaining.