

**Descriptions — Computer Science  
of  
Courses**

**801. Special Problems**  
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 8 credits. Approval of department.

**805. Clustering and Scaling Algorithms**  
Fall. 3(3-0) 300, STT 441 or approval of department.

Algorithms that organize large amounts of data. Includes metric clustering, hierarchical clustering and multi-dimensional scaling.

**810. Introduction to Linear System Theory**

(812.) Fall. 3(3-0) MTH 214. Interdepartmental with Systems Science and Social Science (College of) and administered by Systems Science.

A first course in system theory for students from a range of disciplines. Mathematical representation of system variables, transform and state space method of analysis, introduction to control theory, applications to physical, economic and social systems.

**811. System Methodology and Simulation**

Winter. 3(3-0) 810, STT 441. Interdepartmental with Systems Science and Social Science (College of) and administered by Systems Science.

Problem definition, design of abstract models for system design and control, simulation of systems described by differential and difference equations, generation of random variables, simulation of discrete object stochastic systems, simulation languages, applications to physical, economic and social systems.

**813. System Project**

Spring. 3(1-6) 811. Interdepartmental with Systems Science and Social Science (College of) and administered by Systems Science. Individual or team application of simulation methods to system design and/or management.

**817. Nonparametric Pattern Recognition**

Winter. 3(3-0) 300, STT 441, MTH 334.

Nonstatistical approach to pattern recognition. Discriminant functions, optimization techniques, feature extraction, non-parametric learning and algorithms for recognition. Error analysis.

**818. Parametric Pattern Recognition**

Spring. 3(3-0) STT 442, MTH 334.

Decision-theoretic approach to pattern recognition using decision rules, parameter estimation, suboptimum strategies, optimum strategy without learning, learning and sequential recognition.

**825. Theory of Combinational Circuits**  
Fall. 3(3-0) 423 or approval of department.

Switching algebra and related group and lattice theory; decomposition; the synthesis of multiple-output switching functions using multi-level combinational circuits.

**826. Theory of Digital Machines**

Winter. 3(3-0) 825.  
Sequential machines; machine specification in terms of states and transitions; decomposition; state minimization and assignment.

**827. Switching Theory**

Spring. 3(3-0) 826.  
Asynchronous and speed independent circuits; static and dynamic hazards; use of race conditions.

**831. Mathematical Theory of Formal Languages I**

Fall. 3(3-0) 453 or approval of department.

Definition of grammars; recursive and recursively enumerable sets; decidability and undecidability; regular sets; linear languages and context-free languages.

**832. Mathematical Theory of Formal Languages II**

Winter. 3(3-0) 831.

Context-sensitive grammars; scattered context grammars; closure properties of languages; abstract families of languages; derivation restricted grammars.

**833. Mathematical Theory of Formal Languages III**

Spring. 3(3-0) 832.

Current literature and advanced topics in formal language theory.

**837. Computer-Aided Design of Deterministic Systems**

Spring. 3(3-0)

Formal language specification of time-dependent, deterministic systems; automatic production, management, and solution of system-associated equations.

**841. Artificial Intelligence and Adaptive Systems I**

Winter of odd-numbered years. 4(4-0) 300, STT 441.

Foundations of heuristic methods; syntactic means-end analysis; semantic means-end analysis; adaptive systems.

**842. Artificial Intelligence and Adaptive Systems II**

Spring of odd-numbered years. 4(4-0)

841.  
Computer representation of information from natural languages; representation of two and three dimensional environments; theory of design of robots; future trends.

**861. Structured Programming**

Fall. 3(3-0) 322; 313 or concurrently.

Block structured languages, control structures and mathematical foundations of structured programming; program development by stepwise refinement; proving program correctness; extensive readings from the current literature.

**862. Advanced Data Structures**

Winter. 3(3-0) 313; 322 or concurrently.

Structured data types; recursive and structured data structures and semantics; hierarchical program structures; models for programming languages; extensive readings from the current literature.

**899. Research**

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

**911. General Automata Theory I**

(E E 981.) Fall of odd-numbered years. 3(3-0) 423 or SYS 827 or approval of department. Interdepartmental with Electrical Engineering.

Characterization of machines and programs as automata; mathematical decomposition of finite automata.

**912. General Automata Theory II**

(E E 982.) Winter of even-numbered years. 3(3-0) 911. Interdepartmental with Electrical Engineering.

Reliability and redundancy of finite automata. Probabilistic sequential machines. Languages definable by probabilistic and deterministic automata. Axioms for equivalence of regular expressions.

**913. General Automata Theory III**

(E E 983.) Spring of even-numbered years. 3(3-0) 912. Interdepartmental with Electrical Engineering.

Degrees of difficulty of computation. Models of parallel computation. 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. 3(3-0)

Survey of agencies that compose the system: primarily the police, courts and corrections. Also, the processes of these components and their relationships, as well as related agencies involved are examined.

**235. Criminology**

Winter, Spring. 4(4-0) SOC 241 or C J 110 or approval of school. Interdepartmental and jointly administered with the Department of Sociology.

Crime analysed from sociological perspective: meaning of "crime", crime statistics, and measurement, theories of crime causation, crime typologies, e.g., professional organized, violent, sex, white-collar crimes, juvenile delinquency.

**315. Criminal Investigation**

(395., 325.) Winter, Spring. 4(4-0) 375.

Theory of investigation, crime scene conduct, collection and preservation of physical evidence and methods used in scientific interpretation of evidence.

**318. Community Relations in Criminal Justice**

Fall, Winter, Spring. 4(4-0) 235.

Interdisciplinary survey of community relations in police and other criminal justice processes; theory and case studies. Emphasizes problem solving, conflict management, and community action in the prevention of civic disorder.

**330. Organizational Theory in Criminal Justice**

Fall, Winter. 4(4-0) 110, 235.

A historic and a comparative overview of the principles of organization used by criminal justice agencies. Current theories and research on organization, with focus on the needs of the criminal justice process.

**335. Police Process**

Fall, Winter, Spring. 4(4-0) 235.

Functional role of law enforcement within the criminal justice system. Law enforcement organizations and the function of operational units. Role of law enforcement in a democracy; service, crime deterrence, discretion, enforcement policies and evaluation of effectiveness.

**355. Juvenile Justice Process**

Fall, Winter, Spring. 4(4-0) 235.

Prevalent interdisciplinary issues, ideas, principles and assumptions pertaining to delinquency phenomena; an overview of variables related to delinquency, duties, and responsibilities.

**365. Corrections Process**  
(368.) Fall, Winter, Spring. 4(4-0)  
235.

The correctional modes applied to juvenile and adult offenders. Theoretical approaches to changing and controlling criminal behavior and practical limitations. Impact of methods on past correctional behavior.

**375. Criminal Law Process**  
Fall, Winter, Spring. 5(5-0) 235.

Administration of criminal justice: investigation, detection, arrest, search, seizure, charging, adjudication, sentencing, probation, corrections, parole. Constitutional safeguards and legal controls on official action emphasized.

**392. Criminal Justice Research and Innovation**  
Fall, Winter, Spring. 5(4-1) 110 and  
235.

The utilization of research in planned change. Problems in conducting and interpreting research concerned with decision-making. The limitations of research and selected alternative strategies in bringing about change.

**400H. Honors Study**

Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 6 credits. Seniors or approval of instructor.

Individually selected programs of supervised group or individual study dealing with some phase of the criminal justice system.

**401. Independent Study**

Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 6 credits. 318, 335, 355, 365, 375, 392 or approval of instructor.

Individual study of the various fields of emphasis in criminal justice, under direct supervision of appropriate faculty member.

**409. Issues in Criminal Justice**

Fall, Winter, Spring, Summer. 3 or 4 credits. May re-enroll for a maximum of 15 credits when different topics are taken. 318, 335, 355, 365, 375, 392.

Forum for course offerings on special issues in criminal justice, by visiting instructors or regular faculty.

**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.

**433. Alcohol and Drugs:  
A Social Dilemma**

(425.) Winter. 3(3-0) Seniors or approval of school. Interdepartmental with the College of Education.

An overview investigation of the substance abuse phenomena with emphasis on alcohol. Sociological, psychological and medical aspects are discussed with implication for prevention, treatment and rehabilitation.

**435. Analysis of Police Operations**

Winter, Spring. 4(4-0) 318, 335, 355, 365, 375, 392 or approval of school.

Organization and administration of line and staff functions of police units. Interrelationships of components. Analysis of total operations of the police, including personnel, budgeting, manpower allocation, enforcement policies and specialization.

**440. Introduction to Highway  
Traffic Administration**

Fall. 4(4-0) Approval of instructor.

Systems approach to highway traffic administration emphasizing the interrelationships among agencies having management responsibilities and their accident prevention and loss reduction countermeasures to combat system failures. Future needs and alternatives.

**441. Police and Court Traffic  
Administration**

Spring. 4(4-0) Approval of instructor.

Police and court traffic functions relative to other police and court functions in the criminal justice system. Systems approach to managing traffic accident prevention programs. Weaknesses, future needs and alternatives.

**455. Analysis of Delinquency  
Programs**

Winter, Spring. 4(4-0) 318, 335, 355, 365, 375, 392 or approval of school.

Complexity of delinquency phenomena; evolution of programs and organizations which prevent, evaluate and treat specific youth problems.

**465. Analysis of Correctional  
Operations**

Fall, Spring. 4(4-0) 318, 335, 355, 365, 392 or approval of school.

A critical analysis of existing institutions and community corrections programs; administrative methods of program implementation and evaluation. Prevalent correctional operational policies. Problems of effecting change.

**472. Criminal Law**

Fall, Spring. 4(4-0) 318, 335, 355, 365, 375, 392, or approval of school.

Substantive criminal law as a means of defining and preserving social values. Criminal law theory, legislative role in criminal justice, victimless crimes, survey of crimes and defenses, constitutional limitations.

**485. Security Systems**

Fall. 4(4-0)

Capabilities and limitations of security systems, both public and private, with particular reference to crime and crime-related problems. Interrelationships between security and other criminal justice agencies.

**490. Criminal Justice Practicum**

Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 12 credits. 318, 335, 355, 365, 375, 392; majors only.

Planned program of research internship, observation, study, and work in selected criminal justice agencies. Supplements classroom study with participation in criminal justice systems of United States and foreign nations.

**492. Methods of Criminal Justice  
Research**

Fall, Winter. 4(4-0) 318, 355, 365, 392 or approval of school.

Elements of scientific perspective; analysis of published reports to illustrate theory interacting with practice. Conceptual frameworks, negotiating access to and collection of data, design choice, analytic techniques, and final reporting.

**495. Crime Prevention Seminar**

Fall, Winter, Spring. 4(4-0) 318, 335, 355, 365, 375, 392, Seniors.

The prevention of crime and the concept of deterrence, stressing a systemic approach: the law, the police, the community, and corrections. A synthesis of the undergraduate program stressing a systemic perspective, commitment to planned change, and total community involvement.

**801. Independent Study**

Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for a maximum of 6 credits. Majors or approval of school.

Individual research and writing in student's field of interest. Requires approval and direction by professor associated with major field of interest.

**809. Special Issues in Criminal  
Justice**

Fall, Winter, Spring, Summer. 3 to 5 credits. May re-enroll for a maximum of 15 credits when different topics are taken. Majors or approval of school.

Forum for study of issues not given continuous consideration in the graduate program.

**812. Criminal Justice Management  
Issues**

Fall, Winter. 4(3-1) Majors or approval of school.

New management requirements of the criminal justice complex in transition. Problems and innovative concepts of criminal justice system development, decision theory, information needs, planning, budgeting, and new managerial perspectives.

**813. Criminal Justice Personnel  
Systems Development**

Winter, Spring. 4(3-1) 812.

Personnel administration approaches to improvement of criminal justice systems such as personnel administration by objectives, and systems analysis approach to human resource development models consonant with criminal justice systems evolution.

**814. Fiscal Administration in  
Criminal Justice**

Winter, Spring. 4(3-1) 812.

Transition from traditional budgeting to program budgeting and evaluation systems in criminal justice agencies. Implications of criminal justice systemic budgeting models.

**815. Seminar in Criminal Investigation**

Fall, Spring. 3(3-0) Majors or approval of school.

Seminar in investigative techniques; criminalistics; case studies: including discussion on quantum of proof in criminal investigations and probative value of physical evidence.

**816. Seminar in Forensic Science**

Winter. 3(3-0) Majors or approval of school.

An investigation of the role of forensic science in the administration of justice; case studies; laboratory techniques; interpretation of proof.

**817. Independent Study in Forensic  
Science**

Fall, Winter, Spring. 3(0-6) Majors or approval of school.

Directed laboratory work in forensic science.

**818. Social Control, Criminal Justice  
and Community Relations**

(823.) Fall, Spring. 4(4-0) 318.

A broad-ranging seminar with a field studies aspect, emphasizing community responsibility in criminal justice processes, in the context of social change and social control.

**822. Historical and Comparative  
Criminal Justice**

Fall, Spring. 3(3-0) Majors or approval of school.

Criminal justice systems are examined on a global basis exclusive of the United States. Emphasis is placed on major different legal philosophies.

**Descriptions — Criminal Justice  
of  
Courses**

**825. Criminal Justice Educational  
Programming**

Spring. 4(4-0) Majors or approval  
of school.

Designed for students preparing for careers  
as criminal justice educators. Discussion of  
issues, administrative problems, and curricula  
for criminal justice programs.

**826. Teaching Internship**

Fall, Winter. 4(4-0) Majors or ap-  
proval of school.

Assumption of complete responsibility for teach-  
ing a course in a criminal justice program.  
Guidance in planning lesson content and eval-  
uating instruction provided. Attendance at a  
series of associated seminars required.

**830. Research for Planning**

Fall, Winter. 4(4-0) Majors or ap-  
proval of school.

Techniques of applied research specially asso-  
ciated with the planning of operational and  
managerial criminal justice systems. Emphasis  
upon empirical basis for organizational plan-  
ning programs.

**831. Criminal Justice Systems  
Development**

Fall, Winter. 4(4-0) Majors or ap-  
proval of school.

Systems analysis approach to the development  
of criminal justice goals, priorities and strat-  
egies. Emphasis upon total systemic resource  
allocation, output and consonance.

**832. Criminal Justice Information  
Systems**

Fall, Spring. 4(4-0) 812.

New management requirements of the criminal  
justice complex in transition. Problems and  
innovative concepts of criminal justice system  
development, decision theory, information  
needs, planning, budgeting, and new managerial  
perspectives.

**833. Project Planning and Evaluation**

Winter, Spring. 4(4-0) 492; 830  
recommended.

Process of managing new projects from incep-  
tion through implementation and evaluation.  
Establishing priorities, securing funding, ad-  
ministering projects and designing and imple-  
menting useful evaluative research. Individual  
exercises in designing projects.

**835. Police Policy Development**

Fall, Winter, Spring. 4(4-0) 812.

Public policy issues affecting the definition of  
police goals and strategies. Facts and values  
which influence policy decision; the processes  
of policy development and linkage with delivery  
systems.

**836. Police Systems Development and  
Management**

Fall, Winter, Spring. 4(4-0) 812.

Analytic techniques of defining goals, and de-  
signing, testing and evaluating police opera-  
tional strategies. Managerial support require-  
ments and goals of specific police systems.

**840. Highway Traffic Administration**

Winter. 4(4-0) Approval of instruc-  
tor.

The Federal-state-local partnership in highway  
traffic administration. Laws, standards and  
policies regulating the accident prevention and  
loss reduction countermeasures of governmental  
agencies and private industry. Problems and  
needs.

**855. Case Studies in Delinquency  
Control**

Fall. 4(4-0) 355, 455.

Evaluation of primary and secondary delin-  
quency prevention, control and treatment  
programs. Current hypotheses, recent develop-  
ments in the field. Use of cases to evaluate past  
and current practices and future needs.

**856. Juvenile Corrections**

Spring. 4(4-0) 855.

A more theoretical extension of 355 and 455.  
Review and analysis of entire treatment and  
rehabilitation process for juvenile offenders.

**865. Correctional Programming**

Fall. 4(4-0) Majors or approval of  
school.

Changing criminal behavior. Traditional and  
institutional methods and theories. Reintegra-  
tion: high stress on offenders and community.  
Motivating the offender. Developing commu-  
nity resources and alternatives. Examining the  
change agent.

**866. Correctional Management**

Spring. 4(4-0) Majors or approval of  
school.

Planning, organizing, controlling and evaluat-  
ing in relation to measurable correctional  
objectives. Establishing objectives from well  
defined alternatives. Change capable adminis-  
tration styles and decision making as functions  
of objectives.

**871. Law of Corrections**

Spring. 4(4-0) Majors or approval of  
school.

Constitutional limitations and impact of law  
on correctional practice. Due process, judicial  
sentencing, probation, prisoners' rights, parole  
grant, revocation of probation and parole.

**872. Law of Criminal Procedure**

Fall, Winter, Spring. 4(4-0) A law  
course.

Constitutional limitations on police activity. Due  
process, bill of rights, right to counsel, arrest,  
search and seizure, electronic eavesdropping,  
entrapment, confessions, lineups, scope of ex-  
clusionary rules.

**874. Law of Administrative Procedure**

Fall. 4(4-0) Majors or approval of  
school.

General principles of administrative law, labor  
law. Application of principles. Law enforce-  
ment policy making. Implementation of con-  
stitutional safeguards. Police unions and politi-  
cal activity.

**885. Security Management**

Fall. 4(4-0) 485 or concurrently, or  
approval of instructor.

The organization and management of security  
units, in industry, businesses, governments, in-  
stitutions, etc. The protection of manpower,  
facilities, and other assets. Administrative, legal  
and technical problems. Loss prevention and  
control.

**886. Advanced Security Management**

Winter. 4(4-0) 885.

Salient problems and issues of concern to pro-  
fessional security administrators. "Growing  
edge" technologies. Specialized programs—  
e.g., government internal security controls; em-  
ployee dishonesty; shoplifting.

**890. Practicum**

Fall, Winter, Spring, Summer. 1(0-4)  
to 6(0-24) Majors or approval of school.

Planned program of research observation, study  
and work in selected criminal justice agencies.  
Designed to supplement classroom study with  
participation in domestic and foreign criminal  
justice systems.

**892. Quantitative Methods in Criminal  
Justice**

Spring. 4(4-0) 492.

Views the relationship and application of sta-  
tistical techniques to theory building and con-  
cept construction. Gives an overview of sta-  
tistical methods with an emphasis on those  
most useful for research in criminal justice.

**898. Comprehensive Readings**

Fall, Winter, Spring, Summer. 1 to 4  
credits. May re-enroll for a maximum of 4  
credits. Majors or approval of school.

Individualized reading program for students who  
elect not to complete a thesis. Means of ex-  
tending breadth and depth of course work to  
achieve mastery of criminal justice areas of  
interest.

**899. Thesis Research**

Fall, Winter, Spring, Summer. 1 to  
6 credits. May re-enroll for a maximum of  
6 credits. Majors or approval of school.

Planned research and writing directed by stu-  
dent's thesis committee.

**930. Seminar on Criminal Justice  
Systems**

Winter. 3(3-0) Graduate students.

Topical issues on the development, functioning,  
and interrelationships of components of crim-  
inal justice systems and how systemic coherence  
can be achieved within a democratic society.

**990. Readings in Criminal Justice and  
Criminology**

Fall. 3 to 5 credits. Graduate stu-  
dents.

Topical reading of major research contribu-  
tions to criminology and criminal justice. Considera-  
tion of applicability of criminological research  
to functioning of the criminal justice system.

**992. Research Utilization and  
Application in Criminal Justice**

Spring. 3(3-0) Majors or approval of  
school.

Substantive and administrative problems of  
conducting research and existing attempts to  
solve these. Utilization of research in bringing  
about change in the criminal justice system.  
Methods of maximizing research utility.

**CROP SCIENCE**

**CSC**

**College of Agriculture and  
Natural Resources**

**101. Crop Science**

Fall. 3(3-0)

Principles of identification, adaptation, manage-  
ment, and utilization of field crops for food  
and fiber. Fundamentals of crop management,  
breeding, weed control, crop quality, and tropi-  
cal crops in world agriculture.

**250. Plant and Animal Genetics**

Spring. 4(4-0) B S 211.

Fundamental genetic principles with particular  
reference to problems in plant and animal  
biology.

**251. Plant and Animal Genetics  
Laboratory**

Spring. 1(0-2) 250 concurrently.