Computer Science in the Early Years

Dennis J. Frailey

Purdue MS CS 1968; PhD CS 1971

1966-67 Grad Catalog

658. THEORY OF TESTS: ESTIMATION AND DECISION II. Sem. 2. Class 3, cr. 3. Prerequisite: STAT 657.

Decision theoretic approach to statistical problems, complete class theorems, Bayes solutions, minimax theorem, sequential decision problems, optimality proof of sequential probability ratio test, connections with game theory.

690. SEMINAR. SS. Sem. 1 and 2, cr. 1 to 3.

691. SEMINAR IN PROBABILITY THEORY. SS. Sem. 1 and 2, cr. 1 to 3.

695. SEMINAR IN MATHEMATICAL STATISTICS. SS. Sem. 1 and 2, cr. 1 to 3.

698. RESEARCH. M.S. Thesis.

699. RESEARCH. Ph.D. Thesis.

Graduate Courses in Computer Sciences

500. COMPUTING AND PROGRAMING SYSTEMS. Sem. 1 and 2. Class 3, cr. 3. Prerequisite: CS 400 or CS 580.

Computer organization as it affects programing. Magnetic tape systems. Error detecting and error correcting codes. Disc, drum, and other random access systems. Input-Output programs. Buffering, simultaneous operation, interrupt handling. Introduction to the design of compiling systems. Programing languages based on ALGOL. Backus Normal Form. Recursive procedures, dynamic storage allocation and other ALGOL features. Professor Rosen.

514. NUMERICAL ANALYSIS. Sem. 1, Class 3, cr. 3. Prerequisite: MA 510; corequisite: CS 200 or equivalent knowledge of programing.

Finite difference calculus, finite difference equations; iterative methods for solving nonlinear equations; differentiation and integration formulas; the solution of ordinary differential equations; the solution of linear systems; round-off error bounds. Professor Maybee.

515. NUMERICAL ANALYSIS OF LINEAR SYSTEMS. Sem. 2. Class 3, cr. 3. Prerequisites: MA 511 or MA 351, and MA 441; corequisite: CS 200 or equivalent knowledge of programming.

Computational aspects of linear algebra; linear equations and matrices, direct and iterative methods; eigenvalues and eigenvectors of matrices; error analysis. Professor Rice.

520. MATHEMATICAL PROGRAMING. Sem. 1. Class 3, cr. 3. Prerequisites: MA 511 or MA 351, MA 441.

Fundamental theorems from the theory of linear inequalities. Simplex Method and variants; gradient methods; special techniques for solving integer programing problems; survey of applications; survey of methods in current use on various computer systems; consideration is directed throughout to that class of algorithms created to solve mathematical programming problems which are appropriate for implementation on modern digital computers. Professor Pyle.

560. INFORMATION STORAGE AND RETRIEVAL. Sem. 1. Class 3, cr. 3. Prerequisites: CS 400 or CS 580.

Computer-based information storage and retrieval systems. Selective dissemination of information; document retrieval. Indexing; file organization; search techniques. Automatic classification and abstracting. The structure of information systems.

580. INTRODUCTION TO DATA PROCESSING. Sem. 1 and 2. Class 3, cr. 3. May not be used in the primary area in mathematics.

Problem solving and programing techniques and languages; students use computer-oriented and problem-oriented languages in solving problems common to the non-physical sciences. Professor Pyle.

(581. INTRODUCTION TO LOGIC AND BOOLEAN ALGEBRA. See MA 581.)

582. MATHEMATICAL THEORY OF FINITE AUTOMATA. Sem. 2. Class 3, cr. 3. Prerequisite: MA 581.

Structure theory of finite transition algebras and semi-groups, lattices of congruence relations on words; periodic sets of words; behavior of finite automata; transition graphs and regular canonical systems; Kleene's theory of regular expressions; Church's solvability-synthesis alogorithm and its extension to wider classes of design requirements; decision procedure for sequential calculus and its significance to the algorithmic design of sequential machines. Professor Büchi.

583. SIMULATION AND INFORMATION PROCESSING. Class 3, cr. 3. Prerequisites: MA 261 or MA 223, CS 400 or CS 580, STAT 311 or equivalent.

Simulation and modeling. Monte Carlo techniques; use of special simulation languages to simulate actual systems; structuring and use of information systems; information storage and retrieval.

584. RECURSIVE FUNCTIONS I. Sem. 1. Class 3, cr. 3. Prerequisite: MA 581.

Post canonical systems, computability, decision problems; recursive functions, Turring machines, Markov algorithms, recursive algorithms. Professors Büchi and Korfhage.

(585. MATHEMATICAL LOGIC I. See MA 585.)

590. TOPICS IN COMPUTER SCIENCES. Sem. 1 and 2. Class 1-5, cr. 1-5.

Directed study for students who wish to undertake individual reading and study on approved topics.

600. ADVANCED PROGRAMING SYSTEMS I. Sem. 2. Class 3, cr. 3. Prerequisite: CS 500.

Design of assemblers, compilers, and interpretive systems. Libraries of subroutines, macro-instructions, and generators. Operating systems for debugging and job sequencing. Systems storage allocation. Programing languages and their translators. List processing languages. Generalized compiling systems for producing compilers. Professor Rosen.

601. ADVANCED PROGRAMING SYSTEMS II. Sem. 2. Class 3, cr. 3. Prerequisite: CS 600.

Continuation of CS 600. Professor Rosen.

614. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS. Sem. 1. Class 3, cr. 3. Prerequisite: CS 514, MA 525, 543 or consent of instructor.

Numerical solution of initial-value problems by Runge-Kutta methods, general one-step methods, and multistep methods. Analysis of truncation error, discretization error, and rounding error. Stability of multistep methods. Numerical solution of boundary- and eigen-value problems by initial-value techniques and finite difference methods. Professor Gautschi.

615. NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS. Sem. 2. Class 3, cr. 3. Prerequisite: CS 515. Desirable: MA 523 or MA 520.

The numerical solution of hyperbolic, parabolic alliptic equations by finite difference methods; iterative methods (Gauss-Seidel, over-relaxation, alternating direction) for solving elliptic equations; discretization and round-off errors; explicit and implicit methods for parabolic and hyperbolic systems; the method of characteristics; the concept of stability for initial value problems. Professors Maybee and Conte.

(616. THE THEORY OF APPROXIMATION. See MA 616.)

(681. ARTIFICIAL INTELLIGENCE. See EE 681.)

(682. THEORY OF AUTOMATA. See EE 682.)

684. RECURSIVE FUNCTIONS II. Sem. 2. Class 3, cr. 3. Prerequisites: MA 553, CS 584.

Kleene hiearchies, of nonrecursive sets; advanced theory of recursivity, recursive unsolvability types; advanced topics on Turing machines. Professor Buchi and Korfhage.

(685. MATHEMATICAL LOGIC II. See MA 685.)

690. SEMINAR ON TOPICS IN COMPUTER SCIENCES. Sem. 1 and 2. Class 1-5, cr. 0-5.

698. RESEARCH. M.S. Thesis.

699. RESEARCH. Ph.D. Thesis.

MECHANICAL ENGINEERING

OFFICERS OF INSTRUCTION

P. W. McFadden, Head of the School

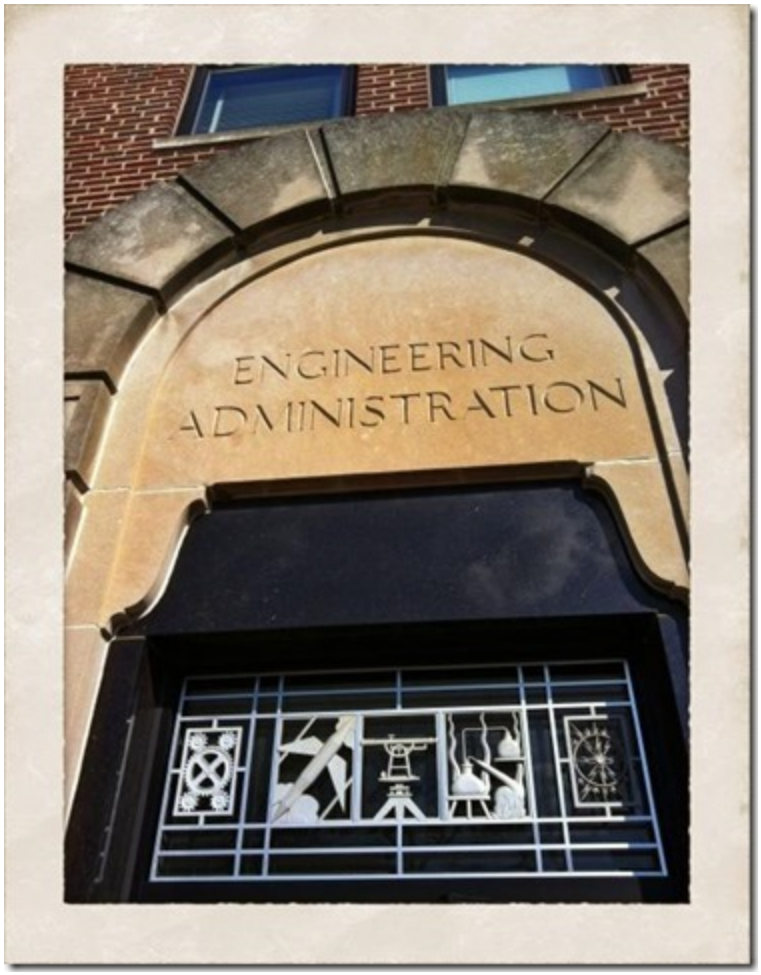
Professors: V. E. Bergdolt, Ph.D.; C. L. Brown, Ph.D.; J. B. Chaddock, Sc.D.; P. F. Chenea, Ph.D.; D. S. Clark, M.S.E.; Raymond Cohen, Ph.D.; W. B. Cottingham, Ph.D.; W E. Fontaine, M.S.M.E.; R. W. Fox, Ph.D.; R. J. Grosh, Ph.D.; A. S. Hall, Ph.D.; G. A. Hawkins, Ph.D.; A. R. Holowenko, M.S.E.; R. H. Kohr, Ph.D.; Wolfgang Leidenfrost, Dr. Ing.; P. W. McFadden, Ph.D.; C. W. Messersmith, M.S.E.; Joseph Modrey, Ph.D.; F. B. Morse, M.S.M.E.; Rufus Oldenburger, Ph.D.; J. R. Osborn, Ph.D.; B. E. Quinn, Ph.D.; B. A. Reese, Ph.D.; Y. S. Touloukian, Ph.D.; R. Viskanta, Ph.D.; C. F. Warner, Ph.D.

Associate Professors: D. E. Abbott, Ph.D.; R. E. Goodson, Ph.D.; J. F. Hamilton, Ph.D.; J. H. Hoffman, Ph.D.; H. G. Laughlin, M.S.M.E.; C. C. Oliver, Ph.D.; R. A. Olsen, M.S.M.E.; K. R. Purdy, Ph.D.; C. W. Rezek, Ph.D.; R. J. Schoenhals, Ph.D.; J. K. Stene, Ph.D.; Kenneth Wark, Ph.D.; E. J. Wellman, Ph.D.; E. R. F. Winter, Ph.D.

Assistant Professors: R. D. Gustafson, Ph.D.; M. R. L'Ecuyer, Ph.D.; J. B. Lusk, M.S.M.E.; J. G. Skifstad, Ph.D.; H. D. Thompson, Ph.D.

Areas of Graduate Study. Graduate students in mechanical engineering may select a primary area of concentration in one or more of the following areas: automatic control; kinematics; dynamics; vibration, stress analysis; design; cli-

ENAD (a few back offices) 1962-1967



We didn’t fit – needed more space!

Match Sciences Building 1967-1985 (4th & 7th floors + computer center in basement)

Courtesy Purdue University Libraries, Archives and Special Collections

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We still didn't fit – needed more space!

Haas Hall (Old Gymnasium) 1985-2006

We still didn’t fit – needed more space!

Lawson (the whole building) 2006 - present

We still don’t fit – need more space!

The Future?

Purdue College of Computer Science?

Purdue Computer Science University?

Will they finally have enough room?