

~~ADMINISTRATIVE - INTERNAL USE ONLY~~

DDI- 02018X/87

4 MAY 1987

MEMORANDUM FOR: Director of Training and Education

VIA: Associate Deputy Director for Intelligence

STAT FROM:   
Director of Information Resources

SUBJECT: Request for Agency Sponsored Training Program

STAT 1. Approval is requested for Agency sponsorship of undergraduate training at American University for  a Computer Systems Analyst-Programmer assigned to this Office. This requested training will commence on a part-time basis with the 1987 summer session and will extend on a full-time basis through the 1987-88 school year.

STAT 2.  has been a member of the Analytic and Computing Services Division since May 1986. During that time her primary responsibility has been to provide computer support to the DI by designing data base systems, applications development, graphics, installation of hardware and software and rating and evaluation of equipment.

STAT 3.  has been attending undergraduate classes in math, computer science and management since September 1983. Her proposed plan of study would help her better fulfill the requirements of her position and would greatly enhance her value to the Directorate. It is anticipated that she will return to this Office with a greatly expanded set of skills in business management and computer programming.

4. Her proposed plan of study, subject to course availability, would include the following:

Summer 1987

Introduction to Computing  
Introduction to Management Information Systems  
Corporate Finance

Fall 1987

Programming Concepts I  
Applied Systems Design  
Business Applications of Computers  
Human Factors in System Design

~~ADMINISTRATIVE - INTERNAL USE ONLY~~

ADMINISTRATIVE - INTERNAL USE ONLY

Spring 1988

Introduction to Simulation and Modeling  
Microcomputer Applications for Managers  
Applications in Management  
Quantitative Analysis

5. The estimated cost of tuition and books for the three semesters at American University is \$11,500.

STAT

Attachments:

- Copies of Course Descriptions
- Continued Service Agreement
- Form 136 (3)

STAT

APPROVE:

Associate Deputy Director for Intelligence

6 MAY 1987

Date

STAT

Director of Training and Education

11 MAY 1987

Date

ADMINISTRATIVE - INTERNAL USE ONLY

ADMINISTRATIVE - INTERNAL USE ONLY

SUBJECT: Request for Agency Sponsored Training Program

Distribution:

Orig. - Adse (to be filed in OPF)

1 - ADDI

1 - D/OIR

✓ 1 - D/OTE

1 - DI/STO

1 - OIR/CDC

1 - C/ACSD

1 - OIR Soft File

OIR/CDC (24Apr87)

STAT

STAT

## Mathematics, Statistics, and Computer Science 273

the correlation with such nonlinguistic factors as the topic of discourse, the identity of the participants, and the setting of the communicative act. Both monolingual and multilingual societies in developed and developing areas will be considered. Usually offered alternate falls. *Prerequisite:* permission of instructor.

**38.528 Bilingual Education (3)** Language acquisition, use, and competency in a bilingual setting, and the general goal of bilingual education. *Prerequisite:* permission of instructor.

**38.529 Program Development and Administration in ESL (3)** Approaches, requirements, and problems in establishing and administering ESL/EFL programs at the elementary, secondary, and post-secondary school levels and in adult education programs. The major focus is on the post-secondary level. Offered irregularly. *Prerequisite:* permission of instructor.

**38.552 Linguistic Structure I: Phonetics and Phonemics (3)** Techniques of describing speech sounds in terms of articulatory movements and formulas. practice in hearing and transcribing phonetic sounds using tape recordings. Basic premises of phonemic analysis and practical procedures for arriving at phonemes of a language. Offered irregularly. *Prerequisite:* 38.500.

**38.553 Linguistic Structure II: Morphology and Syntax (3)** Problems in analysis and description of morphological data. Introduction to transformational generative grammar. Offered irregularly. *Prerequisite:* 38.500.

**38.590 Independent Reading Course in English or Linguistics (1-6)**

### Graduate Courses

**38.620 Practicum in Teaching ESL/EFL (3)** Observation, participation, and supervised teaching experience in ESL/EFL at a level appropriate to the student's career objectives: elementary, secondary, and post-secondary. Weekly conferences and seminars. Usually offered every spring. *Prerequisite:* 38.501 and 38.502.

**38.690 Independent Study Project in English or Linguistics (1-6)**

**38.700 Seminar in Linguistics (3)** Content varies. Reports and critical discussion of theoretical and practical problems in linguistics and TESL/TEFL. Critical evaluation of books and papers on appropriate subjects. May include the preparation of language teaching materials. Must include a research paper or project. May be repeated for credit but not within the same term; topic must be different. Usually offered every fall. *Prerequisite:* permission of the department.

**38.797 Master's Thesis Seminar (1-6)**

## Mathematics, Statistics, and Computer Science

### Computer Science

#### Undergraduate Courses

**40.280 Introduction to Computing /N(4)** A general introduction to computing for students who wish to understand

how computers work, how computers affect their lives, and how computers are used in students' own disciplines. Basic programming skills are developed by the presentation and use of PASCAL. This course does not serve as prerequisite for 40.281 or other advanced computer-science courses. *Prerequisite:* 41.150 or three years of high-school mathematics.

**40.280 Introduction to Computer Science I /N(4)** Problem solving and algorithm development. Structured programming in PASCAL. Basic data types and canonical structures; arrays and subprograms; recursion. Social implications of computing. Elementary applications from business and science. *Prerequisite:* completion of or concurrent registration in 41.170, 41.211 or 41.221.

**40.281 Introduction to Computer Science II /N(3)** Continuation of problem solving in PASCAL. Emphasis on larger programs built from modules. Introduction to abstract data structures—stacks, queues, graphs and trees and their implementations and associated algorithms. Elementary numerical methods. *Prerequisite:* 40.280, and 41.211 or 41.221 (41.211 and 41.221 may be taken concurrently).

**40.282 Assembly-Language Programming (4)** Basic concepts of computer architecture and organization. Assembly-language programming: instruction formats, addressing techniques, macros, and input/output. Program segmentation and linkage. The assembly process. *Prerequisite:* 40.281 or permission of the department.

**40.320 Introduction to File Design (3)** An examination of the structure of files and of the input/output facilities. Topics include file usage, file design, file organization, media limitations, and data definition statements. The IBM environment is stressed; other environments are discussed as time permits. *Prerequisite:* 40.281 and 40.282.

**40.330 Organization of Computer Systems (3)** Logical circuit design, integrated circuits and digital functions, data representation, register transfer operations and microprogramming, basic computer organization, the central processor and arithmetic operations. Not open to students who have taken 40.540. Usually offered every term. *Prerequisite:* 40.281 and 40.282.

**40.340 Data Structures and Algorithms (3)** Basic techniques of design and analysis of efficient algorithms. Implementation and manipulation of data structures, including linked lists, stacks, queues, trees, and graphs. Memory management. Internal and external searching and sorting. *Prerequisite:* 40.281 and 40.282.

**40.341 Organization of Programming Languages (3)** Survey of desirable features and specifications of programming languages by investigation of data types, control structures, data flow, and run-time behavior of several languages, such as FORTRAN, LISP, Ada, etc. Basic elements of compiling and interpreting. At least one non-Pascal-like language (such as LISP) is studied in detail. *Prerequisite:* 40.282 and 40.340.

**40.350 Introduction to Discrete Structures (3)** Introduction to mathematical topics required in computer science, such as graphs, sets and relations, boolean logic, and finite state automata. *Prerequisite:* 40.281 and either 41.211 or 41.221.

**40.365 Introduction to Operating Systems (3)** A survey of the resource-management strategies used in contemporary operating systems. Topics include the management of primary storage, processors, processes, peripheral devices,

## Business Administration 219

Students develop an environmental portfolio according to directions given in the course syllabus. Meets with 09.389.  
*Prerequisite:* graduate standing.

**09.690 Independent Study Project in Biology (1-6)****09.691 Internship (1-6)**

**09.692 Cooperative Education Field Experience (3-6)** See Cooperative Education in this publication.

**09.700 Graduate Seminar (1)** May be repeated for credit but not in the same term; topic must be different. Usually offered every term. *Prerequisite:* graduate standing in biology.

**09.730 Advanced Cell Physiology (4)** The structure and functions of cellular components: chromosomes, mitochondria, membranes, nuclear-cytoplasmic interactions, and chloroplasts. Offers current information about mechanisms involved. *Prerequisite:* 09.250 and graduate standing in biology or permission of instructor.

**09.790 Directed Research (6)** Students conduct a literature search on some aspect of the biological sciences under the direction of their guidance committee, culminating in the submission of a review paper. Satisfies part of the degree requirements for the M.A. degree in biology. Usually offered every term. *Prerequisite:* M.A. candidate in biology.

**09.797 Master's Thesis Research (1-6)****Business Administration****Management****Undergraduate Courses**

*Note:* Junior standing is required to enroll in all KCBA courses at the 300 or 400 level.

**10.352 Introduction to Management Information Systems (3)** Information as an organizational resource, decision-making frameworks, transaction processing systems, decision support systems, external information systems, office automation, competitive information systems, accounting and financial applications, marketing applications, production applications, needs assessment, system design and implementation, organizational impacts, and social issues. A technology update is provided in hardware and software basics, database management systems, and telecommunications. Usually offered every term. *Prerequisite:* 40.260 or 40.280; 14.240, 14.241, 11.300, 42.202, and 10.353 which may be taken concurrently.

**10.353 Organizational Behavior (3)** Current management theories, research, and practice. Course content represents a synthesis of behavioral sciences providing a broad framework for management. Topics include organizational goals and responsibilities, models, decision theory, planning control, organization, motivation, leadership, group behavior, conflict, and organizational change. Usually offered every term. *Prerequisite:* junior standing.

**10.354 Business Applications of Computers (3)** Applications of information systems and various software packages to the solution of business problems. *Prerequisite:* 40.260 or 40.280 and 10.352 or permission of department chair.

**10.355 Quantitative Analysis/Operations Management (3)**

Fundamental concepts of operations management, introduction to operations research and to management science and its interdisciplinary aspects. Basic elements of decision theory, inventory models, linear programming (L/P), production models, simulation, waiting lines, etc. Usually offered every term. *Prerequisite:* for KCBA students, junior standing and all KCBA requirements in economics, mathematics, statistics, and computer science; for all other students, permission of instructor.

**10.360 Principles of Procurement and Federal Assistance Management (3)** The management of acquisition, procurement, and federal assistance by the government and private sectors. Organizations and procedures; requirements; budgeting; government marketing by private sector; negotiations; proposal preparation; types of contracts and federal assistance; political environment; and special considerations such as small business and equal opportunity. Usually offered every term. *Prerequisite:* junior standing.

**10.381 Introduction to Personnel Administration (3)** Understanding the principles and operations of personnel administration and industrial-relations systems in organizations by analyzing and applying theoretical concepts to functional situations. Usually offered every term. *Prerequisite:* junior standing.

**10.382 Industrial Relations Administration (3)** An analysis of concepts and principles of various collective bargaining processes by emphasizing the historical, legal, economic, social, and behavioral dynamics of union-management relationships in the private and public sectors. Usually offered every term. *Prerequisite:* 10.381.

**10.383 Problems in Personnel Administration (3)** Uses problems and case histories to develop decision-making proficiency in the functional areas of personnel administration and industrial relations. Usually offered every term. *Prerequisite:* 10.381 and 10.382.

**10.384 Applications of Performance Appraisal (3)** The course focuses on the function and design of performance appraisal systems as tools of professional development, coaching and counseling, merit-compensation determinations, and goal implementation. Students examine the assets and liabilities of alternative methods of performance-appraisal systems. Applications are oriented to the role of the personnel manager. *Prerequisite:* junior standing.

**10.390 Independent Reading Course in Business Administration (1-6)** *Prerequisite:* junior standing.

**10.391 Internship in Business Administration (1-6)** *Prerequisite:* junior standing.

**10.392 Cooperative Education Field Experience (3-9)** See description under Cooperative Education in this publication. *Prerequisite:* junior standing and nine semester hours in business including any relevant business core courses specified by the department.

**10.393 Applications in Management (3)** Integration of knowledge in functional areas of business and simulation of management experiences. Various methods of simulating a management environment may be employed, including case studies, computerized management games, and consultant roles with business firms. Usually offered every term. *Prerequisite:* senior standing.

## 224 Courses of Instruction

national banks. Usually offered every fall. *Prerequisite:* 12.600 and 12.602.

**12.691 Internship (3-6)** A work-study experience normally taken by students who have no previous professional work experience. Generally taken in the summer following the first year of graduate study. Design of project and monitoring through completion are details worked out among student, supervising faculty member, and employer. *Prerequisite:* 3.00 overall average or permission of associate dean.

**12.692 Cooperative Education Field Experience (3-6)** See description under Cooperative Education in this publication.

**12.701 Seminar in International Business (3)** A seminar discussion of student research efforts on the conduct of international business in Western Europe, Latin America and the Caribbean, the Middle East and Africa, the Far East, or the Socialist countries. The research concentrates on the different business practices that are required because of the different cultural, economic, legal, and political environment of the region. Usually offered every spring. *Prerequisite:* 12.600.

### Finance and Real Estate

#### Undergraduate Courses

*Note:* Junior standing is required to enroll in all KCBA courses at the 300 or 400 level.

**13.201 Business Law (3)** The scope of business law. Individual, business, and legal relationships. Legal concepts, philosophy, and functions. Federal and state court systems. Survey of contracts, sales, agency, business forms, and property. Introduction to negotiable instruments. Usually offered every term.

**13.202 Advanced Business Law (3)** Functions, form, and content of commercial paper. Law of real and personal property. Legal bibliography. Legal requirements of business. Case research. Usually offered every term. *Prerequisite:* 13.201.

**13.212 Personal Finance (3)** Investigation of the principles of personal financial management. Topics include budgeting, consumerism, taxes, credit, savings and savings instruments, insurance (life, health, automobile, fire, and property), housing, investments (stocks, bonds, mutual funds, annuities, and real estate), and estate planning. Usually offered every term.

**13.365 Corporate Finance (3)** Introduction to business finance; acquisition and use of short-term funds and long-term capital; overview of money and capital markets; management of asset, liability, and capital accounts; financial analysis and time value of money; cash, operation, and long-range budgeting; leasing; corporate securities; dividend policy; and cost of capital. Usually offered every term. *Prerequisite:* 14.241 and junior standing.

**13.370 Urban Development /S (3)** Economic and other objectives in an urban society. The function of an urban economy and forces affecting urban development. Social change, market operations, and public facilities management. Rapid changes and associated land development. Economic base theory and theories of land development. Usually offered every term.

**13.373 Real Estate Principles and Transactions (3)** Principles and practices of listing real property, agreement of sale,

and title transfer of ownership and interests. Drawing documents: contracts, deeds, leases, financing, and other instruments. Private and public property rights, liens, taxes, assessments, and other claims on real estate. Mathematical problems for license examination. Approved for the real estate salesperson examination. Usually offered every term.

**13.390 Independent Reading Course in Business Administration (1-6)** *Prerequisite:* junior standing.

**13.391 Internship in Business Administration (1-6)** *Prerequisite:* junior standing.

**13.392 Cooperative Education Field Experience (3-9)** See description under Cooperative Education in this publication. *Prerequisite:* junior standing and nine semester hours in business including any relevant business core courses specified by the department.

**13.452 Business Responsibility in American Society /A, S (3)** The conceptual and historical framework in which the American firm performs as an institution of the community. The relationship between business responsibility and public policy. Emphasis on student participation and cases. Usually offered every term. *Prerequisite:* junior standing.

**13.460 Institute on Property Management I (3)** Management of commercial and residential property. Rental values, neighborhood analysis, tenant selection, leasing, and tenant-owner relationships. Usually offered every term. Has an institute fee in addition to tuition.

**13.462 Real Estate Appraisal Principles (1)** A comprehensive overview of the valuation process. Principles of gathering and analyzing data to be used in the three approaches to value. For students entering the field of real estate appraisal and working with residential or commercial properties. Usually offered every fall. Has a special tuition rate and institute fee.

**13.463 Residential Valuation (2)** A practical foundation in residential valuation. Topics include: the residential appraisal process; site data and analysis; highest and best-use analysis; improvements, inspection, and description; cost, income, and sales comparison approaches; special-purpose properties, including condominium, recreational, and residential; and short-form narrative reports and form reports. Usually offered every fall. Has a special tuition rate and institute fee. *Prerequisite:* 13.462.

**13.464 Financial Markets and Institutions (3)** The history, purposes, functions, and organizations of the short-term money market and long-term capital market. An integrated view of the participating institutions and the markets in which they operate, their investment constraints, and resulting portfolios. The role of the Federal Reserve System. Usually offered every term. *Prerequisite:* 13.365 and 19.306.

**13.468 Financial Decision Making (3)** Investment, financing, and dividend-policy decisions of the financial manager. Case studies and problems are some of the tools used to enable the student to make and see the effects of financial decisions. Usually offered every term. *Prerequisite:* 13.365.

**13.469 Investment Analysis (3)** Investment objectives. Methods of appraising corporate equity, debt, and other securities. Portfolio theory and management, technical analysis, random walk theory, and the role of institutional investors. Case studies and computer simulation are employed. Usually offered every term. *Prerequisite:* 13.365.

## 292 Courses of Instruction

tion, urban housing policy, and science and technology for urban administration. Usually offered every spring and summer.

**54.690 Independent Study Project in Public Administration (1-6)**

**54.691 Graduate Internship in National, State, and Local Governments or Research Organizations (3)** Arrangements for scheduled work assignments in participation, observation, and research, and seminar integration under the supervision of government or research director and member of school faculty. Usually offered every term.

**54.692 Cooperative Education Field Experience (3-6)** See description under Cooperative Education in this publication.

**54.698 Graduate Internship Seminar (3)** Application of political and administrative theory to the analysis of current issues affecting agencies in which the interns work. Usually offered every term.

**54.710 Seminar in Public Administration (3)** An analysis of the various factors that contribute to the overall performance of the executive branch of government. Topics vary, but the course concentrates on the design of research and critical examination of works in the field. Usually offered every term. May be repeated for credit but not in the same term; topic must be different. *Prerequisite:* admission to Ph.D. program or permission of instructor.

**54.799 Doctoral Dissertation Seminar in Public Administration (1-12)**

## Technology and Administration

### Undergraduate Courses

**55.101 Information and Systems /S (3)** An introduction to the roles of information and systems theory in managerial decision making. The course provides the historical perspective for an appreciation of the information-consciousness of our society. Usually offered every term.

**55.310 Introduction to Data Processing /S (3)** Introduction to data processing and the evolution of the computer as a management tool. Topics include computer hardware and software, programming, systems analysis, data communications systems, management information systems, and the role of computers in society. Usually offered every term.

**55.331 Introduction to Computer Design /N (3)** A broad introduction to computer architecture. Mathematical and physical concepts inherent in any computer system. Hardware and software aspects of computer systems, including interdependencies of input, output, arithmetic, logic, memory, and control functions of digital computers. Usually offered every term. *Prerequisite:* 55.310. Familiarity with a computer programming language is recommended.

**55.334 Programming Concepts in COBOL /N (3)** Basic concepts of computer programming using COBOL. Development of the algorithmic models used in constructing file edit and report programs.

**55.337 Problem Analysis /N (3)** Fundamental ideas involved in the reduction of problems to computable form.

Students learn the elements of a programming language and construct and program simple algorithms for sorting, arithmetic, and logical games. Usually offered every term. *Prerequisite:* 55.310; may be taken concurrently.

**55.362 Fundamentals of Technology of Management /S (3)** Basic principles, concepts, and functions of management. How the management process is applied in the private and public sectors in light of changing technology. Usually offered every term. *Prerequisite:* 55.310.

**55.363 Management and the Computer /S (3)** The computer as a tool of management. Examines the present and future capabilities in the use and exploitation of computer techniques in business. Usually offered every term. *Prerequisite:* 55.362.

**55.390 Independent Reading Course in Technology and Administration (1-6)**

**55.392 Cooperative Education Field Experience (3-9)** See description under Cooperative Education in this publication.

**55.431 Documentation of Programs and Systems (3)** The basis and supporting rationale for complete, clear, concise documentation needed by organizational and project managers, analysts, and programmers. Study and application of tools and techniques for technical and management people to establish and evaluate documentation practices. Management commitment and organizational structure. Usually offered every term. *Prerequisite:* 55.363 and 55.434.

**55.432 Introduction to Simulation and Modeling (3)** Design and implementation of simulation models for systems design and analysis. Emphasis on discrete stochastic systems and real-world business and government problems including resource allocation, queuing, inventory control, and industrial production. Overview of principal simulation languages and their applicability to problem solving. *Prerequisite:* 55.310, 42.300 and competence in a high-level programming language.

**55.434 Programming Concepts II: Advanced COBOL /N (3)** Development of the algorithmic models used in constructing file maintenance programs. Exposure to the advanced COBOL facilities such as the sort utility, report writer, and external modules. *Prerequisite:* 55.334.

**55.435 Advanced Programming Concepts: PL/I (3)** Design and implementation of basic data processing algorithmic models (i.e., file edits, reports, and file maintenance) in PL/I. Exposure to advanced facilities in the PL/I language. Usually offered every spring. *Prerequisite:* 55.434.

**55.436 Computer Operating Systems Management (3)** Fundamentals of operating systems management techniques directed toward optimum use of computer systems resources. Concepts of resource allocation and management (scheduling and dispatching of central processor and memory, and input/output management) and data management. Language processors, utility programs, telecommunications, and other system software that interact with the primary functions of the central system. Usually offered every spring. *Prerequisite:* 55.331 and 55.434.

**55.439 Senior Seminar in Computer Systems Applications (3)** Usually offered every term. *Prerequisite:* completion of at least eight CTA courses, senior standing, and permission of instructor.

## Technology and Administration 293

**55.450 Information Storage and Retrieval (3)** Introduction to the application of the computer in handling scientific, technical, and scholarly literature. The role of the modern information center in providing management with relevant and up-to-date information back-up for decision making. Usually offered every fall.

**55.460 Applied Systems Design (3)** Introduction to the fundamentals of systems development: basic data collection, documentation and analysis methods, procedures and techniques used in the life cycle of the development of a system. Usually offered every term. *Prerequisite:* 55.363.

**55.461 Human Factors in Systems Design (3)** Examination of human needs in developing, operating, and using information systems. Methods for analyzing the social, organizational, and human aspects of information systems. Usually offered every fall. *Prerequisite:* 55.460 or may be taken concurrently.

**55.490 Independent Study Project in Technology and Administration (1-6)**

**55.491 Internship (1-6)** *Prerequisite:* permission of appropriate program director.

#### Graduate and Advanced Undergraduate Courses

**55.511 The Systems Approach (3)** The use of a holistic approach for structuring and solving complex decision problems in the public and private sectors. The application of system analytical concepts to the management and theory of organizations. Usually offered every term.

#### Advanced Courses

**55.513 Change and the Managerial Process (3)** The historical and cultural bases of conceptions of change and development in societies and social work organizations. Particular attention is given to the role of science and technology in modern, complex, formal organizations; and the role of formal organizations as agents of social, economic, and technological change. *Prerequisite:* 55.511 or previous course work in organization and management theory and behavior.

**55.515 Human Relations Aspects of Management Systems (3)** Expands awareness of human processes and develops leadership skills in communications and group activities. The effects of human factors in designing, implementing, and managing complex systems. Usually offered every term. *Prerequisite:* 55.511 or permission of instructor.

**55.530 Real-Time Systems (3)** A survey of the development, uses, and limitations of real-time data-processing systems and the contemporary issues related to managing them. Hardware and software capabilities, teleprocessing concepts, distributed systems, man-machine factors, queuing theory, simulation tools, systems planning and control, security, and privacy. Usually offered every term. *Prerequisite:* 55.606 and 55.630; or 55.310, 55.334, and 42.300.

**55.531 Computer Design and Comparative Systems (3)** Number systems, Boolean algebra, and the logical design and organization of the digital computer and its functional components. Analysis and comparison of various design alternatives and the major architectural features of current small, medium, and large-scale commercial computer technology. Usually offered every term. *Prerequisite:* 55.530.

**55.532 Advanced Programming Management (3)** A study of software development. Contemporary techniques and philosophies of software design and implementation are examined. Research projects encompass the areas of organizing personnel and stylized techniques of design and implementation. An extensive review of periodical literature is required. Usually offered every fall. *Prerequisite:* 55.310 and competence in FORTRAN, COBOL, or PL/I.

**55.533 Concepts in Computer Communication (3)** Computer communications and networking. Basic concepts of communication protocols are examined, from simple protocols to support terminal interfaces through various levels of protocol found in modern networks. Usually offered every spring. *Prerequisite:* 55.310.

**55.534 Microcomputer Applications for Managers (3)** Capabilities and limitations of microcomputer applications. When, where, and how microcomputers should be used to support modern systems. A comparative analysis of the major architectural features of current microcomputers, including software, hardware, peripheral devices, and environmental support requirements. Usually offered every term. *Prerequisite:* 55.310 or equivalent and competence in one programming language.

**55.550 Survey of Information Science and Technology (3)** Introduction to communication practices in scientific and scholarly fields emphasizing the role of mechanized methods including the computer. Techniques of word processing, such as information storage and retrieval, reprography, and computerized photocomposition. For users of modern data banks and managers of information systems. *Prerequisite:* 55.511 and 55.530.

**55.560 Systems Design for Management (3)** Organizations as interrelated, complex systems of levels, flows, and processes. Theories and realities of organizations and management are examined for their implications for information systems analysis, design, and implementation. Usually offered every term. *Prerequisite:* 55.511 and 55.530.

**55.561 Management of Computer and Information Systems (3)** Problems, functions, and requirements of computer and information systems: planning, installation, operation, and organization of computer facilities. Executive interaction in decision-making, planning, and evaluation functions. Usually offered every term. *Prerequisite:* 55.530.

**55.570 Management of Research and Engineering (3)** Systems approach to the management of research and engineering. The roles of top management and individual project managers are examined. Techniques for research and engineering management (planning and control) are presented and evaluated. Special attention is given to organization and management for innovation.

**55.590 Independent Reading Course in Technology and Administration (1-6)**

#### Graduate Courses

**55.606 Quantitative Analysis for Information Systems (3)** Quantitative tools applied to the solution of problems in applying, managing, and evaluating information technologies, including statistical, operations-research, and modeling techniques. Usually offered every term.

**55.630 Introduction to Computer Applications (3)** Introduction to computer applications. Topics include current



CONTINUED SERVICE AGREEMENT

Should I be selected for sponsorship for full-time training, I agree to complete a minimum of thirty-six months of service as a federal employee following the completion of the training unless otherwise assigned by the CIA or involuntarily separated. I understand if I do not meet this commitment, I will be liable to the US Government for payment, in part or full, of the costs of training. The amount of payment required will be proportionate to the unexpired period of additional required service.

STAT

April 28, 1987  
Date