519. Health Education in Clinical Settings
Spring, 3(2-3) Approval of instructor.
Application of concepts from social and behavioral sciences to clinical health education through laboratory and classroom experiences including development of a model educational plan for a specific health problem.

520. Biostatistical and Epidemiological Reasoning
Winter, 3(3-4) Approval of instructor. Interdepartmental with the Department of Statistics and Probability.
Concepts and principles from biostatistics and epidemiology to facilitate critical reading and interpretation.

521. Evaluation of Health Services
Spring, 2 to 4 credits. Approval of instructor. Interdepartmental with the School of Nursing.

530. Care of the Elderly
Fall, Spring, 3(2-2) Student in H M, OST or other clinical program or approval of instructor. Interdepartmental with and administered by the Department of Family Practice.
Case studies of the care of the elderly based on the physician-patient interaction with elderly persons and their families. Family systems applications to health care. Associated clinical experiences.

590. Special Problems in Community Medicine
Fall, Winter, Spring, Summer. 1 to 8 credits. May repeat for a maximum of 32 credits. Approval of department.
Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

600. Preventive Medicine and Public Health Clerkship
Fall, Winter, Spring, Summer. 2 to 12 credits. Successful completion of first two years of medical school.
Clinical and community experiences in personal and community health services, environmental health, and other health and medical programs which meet health needs of various population groups.

610. Geriatric Clerkship
Fall, Winter, Spring, Summer. 2 to 12 credits. Successful completion of first two years of medical school.
Clinical and community experiences including history taking, patient assessment, development and use of management and care plans and use of community resources for the long term care of the aged.

620. Directed Studies in Community Medicine
Fall, Winter, Spring, Summer. 1 to 6 credits. May repeat for a maximum of 24 credits. Approval of department.
Individual projects on special problems related to community medicine.

COMPUTER SCIENCE - Descriptions of Courses

110. Introduction to Computer Programming
Fall, Winter, Spring, Summer. 3(3-0) Students may not receive credit in both CPS 110 and CPS 120.
FORTRAN programming, number systems and basic computer structure. Applications from various areas including business and social science.

124. APL-Computer Programming for Scientists
Fall, Winter, Spring, Summer. 3(0-0) Concurrently. Students may not receive credit in both CPS 110 and CPS 120.
FORTRAN programming, number systems and basic computer structure. Applications from engineering, mathematics and physical science.

125. Algorithms and Computing I
Fall, Winter, Spring, 3(2-3) MTH 112.
Algorithms, numeric and character data, data types, variables, expressions, decision structures, arrays, and procedures. Design and implementation of algorithms in PASCAL.

221. Introduction to Theory of Computing
Fall, Winter, Spring, 3(3-0) Approval of department.
Introduction to recursive functions. Symbol manipulation systems.

231. Directed Study in Computer Science
Spring, Summer. 1 to 6 credits. May repeat for a maximum of 24 credits. Approval of department.
Independent study in computer science.

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Fall, Winter, Spring, 3(3-0) Approval of department.
Introduction to recursive functions. Symbol manipulation systems.
412. Computer Communications
Winter. 3(3-0) CPS 300, STT 351 or STT 441
Computer networks; analysis by queueing theory; network design algorithms, routing and flow.

414. Interactive Computer Graphics
Summer. 3(3-0) CPS 312, matrix algebra.
Design of interactive graphics systems including display devices, processors, data structures, interrupt processing and graphical techniques. Two and three dimensional transformations, perspectives, hidden surface removal, shading. Graphics languages.

416. Digital Design
Fall, Spring. Summer. 3(3-0) CPS 311, CPS 322.
Combinational logic with MSI, LSI (medium-scale and large-scale integrated circuits) and microprocessors. Synchronous and asynchronous machines. Processor and control logic design.

417. Digital Design Laboratory
Fall, Spring. Summer. 2(1-3) CPS 416 or concurrently.
Designing, constructing and testing computer related circuits using discrete logic, MSI, LSI and microprocessors.

421. Combinational Circuits
Fall. 3(3-0) CPS 311 and CPS 321 or approval of department.

422. Sequential Circuits
Winter. 3(3-0) CPS 322 or approval of department, CPS 421.

423. Computer Architecture
Spring. 3(3-0) CPS 422.
Computer arithmetic algorithms, memory systems, computer design, input-output system design, digital system simulation.

447. Digital Filtering
Spring. 3(3-0) CPS 300, MTH 310.
Background, sampling theorems, discrete linear systems. The digital filter. Digital filter design. Discrete Fourier transforms, applications and generalizations.

451. Design of Language Processors I
Fall. 3(3-0) CPS 313 or concurrently, CPS 322.
Relation between languages and automata. Properties of grammars. Lexical analysis and symbol-table management. Syntactic analysis using top-down parsing, precedence, LR(k) and LL(k). Preliminary design of a compiler.

452. Design of Language Processors II
Winter. 3(3-0) CPS 451.

453. Design of Language Processors III
Spring. 3(3-0) CPS 452.
Continuation of CPS 452. Readings from the current literature. Completion of compiler project.

490. Selected Topics
Fall, Winter, Spring. Summer. 3(3-0) CPS 453.
May reenroll for a maximum of 9 credits if a different topic is taken. Approval of department. A new developing area of computer science selected by the department.

495. Independent Study
Fall, Winter, Spring. Summer. 1 credit. May reenroll for a maximum of 4 credits in CPS 365 and CPS 495 combined. Approval of department. Independent undergraduate research in computer science.

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

805. Clustering and Scaling Algorithms
Fall. 3(3-0) CPS 300, STT 441 or approval of department.
Algorithms that organize large amounts of data. Includes metric clustering, hierarchical clustering and multi-dimensional scaling.

806. Fundamentals of Pattern Recognition
Spring. 4(4-0) CPS 300, MTH 334, STT 442.
Decision-theoretic and nonstatistical approaches; discriminant functions; parameter and density estimation; feature extraction; supervised and unsupervised learning; sample size effects; error estimation; design of pattern recognition systems; computational considerations.

822. Digital Image Processing
Winter. 3(3-0) MTH 334, CPS 447 or SYS 311 or approval of instructor.

825. Theory of Combinational Circuits
Fall. 3(3-0) CPS 423 or approval of department.
Switching algebra and related group and lattice theory; decomposition; the synthesis of multi-level combinational circuits.

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

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

831. Theory of Formal Languages
I Fall. 3(3-0) CPS 322 or approval of department.
Definition of formal languages; acceptors and grammars; regular, linear and context free languages; closure properties.

832. Theory of Formal Languages II
Winter. 3(3-0) CPS 323.
Context sensitive languages; derivation restricted grammars; semantics of formal languages.

841. Artificial Intelligence and Adaptive Systems I
Winter of odd-numbered years. 4(4-0) CPS 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) CPS 841.
Computer representation of information from natural languages; representation of two and three dimensional environments; theory of design of robots; future trends.

863. Structured Multiprogramming Systems
Spring. 3(3-0) CPS 313; CPS 322 or concurrently.
Advanced software techniques for computer operating systems. Term project to design, implement and analyze an operating system using quality structured program construction.

876. Performance Measurement Techniques
Fall. 3(3-0) CPS 315, CPS 322, STT 441.
Performance evaluation on computer systems, evaluation of the central processor. Systems analysis, simulation, programmed measurement, and instrumentation measurement techniques. Case studies.

884. Large Data Base Theory
Summer. 3(3-0) CPS 315, CPS 452 or approval of department.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. Variable credits. Approval of department.

906. Advances in Pattern Recognition
Fall. 3(3-0) CPS 805, CPS 806.
Current research topics in pattern recognition, exploratory data analysis, syntactic pattern recognition and digital image processing; practical applications of pattern recognition methodology.
315. Criminal Investigation
Fall, Winter, 4(4-0) C J 375.
Theory of investigation, crime scene conduct, collection and preservation of physical evidence and methods used in scientific interpretation of evidence.

318. Crime and the Community
Fall, Spring 4(4-0) C J 320.
Interdisciplinary survey of police-criminal justice and community relations. Stresses the community role and responsibility for crime, crime-coping programs, and the need for the improvement of criminal justice processes.

320. Criminology
(235) Fall, 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 analyzed 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.

330. Organizational Theory and the Politics of Criminal Justice
Fall, Spring 4(4-0) C J 320 or approval of school.
An historic and a comparative overview of the principles of organization used by criminal justice agencies. Current theories and research on organization, with special attention to the impact of politics on system objectives and policy development.

335. Police Process
Fall, Winter, Spring, Summer. 4(4-0) C J 110, C J 230.
Functions of law enforcement and the roles of the police in modern society. Study of the police from several perspectives, historical, sociological, psychological, organizational and political.

355. Juvenile Justice Process
Fall, Winter, Spring, Summer. 4(4-0) C J 230.
Variables related to the duties and responsibilities of criminal justice practitioners working with delinquents. Prevalent interdisciplinary issues, ideas, principles and assumptions pertaining to delinquency.

365. Corrections Process
Fall, Winter, Spring. 4(4-0) C J 230.
An historical view of the development of methods of offender treatment. Operation of a correctional system. The role of individuals. Alternatives to incarceration.

375. Criminal Law Process
Fall, Winter, Spring. 4(4-0) C J 230.
Administration of criminal justice: investigation, arrest, search, seizure, charging, adjudication, sentencing, probation, corrections, parole. Constitutional safeguards and legal controls on official action emphasized.

400H. Honors Study
Fall, Winter, Spring. 1 to 3 credits. May reenroll 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. 1 to 5 credits. May reenroll for a maximum of 5 credits. C J 335, C J 355. C J 375 or approval of school. 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. 3 or 4 credits. May reenroll for a maximum of 15 credits when different topics are taken. C J 335, C J 355, C J 375 or approval of school. Forum for course offerings on special topics in criminal justice, by visiting instructors or regular faculty.

429K. Fundamentals of Traffic Law
Spring. 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: A Social Dilemma
Winter. 3(3-0) Juniors or approval of school. Interdepartmental with the College of Education. Substance abuse with emphasis on beverage alcohol. Sociological, psychological and medical aspects. Prevention, treatment, rehabilitation.

434. Police Administration and Management
Fall, Winter. 4(4-0) C J 335, C J 375. Principles of organization and management of a police agency. Line and non-line functions, personnel administration, planning, budgeting, goals and control.

435. Analysis of Police Operations
Spring. 3(3-0) C J 434 or approval of school. Analysis of police operations including patrol, criminal investigation, staff services, and traffic enforcement. Measurements of police productivity as related to goals. Principles of management evaluation and police agency organization and administration.

440. Introduction to Highway Traffic Administration
Fall. 4(4-0) 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) 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.