912. General Automata Theory II
(E E 952) Winter of even-numbered years. 3(3-0) 911. Interdepartmental with Electrical Engineering.

913. General Automata Theory III
(E E 953) Spring of even-numbered years. 3(3-0) 912. Interdepartmental with Electrical Engineering.
Degree of difficulty of computation. Models of parallel computations. Iterative automata.

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

Criminal Justice* C J
College of Social Science

110. Introduction to Criminal Justice
Fall, Winter, Spring. 4(4-0)
Agencies and processes involved in the administration of criminal justice—the legislature, the police, the prosecutor, the courts and corrections. Problems of law enforcement in a democratic society.

225. Police Science Laboratory I
Fall, Winter, Spring. 4(4-0) 110.
General course in laboratory techniques. Photography, recording of a crime scene, collection and preservation of evidence, and fingerprinting.

230. Administrative Theory in Criminal Justice
(150) Winter, Spring. 5(4-3) 110.
Exposition of theories and research relating to organization and management, and their applicability to criminal justice agencies.

245. Highway Traffic Administration I
Fall. 5(3-0) 110.
Examination of United States transportation system, emphasizing efficient, safe operation. Activities and agencies concerned with increasing efficiency. System's development; components; social, political impacts. Survey of present and future needs.

246. Highway Traffic Administration II
Winter. 5(4-0) 110.
Organization for traffic control, accident investigation, traffic flow regulation, and accident analysis and interpretation. Survey of traffic law, as related to administration. Violation bureau and traffic court administration.

247. Highway Traffic Administration III
Spring. 5(4-0) 110.
Highway traffic education at the elementary, secondary and adult levels of instruction. Communication aspects of highway traffic administration. Public support organizations. Motor vehicle fleet safety programs. Traffic safety research.

316. The Police and Community Relations
Fall, Winter, Spring. 4(4-0) 110.
Interdisciplinary survey of the field of police and community relations, emphasizing police administrative responsibility, with special attention to police role in community relations tension and conflict.

327. Police Science Laboratory II
Winter. 3(0-4) 285 or approval of school.
Continuation of 225, including the studies of firearms, hair, microscopy and chemistry.

328. Police Science Laboratory III
Spring. 3(0-8) 327 or approval of school.
Continuation of 327, including forensiological examination of minute pieces of evidence, documents, and instrumental analysis.

335. Police Administration I
(235) Fall. 5(4-1) 230.
Principles of police administration and organization; administration of staff units; function and activities of police agencies.

336. Police Administration II
(236) Winter. 5(4-1) 335.
Administration of police line operations; including patrol as the basic police function, investigation, juvenile, traffic and special operational units. Liaison between units, enforcement policy, manpower distribution, and analysis of operations.

335. Delinquency Prevention and Control
Fall, Spring. 5(4-1) 230.
Problem of juvenile delinquency, theories of causation and prevention programs. Police preventive programs, juvenile courts, institutional treatment, community resources for prevention, federal and state programs.

356. Organization and Administration of Delinquency Prevention Programs
Winter. 5(4-1) 335.
Prevention programs in general. Police prevention programs—historical development, present status, organization and administration areas of operation, personnel, training, relationship to other agencies. Application of organizational scheme to other agencies.

368. Correctional Philosophy, Theory and Practice
Fall, Winter. 5(4-1) 110.

369. Probation and Parole
Spring. 5(4-1) 110, 355, 368; or approval of school.
Treatment of convicted law violators by the correctional field services before and after prison. The role of probation and parole counselors. Appraisal of effectiveness. Prediction of behavior during and after probation and parole.

375. Criminal Law
(275) Fall, Winter, Spring. 4(4-0) 110.
Survey of substantive criminal law as a means of attaining certain socially desirable ends like the preservation and protection of life and property; emphasis on historical and philosophical concepts.

390. Industrial Security Administration
Fall. 5(4-1) 290.
The organization and management of industrial security units including government security. The protection of commercial and industrial plant; facilities, and installations. Security and police operations. Administrative, legal and technical problems. Specialized programs for factories, railroads, retail stores, insurance companies, credit bureaus, etc.

*Name changed July 1, 1970. Formerly Police Administration and Public Safety.
395. Criminal Investigation
Fall, Winter. 4(4-0) 110, 375.
Introduction to criminal investigation procedures including: theory of an investigation, conduct at crime scenes, collection and preservation of physical evidence; methods used in police science laboratory; fingerprinting, ballistics, documents, serology, photography, and related forensic sciences.

400H. Honors Work
Fall, Winter, Spring, Summer. Variable credit. 110, 230, and 10 additional criminal justice credits.
Open only to qualified students. Individually selected program of supervised group or individual study dealing with some phase of police administration and public safety.

401. Case Studies in Criminal Justice
Fall, Winter, Summer. 1 to 6 credits. May re-enroll for credit. 110, 230, and 10 additional criminal justice credits.
Surveys and applied research as approved by students' major professor.

409. Special Issues in Criminal Justice
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 4 credits. Majors: 110, others: approval of school. Forum for special course offerings focusing on special issues in criminal justice by visiting instructors or regular faculty.

425. Alcohol: A Social Dilemma
Senior. 3(3-0) 365.
Current problems related to alcohol and abuse including: physiology, psychological aspects, medical aspects, alcohol and road safety, religious considerations, attitude of the beverage industry and the role of Alcoholics Anonymous.

429K. Fundamentals of Traffic Law
Fall, Summer. 3(3-0) Interdepartmental with and administered by the College of Education.
Nature, function and application of traffic law as it applies to the safe and efficient movement of people and goods in a broadly conceived traffic accident prevention program.

453. Case Analysis in Prevention Programs
Spring. 5(4-1) 356.
Factors to be considered in determination of referral action for delinquent youth. Estimating significance of behavior and home situation. The referral process; selection of agency; preparation for referral; follow-up.

465. Administration of Correctional Institutions
Fall, Spring. 4(4-0) 110, 355, 368; or approval of school.
Treatment, security, custody and discipline of the convicted law violator in correctional institutions; social structure of the prison community; inmate social systems and interaction; Correctional Clinic records; Correctional research and decision making.

471. Criminal Procedure
Fall, Spring. 4(4-0) 375.
Study of the constitutional right of the people to be secure from unreasonable searches and seizures; the rules of evidence safeguard individual rights in the administration of criminal justice.

475. Evidence
Winter. 3(3-0) 375.
Concepts, policies and procedures relating to the admissibility of evidence before judicial tribunals.

480. Internal Security in a Democracy
Winter. 4(4-0)
Approaches to the control of "subversive activities" and their effectiveness from the standpoint of security and freedoms essential in a democracy.

481. Theft Control in Business, Industry and Institutions
Spring. 3(3-0)
Causation, prevention, and control of robbery, burglary, shoplifting, pilferage, embezzlement, and employee dishonesty in private and public institutions. Social science theory and research methods.

490. Criminal Justice Practicum
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 12 credits. Approval of school.
Planned program of research, observation, study, and work in selected criminal justice agencies. Designed to supplement classroom study with constructive participation in the criminal justice system of communities of the United States and foreign nations.

492. Methods of Criminal Justice Research
Fall, Spring. 4(3-2) 110.
Elements of scientific perspective; interaction of research and theory. Introduction to research design, data collection, analytic and statistical techniques, use of data processing resources, and preparation of research reports.

493. Problems and Techniques of Criminal Justice Research
Winter. 4(3-2) 492 or Approval of school.
Continuation of 492 to provide depth in the various elements of research; extension to more sophisticated research models, and the relevance of findings for criminal justice program innovation and evaluation.

499. Seminar in Criminal Justice
Fall, Winter, Spring, Summer. 5(3-0) 230, 355, 368, 375, 499.
Discussion and evaluation of criminal justice policies and practices. Preparation of undergraduate senior research paper.

501. Directed Studies
Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for credit. 10(0-12) Approval of school.
Individual research and study in student's field of interest as approved and directed by major professor.

509. Special Issues in Criminal Justice
Fall, Winter, Spring, Summer. 3(3-0) 110.
Course offerings focusing on special issues in criminal justice by guest instructors or regular faculty.

512. Advanced Criminal Justice Administration
Fall, Spring. 4(4-0) 494 or Approval of school.
Framework through which the objectives of the process of social control (criminal justice) are obtained. The administrative, political and social milieu in which this machinery operates.

515. Seminar in Criminal Investigation
Spring. 3(3-0) 492 Approval of school.
Seminar in investigative techniques; criminalistics: case studies; including discussion of the quantum of proof in criminal investigations and probative value of physical evidence.

520. Advanced Police Administration
Winter. 4(3-0) Approval of school.
Depth analysis of the line and staff functions within a law enforcement agency. Problems of program development, execution, and evaluation.

522. Comparative Law Enforcement Administration
Spring. 3(3-0) Approval of school.
Comparative study of police organization and administration in various governmental and social systems. Evaluation of government's role, its limitations, the selection and training of leaders.

523. Community Relations in the Administration of Justice
Fall, 5(5-0) Approval of school.
Seminar in the field of community relations, encompassing the spectrum of the administration of justice and community responsibility, utilizing the interdisciplinary approval in case and situational analysis.

540. Seminar in Highway Traffic Administration
Winter. 3(3-0) or 5(3-0) Approval of school.
Traffic problems in the broad social setting. Inventory and critical review of the traffic safety movement and role of various professions therein. Future problems and developments.

568. Review and Evaluation of Correctional Research
Winter. 4(3-0) or 4(3-2) Approval of school.
Correctional research systems review, analysis and critical evaluation of correctional research findings and conclusions pertaining to correctional decision making in the treatment process.

570. Administration of Criminal Law
Winter. 4(4-0) Approval of school.
Major provisions of the Constitution of the United States that safeguard personal liberties. Judicial processes are examined in the light of historical experience, and social change.

575. Seminar in Deviant Behavior
Spring. 3(3-0) or 3(3-0) Approval of school.
Evaluation of current major hypotheses, review of recent developments, contributions by agencies and academic institutions and review of current literature in the field of deviant behavior.

580. Field Training
Fall, Winter, Spring, Summer. 1(0-4) to 6(0-24) Approval of school.
Field service training provided with federal, state, and local enforcement agencies; crime laboratories; commercial, industrial, and financial organizations with security programs; agencies working in crime and delinquency prevention; correctional agencies; and organizations engaged in highway safety.

589. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of school.

590. Seminar on Criminal Justice Systems
Winter. 3(3-0) Graduate students.
Topical issues in the development, functioning and interrelationships of components of criminal justice systems and how systemic coherence can be achieved within a democratic society.
900. Readings in Criminal Justice and Criminology
Fall. 3 to 5 credits. Graduate students. Topical reading of major research contributions to criminal justice and criminology. Consideration of applicability of criminological research to functioning of the criminal justice system.

CROP SCIENCE

College of Agriculture and Natural Resources

101. Crop Science
Fall. 3(3-0)
Principles of identification, adaptation, management, and utilization of field crops for food and fiber. Fundamentals of crop management, breeding, weed control, crop quality, and tropical crops in world agriculture.

250. Plant and Animal Genetics
Spring. 4(4-0)
Reference to problems in plant and animal biology.

251. Plant and Animal Genetics Laboratory
Spring. 1(0-2) 250 concurrently.

301. Forage Crops
Fall. 3(2-2) Sophomores.
Distribution, mycorrhizal identification, physiology, management and utilization of forage crops for hay, silage, and pasture for livestocks, and for soil improvement and conservation.

380. Ecology and Physiology of Agricultural Plants
Spring. 3(3-0) FOR 220 or BOT 301.
Interrelationships of physiological processes and environmental manipulation for higher yield of agricultural plants.

402. Principles of Weed Control
Fall. 3(2-2) Juniors.
Interdepartmental and administered jointly with the Horticulture Department. Comprehensive study of principles underlying weed control practices, and factors involved in both mechanical and chemical control.

406. Crop Improvement and Seed Production
Winter. 4(3-2)
Practical methods of crop improvement, seed production, storing, cleaning, packing, and distribution, seed certification of small grains, legumes, corn, beans, potatoes, visit to seed agencies and seed farms.

407. Special Crop Problems
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 6 credits. Approval of department.

408. Principles of Plant Breeding
Spring. 4(3-2) 230.
Interdepartmental and administered jointly with the Horticulture Department. Application of genetics and other sciences to breeding and improvement of agronomic and horticultural crops.

415. Turfgrass Management
Spring. 3(2-2)
Adaptation characteristics and utilization of turf grasses, management principles and physiological bases for the establishment and maintenance of turf for lawns, athletic fields, golf courses, cemeteries, parks, highways and airfields.

420. Seminar
Winter. 1(1-0) May re-enroll for a maximum of 4 credits. Interdepartmental and administered jointly with Soil Science.

485. Seed Science
(912.) Spring. 3(3-2) Approval of department.
Morphological and physiological changes during seed formation, development, maturation and germination. Practical and biological aspects of seed drying, storage, deterioration, dormancy and quality. Current problems and research in seed science.

Winter. 3(4-0) For course description, see Interdisciplinary Courses.

801. Crop Ecology
Fall of odd-numbered years. 3(3-0) Approval of department.
Environment within the crop community and the environmental stresses limiting crop survival. Temperature, light, water and atmospheric stresses and variations in the crop canopy will be discussed.

803. Crop Physiology
Spring. 3(3-0) Approval of department.
Role of physiological factors determining maximum crop yields and quality.

805. Herbicidal Action and Metabolism
Spring. 3(3-0) 402; BOT 415 or concurrently.
A study of the properties and characteristics of herbicides, the fundamental processes involved in the physiological action, behavior, and metabolism of herbicides.

814. Advanced Field Crop Studies
(914.) Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 6 credits. Approval of department.
Advanced work in any of the following specialties: advanced field crop studies, management, physiology, ecology, breeding, turfgrass culture, weed control, nutritional quality, tropical crops, crop extension, and seed studies.

820. Seminar
Fall, Winter, Spring. 1(1-0) May re-enroll for a maximum of 3 credits. Interdepartmental and administered jointly with Soil Science.
Studies and presentation of research in crop and soil sciences.

830. Physiological Genetics
Winter. 3(3-0) Approval of department. Interdepartmental with and administered by the Forestry Department.
Physiological bases for genetic variation in higher plants including adaptive physiology, quantitative genetics, growth correlations, biochemical genetics, hybrid physiology, and genetics.

831. World Crop Adaptation
Spring. 3(3-0)
Distribution, adaptation, and importance of crops in world agriculture and their production as influenced by climate, soil, people and markets.

851. Quantitative Genetics in Plant Breeding
Fall of odd-numbered years. 4(3-1) One course in genetics or breeding, and one course in biometry, or approval of department. Genetic systems and quantitative inheritance in relation to the establishment of superior populations.

899. Research
Fall, Winter, Spring, Summer. Variable credit.

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.

881. Cytogenetics in Plant Breeding
Winter of odd-numbered years. 3(3-0) BOT 427, 838, or approval of department. Interdepartmental with the Horticulture Department.
Application of cytogenetic principles to plant breeding. Significance of recombination, role of induced mutations, polyploid, 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. Research
Fall, Winter, Spring, Summer. Variable credit.

DAIRY SCIENCE

College of Agriculture and Natural Resources

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

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

371. Dairy Seminar
(471) 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.