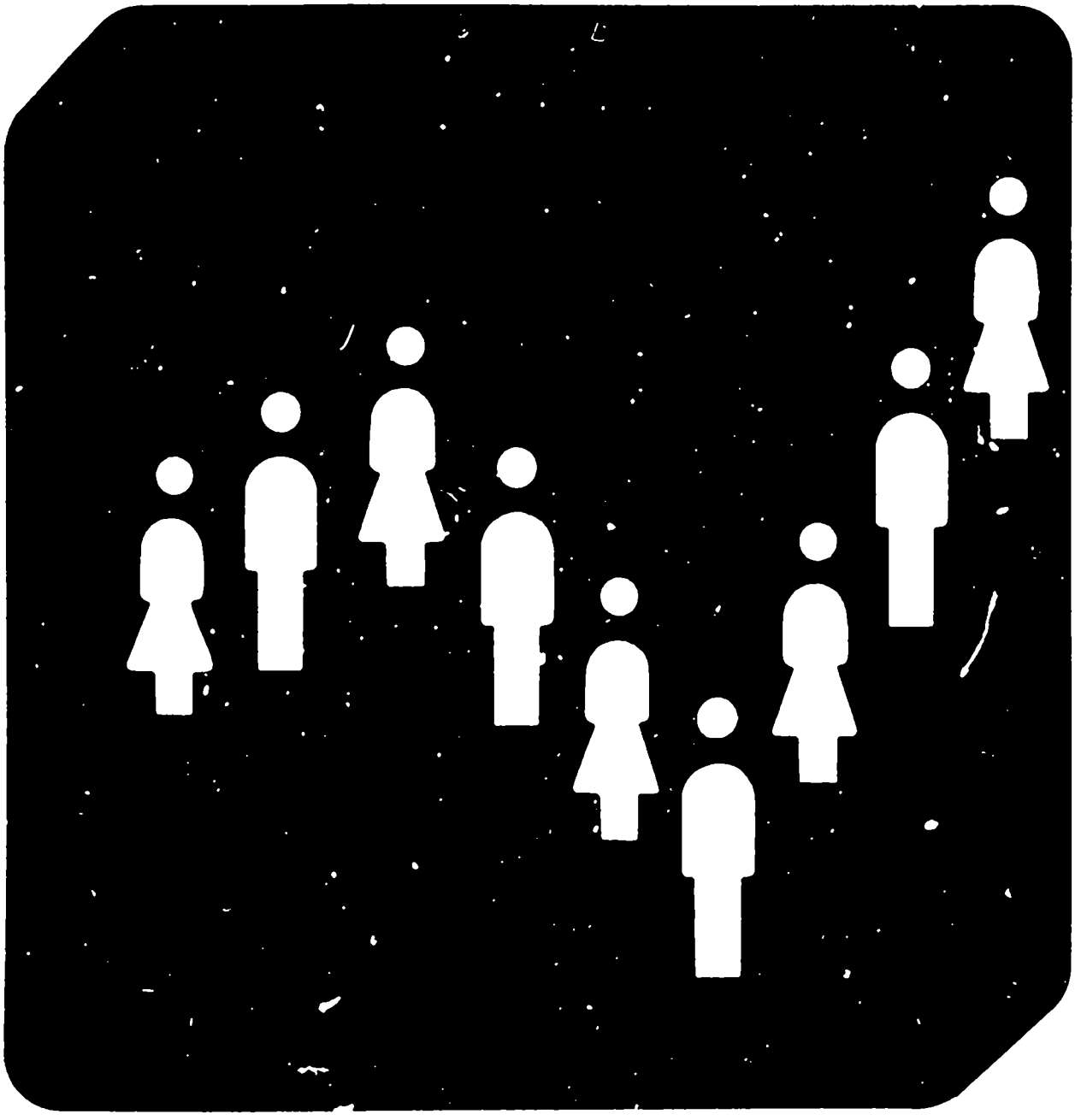
International Statistical Training Programs

U.S. Department of Commerce
BUREAU OF THE CENSUS

August 1980 to August 1981



Calendar of Training Activities

Date	Activity
August 21 and 22, 1980	Arrival of participants and orientation at Agency for International Development (Washington) or United Nations (New York)
August 25 to 27	Orientation at Washington International Center
August 28 and 29	Orientation at the Bureau of the Census
September 2 to October 9	FIRST TRAINING PERIOD (6 weeks)
October 14 to December 19	SECOND TRAINING PERIOD (10 weeks)
December 20 to January 4, 1981	Mid-Winter Community Seminar and recess
January 5 to March 27	THIRD TRAINING PERIOD (12 weeks)
March 23 to April 3	Workshop, "Training for Statistical Activities," and recess
March 30 to June 19	FOURTH TRAINING PERIOD (12 weeks)
May 18 to 22	Management-Communication Seminar
June 22 to July 31	FIFTH TRAINING PERIOD (6 weeks) Full-time workshops and field demonstrations in current agricultural surveys and socio-economic surveys
August 1 to 5	Consultation, evaluation, exit interviews, and departure of participants

Location of ISPC:

Scuderi Building
Suite 213, Second floor
4235 28th Avenue
Marlow Heights, Maryland
Telephone: (301) 763-2860

Mailing address:

Training Branch
International Statistical Programs Center
Bureau of the Census
Washington, D.C. 20233

International Statistical Training Programs

August 1980 to August 1981

Sampling and Survey Methods

Agricultural Surveys and Censuses

Population Statistics and Demographic Analysis

Economic Surveys and Censuses

Computer Data Systems

Statistical Technology and Survey Management

Conducted by the U.S. Bureau of the Census
under a Resources Support Services Agreement
with the Agency for International Development,
U.S. International Development Cooperation Agency

U.S. Department of Commerce
BUREAU OF THE CENSUS
International Statistical Programs Center
Washington, D.C.

Contents

NEW FEATURES IN 1980/1981 - - -

A new structure for training in Statistical Technology and Survey Management. Beginning September 1980, a Diploma specialization will be offered in Statistical Technology and Survey ment. Training in this specialization will equip participants with the wide range of skills n by survey statisticians in the design and implementation of surveys and censuses. Management used by the survey statistician in planning, scheduling, and coordinating the work of subject-specialists, mathematical statisticians, and data processing personnel who are involved in a s or census project also are taught. The skills learned by participants completing the Statisti Technology and Survey Management training program can be applied to censuses and surveys in va subject-matter fields.

A special-purpose training program leading to a Diploma in Agricultural Economics. Cours agricultural economics are listed for the first time in the 1980/1981 training booklet. Compl a 1-year special-purpose program centering around these courses will lead to a Diploma in Agri Econ ics. The new courses include Concepts and Tools for Agricultural Economics, Collecting tistics on Agricultural Population and Development, and Integrated Rural Development Projects: Theory and Applications.

Introduction of the first ISPC course on civil registration and vital statistics. A new course, Civil Registration and Vital Statistics Methods, will be offered as part of the ISPC c riculum in Population Statistics and Demographic Analysis in cooperation with the National Cen for Health Statistics (NCHS). In addition to this new course, ISPC can arrange short courses the Applied Statistics Training Institute of NCHS. NCHS also will assist ISPC in arranging or visits to vital statistics offices and state health statistics centers for ISPC participants s cializing in vital statistics.

Training to promote the more effective dissemination of survey results. In 1980/1981, sp emphasis will be given to training in the skills needed to compile, present, and publish surve census results within a time schedule and in a format which will ensure that these statistics useful for planners and policymakers. This training will be available to all participants in statistical technology course, Analysis, Presentation, and Dissemination of Data; in subject-s courses such as the population workshop, Preparation of Demographic Reports; and in a special-purpose training program on printing and reproduction.

Increased emphasis on training in the use of computer package programs. There is an inc recognition of the need to reduce the time to write custom programs to process census and sur data. Courses on the COCENTS tabulation system and the CONCOR editing and imputation system duce Computer Data Systems specialists to general-purpose software tools to speed processing. ing on the use of statistical software packages--SPSS, SAS, BMD--also can be arranged. In 19 a course, Introduction to the Use of Computer Package Programs, will be made available to sub matter specialists, and several statistics or subject-matter courses will give participants e in the use of statistical software packages.

International Statistical Training Programs

I. Introduction

The International Statistical Programs Center (ISPC) of the U.S. Bureau of the Census has conducted training programs for foreign statisticians for more than 30 years and through these programs has contributed substantially to statistical development in many countries. The programs are conducted under the auspices of the Agency for International Development (AID); they serve urgent and changing needs of developing countries for trained personnel to collect, process, and analyze statistical data. The training is conducted in English.

The programs described in this booklet are offered during the period August 1980 to August 1981. Some are full-year programs, while others are for short terms. In content, they differ from the programs offered in past years in that the curricula has been updated and expanded to include new and advanced topics and techniques to meet the current needs of countries. A training program is offered in each of the following specializations:

(1) Sampling and Survey Methods
(2) Agricultural Surveys and Censuses
(3) Population Statistics and Demographic Analysis
(4) Economic Surveys and Censuses
(5) Computer Data Systems
(6) Statistical Technology and Survey Management

Beginning in 1980, Statistical Technology and Survey Management will be offered as an area of specialization in addition to the five previously available. This program of specialization will be designed to equip participants with the wide range of skills required of the survey generalist. These skills involve design of tables and questionnaires, mapping, recruitment and training of data collection personnel, organization of field operations, development of procedures for control of nonsampling error and for manual coding and editing, and presentation and dissemination of survey results.

The six programs listed above are directed toward training statisticians in the specific skills needed to carry out many different phases of ongoing statistical activities. Although participants specialize in one area, they are introduced to clearly related and auxiliary fields and skills to give them an understanding of how their specialty fits into the total statistical system.

The culmination of the ISPC program is a demonstration survey which is planned, prepared, and conducted by the participants under supervision of the training staff. Participants in the Sampling and Survey Methods, Agricultural Surveys and Censuses, Population Statistics and Demographic Analysis, Economic Surveys and Censuses, Computer Data Systems, and Statistical Technology and Survey Management training programs participate in either an agricultural or a socioeconomic field demonstration survey. Technical and organizational skills learned in the classroom and applied in the practical field exercises prepare participants to play a major role in the design, conduct, processing, and analysis of the type of nationwide census or survey called for by the World Census of Agriculture or the National Household Survey Capability Program. A demonstration enterprise survey also is scheduled for participants in the Economic Surveys and Censuses program. (More specific descriptions of the curricula of the regular 1-year programs are found on pages 10 to 21.)

II. Objectives and Curriculum

The program is designed to provide training both for men and women who have responsibility for data collection operations and for those engaged in research and analysis. The principal objectives of the program are (a) to train statisticians and technicians in the variety of skills needed to plan and carry out surveys, censuses, and numerous other statistical activities, and (b) to train these persons to assist others in developing similar skills, thus introducing an important multiplier effect at the national level. ISPC has developed a variety of materials, not only in survey and census methods but in the production of other basic economic and social statistics and in electronic data processing. The program provides for specific training in each of the six areas listed above, although some courses have broad interest and applicability and overlap several specialities.

The program has several secondary objectives. It offers participants the opportunity (a) to meet and talk with professional statisticians in both government and private agencies in the United States and to observe their work, (b) to become acquainted with new technology which is, or soon will be, available in their countries, and (c) to exchange experiences with technicians from a number of other countries with similar resources.

The training is conducted through classroom and laboratory sessions, seminars, workshops, field exercises, and group projects. It is oriented toward surveys and censuses and related statistical operations and emphasizes the practical aspects; however, theory and principles also are presented to provide the basis for making decisions. Academic credit for successful completion of a course is awarded by the Graduate School of the U.S. Department of Agriculture[1], with which the Bureau of the Census has a cooperative agreement.

Participants who enroll in undergraduate academic programs at the George Washington University after the completion of their 1-year ISPC training programs can be awarded the equivalent of one year of advanced standing credits toward the baccalaureate degree requirements of the departments of Statistics, Economics, Sociology, Geography, or Electrical Engineering. Participants in the Combined Degree Program, conducted jointly by ISPC and the George Washington University, earn advanced standing credits toward a Master of Science degree by completing the 1-year ISPC training program; this program is described in Annex I, page 43, in the back of this booklet. Participants in the Demography Degree Program, conducted jointly by ISPC and Georgetown University, earn advanced standing credits toward a Master of Arts degree by completing the 1-year ISPC program in Population Statistics and Demographic Analysis. See Annex II, page 47, in the back of this booklet for details. Awarding of advanced standing credit toward either undergraduate or graduate degrees for participants who complete the ISPC training program and who wish to follow an academic program at another university can also be arranged on a case-by-case basis.

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[1]Although originally established for continued training of agricultural employees in the government, the Graduate School has expanded its curriculum and offers courses at both the graduate and the undergraduate level in various disciplines economics, mathematics, statistics, computer scien language, etc. Government agencies generally accept the credits of the Graduate School, for examination and qualification purposes, on the same basis as those from accredited colleges and universities.

A complete list of ISPC courses and selected courses available at other institutions is given on pages 7 to 9. Courses are selected and programs are arranged to satisfy the individual participant's needs and objectives. Suggested programs for each training period for each of the six specialized areas are given on pages 10 to 21. Participants whose training objectives are not defined within these areas may select courses from the ISPC curricula and courses offered by other institutions according to their individual needs with approval of their Training Advisers. (See page 9 for an illustrative list of some of the courses that are available.) Course descriptions, in order by course number, start on page 25.

III. Special Programs

Agricultural economics--To enable countries to more fully utilize agricultural census or current survey data for economic development planning, especially with respect to expanding the productivity of the agricultural sector and improving the quality of life of the rural poor, special training programs will be arranged by ISPC in agricultural economics. These special programs are 1-year in duration; however, shorter programs can be arranged to meet individual training needs. (See pages 22 and 23 for details.)

Special-purpose programs--It is possible for ISPC to arrange programs of varying lengths on general statistical technology or other statistical topics appropriate to the specific training needs of groups of participants constituted by a sponsor. Special-purpose group training can be arranged on topics such as, census/survey cartography, printing and reproduction, seasonal adjustment of economic data, or the construction of social indicators. These group training programs consist of courses at ISPC or other institutions, consultation and visitation programs, attendance at selected conferences, and practical work experience.

Short visitation and consultation programs from a few days to a few weeks in length can be arranged by ISPC within the Census Bureau and other agencies to meet the specific objectives of individual participants or groups. Procedures for applying for either individual or group special-purpose programs are explained on page 24.

Planning and implementing a household survey--In June and July 1981, a workshop will be held at ISPC in Washington for statisticians and subject-matter specialists who are or who will be involved in the development of a continuing multi-subject household survey program. More detailed information about this workshop is given on page 24.

IV. Calendar of Activities

A Calendar of Training Activities appears on the inside cover of this booklet. It lists the major elements of the program and their scheduled dates. One week of general orientation to the United States at the Washington International Center and at the Bureau of the Census precedes the technical training. Similar arrangements can be made for persons arriving at later dates for parts of the full program. Participants should be scheduled to arrive in the U.S. approximately 10 days before their training programs begin to allow time for this orientation and to complete their housing arrangements.

The year's program is divided into five training periods. The first four consist primarily of classroom and laboratory work, group discussion, and seminars; participants receive basic training in the professional knowledge and skills needed to carry out statistical operations and analyses. They are then prepared to participate fully in the case-study workshops and field demonstrations that constitute the training in the fifth period. All persons who receive the classroom training normally participate in the workshops offered in their specialized fields in order to gain full

benefit from "on-the-job" training. Separate enrollment in the workshops and field work may be arranged for participants with appropriate previous experience and training.

The first training period, which is relatively short, provides for intensive basic training in a limited number of subjects. The second, third, and fourth periods are about equal in length and scope, providing a progressive, integrated program in the participant's field of specialization.

A 1-week Management-Communication Seminar is a basic element of all training programs for ISPC participants. The seminar is conducted in May by Management-Communication Associates outside the Washington area.

Also, during the last week of December, mid-winter community seminars are planned for several locations away from Washington, D.C. These seminars are conducted by voluntary organizations working in cooperation with AID. The programs are designed primarily to convey various aspects of community life in the United States.

V. Program Duration

Full-year program--The full ISPC training program, including preprogram orientation and predeparture activities, requires 1 year. It is strongly recommended that participants be scheduled for the full-year program, and that they arrive about 10 days before it begins; however, as noted below, arrangements can be made for short-term programs of one to four training periods in length.

Short-term programs--Participation in short-term programs consisting of one or more training periods selected from the full-year program can be arranged. Programs starting at the beginning of the first training period may be arranged for 10½ months, 7½ months, or 4 months Persons wishing to enroll for short-term programs beginning after the first training period should have previous education or experience equivalent to the courses they would miss by late enrollment.

Supplement to academic programs--At the request of the sponsoring agency, ISPC may arrange a training program one or more training periods in length for participants from developing countries who are placed in American universities to study statistics or related fields. The program would emphasize practical statistical applications that utilize or supplement the academic training. It is especially valuable to arrange for enrollment in the Survey Workshop and Field Demonstration in the fifth training period for students who are on academic vacation or who have finished their academic programs.

VI. Diplomas and Certificates

A diploma is awarded by ISPC upon satisfactory completion of the full 1-year ISPC curriculum in any of the six regular specializations (or in agricultural economics). The recommended course in each specialization are listed on pages 11, 13, 15, 17, 19, 21 and 23. To complete the curriculum in any area of specialization, a participant must satisfactorily complete a minimum number of recommended and elective courses chosen by the participant with the advice of his or her Training Advisor. All diploma candidates must complete at least one statistical methods and one sampling course and five statistical technology courses. Completion of the curriculum also necessitates the participant's arriving in the United States early enough to begin the first training period on time.

A certificate is awarded by ISPC upon successful completion of a short-term program--less than the full year but at least 3 months.

The USDA Graduate School provides a transcript of credits for each course satisfactorily completed, regardless of the length of the participant's program.

VII Program Costs

For participants sponsored by the United Nations (UN), the Food and Agriculture Organization (FAO), or other UN specialized agencies, the costs, excluding international travel, consist of subsistence (usually paid directly to the participants) and "other" costs. "Other" costs include transportation for program-related travel within the U.S., tuition fees for accredited courses and special seminars, allowance for books and other training materials, membership in a professional society, and a program charge. The estimated "other" costs (that is, costs excluding international travel and excluding all subsistence) amount to $8,630 for 1 year, $5,650 for 7½ months, $4,415 for 6 months, and $2,710 for 4 months.

For participants not sponsored by the United Nations, estimated "other" costs (that is, costs excluding international travel and excluding all subsistence) amount to $11,575 for 1 year, $7,585 for 7½ months, $5,735 for 6 months, and $3,495 for 4 months. It is assumed that the participant's sponsor will provide international travel and will arrange for payment of the subsistence allowance.

For participants sponsored by the U.S. Agency for International Development, the "other" costs are approximately the same as estimated above for participants not sponsored by the United Nations. The standard subsistence allowance for AID-sponsored participants in a nonacademic program also applies.

All cost figures given in this section are subject to change. All participants are required to have health insurance. If the sponsoring agency does not provide it, the participant will be responsible for obtaining his or her own health insurance policy. The ISPC staff will assist in making insurance arrangements

VIII. Qualifications of Participants

The ISPC training programs are conducted primarily for statisticians and technicians who have had some working experience (at least a year) in national statistical programs. Formal educational background may range from high school graduation to advanced university degrees. Academic training in mathematics, statistics, and economics is desirable; at least a basic knowledge of algebra is required.

A minimum English language score of 70/70 (ALIGU) is required, although a higher level is needed to obtain major benefits from the program. AID missions and other sponsoring agencies are urged to provide potential participants with the necessary training to attain maximum proficiency in English prior to their arrival in the United States. In cases where failure to meet the English language requirements would mean a serious delay in providing training, arrangements may be made for participants to receive intensive English language training in the United States for 1 to 3 months prior to their enrolling in the ISPC program. As a rough guide, a score of 60 to 70 would require at least 1 month of intensive training, 50 to 60 would require 2 months, and 40 to 50 would require 3 months. Sponsors wishing to send participants to the United States to receive training in English should provide for the extra time and funds.

The above qualification conditions apply, in general to the regular ISPC training program. Specific candidate requirements for each area of specialization

are given on pages 10, 12, 14, 16, 18, 20 and 22. Additional candidate requirements for the Master's degree programs are given in the annexes at the back of this booklet. In addition to ISPC qualification conditions,. all candidates for enrollment in the training program must fulfill the requirements of their sponsoring agencies.

IX. Action to be Taken by Sponsoring Agency

It is desirable that nominations of qualified participants be made sufficiently early to permit adequate time for processing their applications and arranging for their programs. It is suggested that nominations be submitted through appropriate channels at least 2 to 3 months prior to the opening date of the program, and biographical data 1 to 2 months before opening date.

Participants may be sponsored by the Agency for International Development; the United Nations Development Program, the Food and Agriculture Organization, the World Bank or another of the UN specialized agencies; the Organization of American States; the Ford Foundation or other private foundations; or the participant's own government.

X. Other Considerations

Participants are requested to bring with them questionnaires, instructions, descriptions of procedures, publications, and other materials pertinent to the national statistical program in which they may be engaged. These materials will be of practical value to the participants throughout their training. Also, for the purpose of relating training objectives to the candidate's future job responsibilities, it is strongly recommended that the objectives and content of the proposed training program be discussed in detail by the candidate, the candidate's supervisor, and a representative of the sponsoring agency prior to departure from the home country.

XI. ISPC-George Washington University Combined Degree Program in Social and Economic Statistics

A qualified participant may enroll in the Combined Degree Program to earn a Master of Science in Special Studies degree with a concentration in Social and Economic Statistics from the George Washington University. This program requires the satisfactory completion of the full 1-year ISPC curriculum (beginning September 2, 1980) and a 4-month extension for additional university courses. The participant must have an undergraduate degree and must meet the English language requirements of George Washington University For details of the program, see Annex I, page 43, in this booklet.

XII. ISPC-Georgetown University Demography Degree Program

A qualified Population participant may enroll in the Demography Degree Program to earn a Master of Arts in Sociology (Demography) degree from Georgetown University. This program requires the satisfactory completion of the full 1-year ISPC curriculum in Population Statistics and Demographic Analysis (beginning September 2, 1980) and a 6-month extension to complete additional university courses and other degree requirements. The participant must have an undergraduate degree and must meet the English language requirements of Georgetown University. For details of the program, see Annex II, page 47, in this booklet.

XIII. Additional Information

For further information about the program, refer to the AID Mission or to the UN or FAO resident representative in the country or region, or write directly to the Chief, Training Branch, International Statistical Programs Center, U.S. Bureau of the Census, Washington, D.C. 20233.

CURRICULUM OF COURSES BY SUBJECT AREA

Course number	SAMPLING AND SURVEY METHODS	Training period
101	Introduction to Statistical Methods	1 and 2
102	Introduction to Survey Sampling	2
103	Applied Regression and Correlation Analysis	3
104	Design of Sample Surveys	1 and 2
105	Survey Sampling Laboratory	1 and 2
106	Variance Estimation in Sample Surveys	3
107	Laboratory in Variance Estimation Techniques	3
108	Control and Evaluation of Nonsampling Error	3
109	Quality Control in Censuses and Surveys	4
110	Applications of Current Survey Design and Evaluation Techniques	4
120	Field Demonstration Laboratory in Sampling and Survey Methods	3 and 4
150	Seminar: Selected Topics in Sampling and Survey Methods	3 and 4
190	Case Study in Sampling: Workshop and Field Demonstration	5
	AGRICULTURAL SURVEYS AND CENSUSES*	
201	Concepts and Tools for Agricultural Statistics	1
203	Agricultural Census and Current Survey Organization and Methods	2 and 3
204	Sample Survey Design--Applications for Agricultural Data Collection	3
205	Frame Construction for Agricultural Samples	3
206	Objective Measurement of Area and Yield	4
207	Agricultural Estimating Techniques	4
210	Introduction to the 1980 World Census of Agriculture	1
220	Agriculture Field Demonstration Laboratory	3 and 4
250	Seminar: Selected Topics in Agricultural Statistics	3 and 4
290	Case Study in Agricultural Statistics: Workshop and Field Demonstration	5
	POPULATION STATISTICS AND DEMOGRAPHIC ANALYSIS	
301	Population Dynamics and Introduction to Demographic Analysis	1
302	Population and Housing Census Concepts and Applications	2
303	Civil Registration and Vital Statistics Methods	2
304	Techniques of Demographic Analysis: Mortality and Fertility	2
305	Demographic Analysis Laboratory	2
306	Demographic Measures from Incomplete Data	3
307	Advanced Demographic Analysis Laboratory	3
308	Alternative Strategies for the Collection and Analysis of Demographic Data	4
309	Workshop: Preparation of Demographic Reports	4
310	Collection and Analysis of Migration Data	4
311	Population Estimates and Projections: Concepts and Applications	4
320	Population Field Demonstration Laboratory	3 and 4
350	Seminar: Selected Topics in Population and Demography	3
390	Case Study in Population Statistics: Household Survey Workshop and Field Demonstration	5

*Joint training program of the U.S. Bureau of the Census and the Food and Agriculture Organization of the United Nations in collaboration with the Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture.

Course number	ECONOMIC SURVEYS AND CENSUSES	Training period
401	Microeconomic Concepts for Statisticians	1
402	Macroeconomic Concepts for Statisticians	2
403	Elements of Economic Survey-Census Operations	2
404	Economic Index Construction: Principles and Applications	3
405	Applications of Economic Survey-Census Techniques	3
406	Family Income and Expenditure Surveys: Design and Methodology	3
407	Foreign Trade Statistical Operations	2
408	Statistical Tools for Economic Analysis and Development Planning	4
420	Socioeconomic Field Demonstration Laboratory	3 and 4
430	Economic Enterprise Survey: Field Demonstration Laboratory	4
450	Seminar: Selected Topics in Economic Statistics	4
490	Case Study in Socioeconomic Statistics: Household Survey Workshop and Field Demonstration	5
	COMPUTER DATA SYSTEMS	
501	Computer Processing Fundamentals	1
502	Fundamentals of Programming	1
503	Computer Programming in Structured COBOL	2
504	Concepts of IBM Systems 360/370	2
505	Systems Analysis and Management	3
506	Disk Operating System (DOS) Concepts and Job Control Language (DOS JCL)	3
507	Operating System (OS) Concepts and Facilities	3
508	Operating System Job Control Language (OS JCL)	3
509	Advanced Structured COBOL	3
510	Data Base Design and Management	4
511	COCENTS--COBOL Census Tabulation System	4
512	CONCOR--Editing and Imputation System	4
513	Programming Language I (PL/I) Coding and Testing	4
514	FORTRAN IV Coding and Testing	4
515	IBM Systems 360/370 Assembler Language Coding (ALC)	4
520	Field Demonstration Laboratory in Systems Analysis	3 and 4
550	Seminar: Selected Topics in Computer Data Systems	3 and 4
590	Case Study in Computer Data Systems: Workshop and Field Demonstration	5
	STATISTICAL TECHNOLOGY AND SURVEY MANAGEMENT	
600	Introduction to Design of Surveys and Censuses	1
601	Introduction to Data Processing for Subject-Matter Specialists	2
602	Design of Tables and Questionnaires	2
603	Geography and Mapping for Surveys and Censuses	2
604	Data Collection Field Operations	3
605	Editing, Coding, and Imputation Principles	3
606	Management of Statistical Activities	4
607	Introduction to the Use of Computer Package Programs	4
608	Analysis, Presentation, and Dissemination of Data	4
609	Workshop: Training for Statistical Activities	3 and 4
620	Field Demonstration Laboratory in Statistical Technology	3 and 4
650	Seminar: Selected Topics in Statistical Technology	3 and 4
690	Case Study in Statistical Technology: Workshop and Field Demonstration	5
695	Special Programs in Statistical Technology	3 and 4

Course number	AGRICULTURAL ECONOMICS	Training period
701	Concepts and Tools for Agricultural Economics	1
702	Economics of Agricultural Development	2
703	Collecting Statistics on Agricultural Population and Employment	2
704	Integrated Rural Development Projects: Theory and Application	3
705	Use of Agricultural Statistics for Productivity Measurement and Forecasting	3
706	Use of Agricultural Statistics in Economic Development Planning	4
720	Field Demonstration Laboratory in Agricultural Economics	3 and 4
750	Seminar: Selected Topics in Agricultural Economics	3 and 4
790	Case Study in Agricultural Economics: Workshop and Field Demonstration	5

ILLUSTRATIVE LIST OF COURSES THAT ISPC CAN ARRANGE AT OTHER INSTITUTIONS

At the Applied Statistics Training Institute

- Vital Statistics Measurement and Utilization
- Vital Statistics Records and Their Administration
- Family Planning Statistics
- Tabular and Graphic Presentation of Data
- Nature and Use of Mortality Data System

At the George Washington University

- Elements of Remote Sensing
- Photo-interpretation
- Cartographic Techniques
- Map Design
- Thematic Mapping
- Techniques in Remote Sensing

At the International Business Machines Education Center

- DOS/TOS Systems Control
- Software Application Seminars
- Introduction to Data Communications
- OS Systems Control
- IBM System 3 Coding and Testing
- Introduction to DOS/VS or OS/VS

At the Office of Personnel Management

- Fundamental Telecommunications Concepts
- Systems Design Considerations in an On-Line Environment
- Seminar in Systems Evaluation and Selection
- Seminar in Advanced Computer Systems Technology
- Management and Control of ADP Projects
- Software for Information Processing
- ADP Management and Administration
- Computer Performance Evaluation
- Computers in Financial Management

At the U.S. Department of Agriculture Graduate School

- Teleprocessing and Data Communication Systems
- OS Job Control Language and Core Dump Analysis
- Systems Approach to ANS COBOL
- System 370 Virtual Storage Concepts and Operating Systems
- Utility Programs for IBM 360/370 OS/VS
- Printing, Layout, and Design
- Graphic Methods of Presenting Statistics
- Introduction to Lithography
- Offset Photography

SAMPLING

SAMPLING AND SURVEY METHODS

Training objectives

This program has been developed to provide both theoretical instruction and practical experience in sample design and survey methodology for mathematical statisticians. Expertise in designing large-scale sample surveys and estimating population values from sample data normally is developed over a long period of application and experience combined with sound technical knowledge. The 1-year Sampling and Survey Methods program enables participants to greatly improve both their understanding of the principles of statistical inference and their ability to apply such knowledge to actual design and evaluation of sample surveys and censuses for a broad range of subject-matter needs.

The program begins with theory necessary to provide a firm technical foundation, proceeds into application of the theory in specialized areas such as estimation and variance calculation, is supplemented throughout with courses in census and survey methodology, and culminates in the actual design of either an agricultural, socioeconomic, or establishment survey. Through an intensive workshop and field demonstration, participants also learn to plan, coordinate, and control all phases of censuses or surveys such as the one they designed.

Training plan

The 1-year program is divided into five training periods. The first four training periods include classroom work, seminars, conferences, and laboratory sessions. In the sampling seminars, sampling experts are invited to discuss topics of special interest to the participants; also, each participant reports on some aspect of sampling and survey methods appropriate to his or her country. The fifth training period permits a choice of a socioeconomic or an agricultural statistics workshop and field demonstration. The workshops cover all aspects of planning and carrying out sample surveys or censuses, including experience in actual field listing and enumerating.

A recommended curriculum for participants specializing in sampling and survey methods appears on the next page. This curriculum assumes that participants specializing in sampling do not require Course 101, Introduction to Statistical Methods, or Course 102, Introduction to Survey Sampling, but they should expect to take all other ISPC courses in the 100 series. Sampling and Survey Methods is the major area of training emphasis, but clearly related auxiliary fields and skills are included, such as mapping; design of tables, questionnaires, and other forms; and basic data processing operations. Statisticians interested in other courses may select from the list on pages 7 to 9 in accordance with their program objectives. Participants with a more advanced level of statistical training or experience receive some advanced training in design, analysis, and evaluation of sample surveys.

Duration

To receive a diploma it is necessary for the participant to complete the full 1-year program and earn 36 or more USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates). Participants in the earlier training periods normally enroll in the sample survey workshop and field demonstration in the fifth period; however, separate enrollment for the fifth period can be arranged for those with appropriate background.

Candidate requirements

As a minimum for the full 1-year program, participants should have completed a secondary school course in algebra, and an elementary statistics course or its equivalent. Other academic training in statistics and mathematics is helpful. For the shorter programs of 7½ and 5 months, candidates must have completed training equivalent to that shown on page 11 for the previous training periods. An absolute minimum requirement would be completion of courses in theory or design of sample surveys or equivalent experience. Most participants in this field hold a university degree. (For English language requirements, see page 5.)

SAMPLING

COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
600	Introduction to Design of Surveys and Censuses	10
Second training period--October 14 to December 19, 1980		
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory--Continued	10
601	Introduction to Data Processing for Subject-Matter Specialists	10
602	Design of Tables and Questionnaires	20
603	Geography and Mapping for Surveys and Censuses	20
	Optional:	
203-1	Agricultural Census and Current Survey Organization and Methods	20
302	Population and Housing Census Concepts and Applications	20
403	Elements of Economic Survey-Census Operations	20
Third training period--January 5 to March 27, 1981		
103	Applied Regression and Correlation Analysis	20
106	Variance Estimation in Sample Surveys	20
107	Laboratory in Variance Estimation Techniques	10
108	Control and Evaluation of Nonsampling Error	20
120-1	Field Demonstration Laboratory in Sampling and Survey Methods	10
150-1	Seminar: Selected Topics in Sampling and Survey Methods	10
604	Data Collection Field Operations	10
605	Editing, Coding, and Imputation Principles	20
695-1	Special Programs in Statistical Technology	Varies
	Optional:	
203-2	Agricultural Census and Current Survey Organization and Methods--Continued.	20
204	Sample Survey Design--Applications for Agricultural Data Collection	20
205	Frame Construction for Agricultural Samples	20
406	Family Income and Expenditure Surveys: Design and Methodology	20
Fourth training period--March 30 to June 19, 1981		
109	Quality Control in Censuses and Surveys	20
110	Applications of Current Survey Design and Evaluation Techniques	20
120-2	Field Demonstration Laboratory in Sampling and Survey Methods--Continued	10
150-2	Seminar: Selected Topics in Sampling and Survey Methods--Continued	10
606	Management of Statistical Activities	10
607	Introduction to the Use of Computer Package Programs	40
608	Analysis, Presentation, and Dissemination of Data	20
609	Workshop: Training for Statistical Activities	1 week
695-2	Special Programs in Statistical Technology--Continued	Varies
	Optional:	
206	Objective Measurement of Area and Yield	30
308	Alternative Strategies for the Collection and Analysis of Demographic Data.	10
Fifth training period--June 22 to July 31, 1981		
190	Case Study in Sampling: Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum (see list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

AGRICULTURE

AGRICULTURAL SURVEYS AND CENSUSES
(Based on Joint FAO/US Agricultural Statistics Training Program)

Training objectives

More and better data are needed for national and world-wide planning to provide adequate food and industrial crops and livestock products for internal use and for international trade. Many countries are conducting censuses to obtain basic agricultural data in conjunction with the Food and Agriculture Organization (FAO) Program for the 1980 World Census of Agriculture.

Training is needed for statisticians who can help their countries improve agricultural data systems, including both census and current survey activities. The training program will provide instruction in the statistical concepts and operational skills necessary for the collection of agricultural data and the measurement of basic agricultural activities within a country. Participants should also learn to see their specific technical skills in technical organizational relationship with the skills and activities of other specialists.

Training plan

The 1-year program is divided into five training periods. The regular agricultural surveys curriculum is an integrated program covering all aspects and steps in the development and conduct of a survey from conception through data publication and post-survey evaluation. These are presented a step at a time in the core courses from September through June. Many of the major activities covered in the core courses are studied in depth in other courses presented only once in the training cycle. All of the material is put into practice in a demonstration survey managed, developed and conducted by the participants as a group. The agriculture participants begin the planning and development of the agriculture survey in January. They are joined by data processing and sampling participants. Preparations continue in weekly workshops until June. Preparations include sample design, mapping, developing tables, questionnaire, instruction manuals, training and management. Participants conduct, process, publish, and critique their survey in July. Course work and practical application build upon previous work and learning throughout the program.

A recommended curriculum for agricultural statistics participants is shown on the next page. Agricultural statistics is the major area of training emphasis, but clearly related auxiliary fields and skills are included. Statisticians interested in other courses may select from the list on pages 7 to 9 in accordance with their program objectives and within the constraints imposed by the class schedule.

Duration

To receive a diploma it is necessary for the participant to complete the full 1-year program and earn 36 or more USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates). Participants in the earlier training periods normally enroll in the agricultural statistics workshop and field demonstration in the fifth period; however, separate enrollment for the fifth period can be arranged for those with appropriate background.

Candidate requirements

Participants must have a basic knowledge of algebra and should have had some experience (at least a year) in agricultural statistical programs. Academic training in statistics, mathematics, and economics is very helpful. A university degree also is desirable, although formal education may range from high school graduation to an advanced university degree. (For English language requirements, see page 5.)

AGRICULTURE

COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
201	Concepts and Tools for Agricultural Statistics	10
210	Introduction to the 1980 World Census of Agriculture	10
600	Introduction to Design of Surveys and Censuses	10
	Must choose either 101-1 or 104-1 and 105-1	
101-1	Introduction to Statistical Methods	15
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
Second training period--October 14 to December 19, 1980		
203-1	Agricultural Census and Current Survey Organization and Methods	20
601	Introduction to Data Processing for Subject-Matter Specialists	10
602	Design of Tables and Questionnaires	20
	Must choose either 101-2 and 102 or 104-2 and 105-2; must choose either 603 or 702	
101-2	Introduction to Statistical Methods--Continued	30
102	Introduction to Survey Sampling	20
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory--Continued	10
603	Geography and Mapping for Surveys and Censuses	20
702	Economics of Agricultural Development	20
Third training period--January 5 to March 27, 1981		
108	Control and Evaluation of Nonsampling Error	20
203-2	Agricultural Census and Current Survey Organization and Methods--Continued	20
204	Sample Survey Design--Applications for Agricultural Data Collection	20
205	Frame Construction for Agricultural Samples	20
220-1	Agriculture Field Demonstration Laboratory	10
250-1	Seminar: Selected Topics in Agricultural Statistics	10
605	Editing, Coding, and Imputation Principles	20
609	Workshop: Training for Statistical Activities	1 week
695-1	Special Programs in Statistical Technology	Varies
	Optional:	
103	Applied Regression and Correlation Analysis	20
604	Data Collection Field Operations	10
Fourth training period--March 30 to June 19, 1981		
109	Quality Control in Censuses and Surveys	20
206	Objective Measurement of Area and Yield	30
207	Agricultural Estimating Techniques	10
220-2	Agriculture Field Demonstration Laboratory--Continued	10
250-2	Seminar: Selected Topics in Agricultural Statistics--Continued	10
606	Management of Statistical Activities	10
695	Special Programs in Statistical Technology--Continued	Varies
	Optional:	
607	Introduction to the Use of Computer Package Programs	40
608	Analysis, Presentation, and Dissemination of Data	20
706	Use of Agricultural Statistics in Economic Development Planning	10
Fifth training period--June 22 to July 31, 1981		
290	Case Study in Agricultural Statistics: Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum (see list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

POPULATION STATISTICS AND DEMOGRAPHIC ANALYSIS

Training objectives

The purpose of the Population Statistics and Demographic Analysis curriculum is to provide training for people who will have responsibility for demographic operations or who will be engaged in research and analysis of demographic data. The training in this specialization is intended for professional personnel working in population censuses, household surveys, demographic surveys, fertility surveys, and vital statistics. Additionally, it is designed for statisticians responsible for estimating population levels, growth patterns, and future trends. Participants learn techniques for developing dependable demographic measures from incomplete and defective data as well as methods for improving the overall quality of demographic data.

Demographic surveys and population censuses provide the principal bases for establishing dependable data on the numbers, characteristics, and geographic distribution of the population; also they are frequently the principal statistical vehicles for measurement of population change. Demographic data serve as a basis for determining national population policies and for measuring the impact of family planning programs in addition to the familiar uses in planning and administering programs of economic and social development.

Most developing countries plan to participate in the 1980 Censuses of Population and Housing. A course on concepts and applications of techniques, using the Popstan Case Study, is designed to provide practical training in census taking; other courses concentrate on the evaluation and analysis of census data. It is of vital importance that countries also conduct continuing surveys to provide current population data; several courses (e.g. 308, 320, and 390) provide both training and firsthand experience in planning and implementing household sample surveys. Two new courses also have been added to the curriculum. A course in civil registration methods has been adopted for those participants who specialize in the collection of vital statistics. In recognition of the importance of the publication and analysis of data, a course on the preparation of demographic reports also is included in the curriculum.

Training plan

The 1-year program is divided into five training periods. The first four training periods include classroom work, seminars, conferences, and discussion and laboratory sessions. The classroom work gives participants the basic knowledge and skills to collect and analyze demographic data. In the seminar, expert demographers are invited to discuss topics of special interest to the participants; also, each participant will be responsible for the analysis of demographic data and the preparation of a report presenting the results of this analysis. The fifth training period consists of a full-time workshop and field demonstration in socioeconomic sample surveys. The workshop reviews all aspects of planning and carrying out a multi-subject sample survey program--from determining the objectives of the survey, through sampling and field operations, to the analysis and publication of the data. The field demonstration involves the participant in an actual field exercise in a semi-rural area.

A recommended curriculum appears on the next page. Demography is the major area of training emphasis, but clearly related auxiliary fields and skills are included, such as statistical sampling; survey methods; mapping; design of tables, questionnaires, and control forms; and basic data processing operations. Statisticians interested in other courses may select from the list on pages 7 to 9 in accordance with their program objectives.

Duration

To receive a diploma, it is necessary for the participant to complete the full 1-year program and earn 36 or more USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates). Participants in the earlier training periods normally enroll in the household survey workshop and field demonstration in the fifth period; however, separate enrollment for the fifth period can be arranged for those with appropriate background.

Candidate requirements

Participants must have a basic knowledge of algebra and should have some working experience (at least a year) in population statistical programs. Formal educational background may range from high school graduation to university degrees. Academic training in mathematics, statistics, sociology, and demography is especially helpful; a basic acquaintance with demographic measures is desirable but not required. (For English language requirements, see page 5.)

POPULATION

COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
301	Population Dynamics and Introduction to Demographic Analysis	20
600	Introduction to Design of Surveys and Censuses	10
	Must choose either 101-1 or 104-1 and 105-1	
101-1	Introduction to Statistical Methods	15
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
Second training period--October 14 to December 19, 1980		
304	Techniques of Demographic Analysis: Mortality and Fertility	20
305	Demographic Analysis Laboratory	10
	Must choose either 101-2 and 102 or 104-2 and 105-2; must choose either 302 or 303, and at least two from 601, 602, and 603	
101-2	Introduction to Statistical Methods--Continued	30
102	Introduction to Survey Sampling	20
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory--Continued	10
302	Population and Housing Census Concepts and Applications	20
303	Civil Registration and Vital Statistics Methods	20
601	Introduction to Data Processing for Subject-Matter Specialists	10
602	Design of Tables and Questionnaires	20
603	Geography and Mapping for Surveys and Censuses	20
Third training period--January 5 to March 27, 1981		
108	Control and Evaluation of Nonsampling Error	20
306	Demographic Measures from Incomplete Data	40
307	Advanced Demographic Analysis Laboratory	10
320-1	Population Field Demonstration Laboratory	10
350	Seminar: Selected Topics in Population and Demography	10
604	Data Collection Field Operations	10
605	Editing, Coding, and Imputation Principles	20
609	Workshop: Training for Statistical Activities	1 week
695-1	Special Programs in Statistical Technology	Varies
	Optional:	
103	Applied Regression and Correlation Analysis	20
Fourth training period--March 30 to June 19, 1981		
109	Quality Control in Censuses and Surveys	20
308	Alternative Strategies for the Collection and Analysis of Demographic Data	10
309	Workshop: Preparation of Demographic Reports	Varies
310	Collection and Analysis of Migration Data	20
311	Population Estimates and Projections: Concepts and Applications	20
320-2	Population Field Demonstration Laboratory--Continued	10
606	Management of Statistical Activities	10
695-2	Special Programs in Statistical Technology--Continued	Varies
	Optional:	
607	Introduction to the Use of Computer Package Programs	40
608	Analysis, Presentation, and Dissemination of Data	20
Fifth training period--June 22 to July 31, 1981		
390	Case Study in Population Statistics: Household Survey Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum. (See list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

ECONOMIC SURVEYS AND CENSUSES

Training objectives

The training program provides instruction in statistical concepts and operations necessary for the measurement and analysis of various branches of basic economic activity. Participants are given an opportunity to study applied concepts and techniques and to refine their knowledge of economic surveys and censuses. The objective is to prepare technicians to initiate or to improve national programs in industrial statistics, foreign trade statistics, distributive and service trade statistics, and various basic economic measures associated with the household, depending on individual specialization.

Training plan

The 1-year program is divided into five training periods. The first four training periods include classroom instruction, conferences, and laboratory sessions. During this time experts in economic statistics are occasionally invited to discuss topics of special interest to the participants. The first two periods cover a study of basic economic concepts and survey-census operations including foreign trade statistical operations. The third training period curriculum features the application of economic census techniques in a workshop using the Providencia Economic Census Case Study as a guide. Courses on economic index construction and family income and expenditure survey methods also are offered during the third training period. In the fourth training period the program deals primarily with statistical tools for economic analysis and the use of economic statistics in development planning and an enterprise survey field exercise.

The entire fifth training period is devoted to a full-time socioeconomic survey workshop and field demonstration. Participants learn to plan, coordinate, and control various phases of a multi-subject household sample survey in which information is collected on economic characteristics of the household and manpower characteristics of its members. The workshop reviews all aspects of planning and carrying out a household sample survey program--from determining the objectives of the program, through sampling and field operations, to the analysis and publication of the data. The field demonstration involves the participant in an actual field exercise in a semi-rural area.

A recommended curriculum for participants specializing in economic statistics appears on the next page. Economic statistics is the major area of training emphasis, but clearly related auxiliary fields and skills are included, such as statistical sampling; survey methods; mapping; design of questionnaires, tables, and other forms; and basic data processing operations. Sufficient flexibility is incorporated into the program to allow participants who wish to include courses from other specializations to select from the list of courses on pages 7 to 9 in accordance with their program objectives.

Throughout the year, the program may be interspersed with appropriate conferences or courses in national accounts and balance of payments (offered by the Bureau of Economic Analysis), production analysis, labor force statistics, manpower, and price statistics (offered by the Bureau of Labor Statistics). Conferences and courses of training offered by agencies other than the Bureau of the Census are arranged in accordance with the training objectives of the participant.

Duration

To receive a diploma it is necessary for the participant to complete the full 1-year program and earn 36 or more USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates).

Candidate requirements

Participants must have a basic knowledge of algebra and should have some working experience (at least a year) in national statistical programs. Formal educational background may range from high school graduation to advanced university degrees. Academic training in mathematics, statistics, and economics is especially desirable. (For English language requirements, see page 5.)

ECONOMICS

COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
401	Microeconomic Concepts for Statisticians	20
600	Introduction to Design of Surveys and Censuses	10
	Must choose either 101-1 or 104-1 and 105-1	
101-1	Introduction to Statistical Methods	15
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
Second training period--October 14 to December 19, 1980		
402	Macroeconomic Concepts for Statisticians	20
403	Elements of Economic Survey-Census Operations	20
407	Foreign Trade Statistical Operations	20
	Must choose either 101-2 and 102 or 104-2 and 105-2; must choose at least two from 601, 602, and 603	
101-2	Introduction to Statistical Methods--Continued	30
102	Introduction to Survey Sampling	20
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory	10
601	Introduction to Data Processing for Subject-Matter Specialists	10
602	Design of Tables and Questionnaires	20
603	Geography and Mapping for Surveys and Censuses	20
Third training period--January 5 to March 27, 1981		
103	Applied Regression and Correlation Analysis	20
108	Control and Evaluation of Nonsampling Error	20
404	Economic Index Construction: Principles and Applications	20
405	Applications of Economic Survey-Census Techniques	20
406	Family Income and Expenditure Surveys: Design and Methodology	20
420-1	Socioeconomic Field Demonstration Laboratory	10
695-1	Special Programs in Statistical Technology	Varies
	Optional:	
106	Variance Estimation in Sample Surveys	20
107	Laboratory in Variance Estimation Techniques	10
604	Data Collection Field Operations	10
605	Editing, Coding, and Imputation Principles	20
Fourth training period--March 30 to June 19, 1981		
109	Quality Control in Censuses and Surveys	20
408	Statistical Tools for Economic Analysis and Development Planning	20
420-2	Socioeconomic Field Demonstration Laboratory--Continued	10
430	Economic Enterprise Survey: Field Demonstration Laboratory	10
450	Seminar: Selected Topics in Economic Statistics	10
606	Management of Statistical Activities	10
609	Workshop: Training for Statistical Activities	1 week
695-2	Special Programs in Statistical Technology--Continued	Varies
	Optional:	
110	Applications of Current Survey Design and Evaluation Techniques	20
607	Introduction to the Use of Computer Package Programs	40
608	Analysis, Presentation, and Dissemination of Data	20
Fifth training period--June 22 to July 31, 1981		
490	Case Study in Socioeconomic Statistics: Household Survey Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum (see list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

COMPUTER DATA SYSTEMS

Training objectives

This training is designed to provide the knowledge and skills needed to qualify persons as systems analysts/programmers, project managers, ADP (Automatic Data Processing) managers, and supervisors of computer operations; to train analysts to evaluate software and hardware; and to upgrade the capabilities of persons already specializing in computer data systems. Although designed primarily to train personnel in government statistical offices in technical, analytical, and managerial functions, the program is flexible and adaptable to requirements of specialists in government banking systems or general-purpose computer centers.

Training plan

The 1-year program is divided into five training periods. Forms of instruction include classroom courses, laboratory sessions, supervised study, and individual projects. Program planning, design, and coding are regular components of computer language classes, and programs are tested on Census Bureau equipment, including an on-line terminal to an IBM 370 computer system. Assistance is provided in analysis, test deck preparation, and "debugging" of programs. The training in systems analysis and programming languages is related primarily to third generations, medium-scale computers, of which the IBM System 360/370 series is representative. Participants are instructed in adapting languages and procedures to other types of equipment appropriate to the facilities in their own countries. Knowledge and skill obtained in COBOL and FORTRAN are readily adaptable to various types of computers; training in IBM 360/370 assembler language teaches the concepts needed to learn the assembler language that would be required for another computer system.

A recommended curriculum for specialists in computer data systems appears on the next page. Computer data systems is the major area of training emphasis, but several essential related fields are included, such as basic statistical concepts, design of tables and questionnaires, editing, coding, and imputation principles, and control and evaluation of nonsampling errors. These related topics are considered necessary for better understanding of subject-matter concepts underlying the editing-tabulating procedures and better understanding of various statistical operations that precede the computer processes. Computer data systems participants interested in other fields of specialization (population, sampling, agriculture, economics, statistical technology, agricultural economics) may select from the list of courses on pages 7 to 9 in accordance with their program objectives and available time.

Participants may also attend seminars or enroll in short courses at education centers or computer installations in the Washington area for training not included in the Census Bureau curriculum. Examples of such training are listed on page 9.

Duration

To receive a diploma it is necessary for the participant to complete the full 1-year program and earn 36 or more USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates). Special programs covering topics not offered in the regular curriculum may be arranged as appropriate. Separate enrollment in the third and fourth periods may be arranged for the COCENTS and CONCOR courses and for the Systems Analysis and Management course for persons with appropriate background (see descriptions of Courses 505, 511, and 512).

Candidate requirements

Participants must have a basic knowledge of algebra. Although a secondary or higher level of education and some working experience in computer data systems are highly desirable, there are no specific data processing prerequisites for the basic courses that begin in September. Participants may also join the program at the beginning of the third training period (or later) if they have had some experience with computer systems. (For English language requirements, see page 5.)

COMPUTER DATA SYSTEMS

COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
501	Computer Processing Fundamentals	20
502	Fundamentals of Programming	20
600	Introduction to Design of Surveys and Censuses	10
	Must choose either 101-1 or 104-1 and 105-1	
101-1	Introduction to Statistical Methods	15
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
Second training period--October 14 to December 19, 1980		
503	Computer Programming in Structured COBOL	70
504	Concepts of IBM Systems 360/370	30
602	Design of Tables and Questionnaires	20
	Must choose either 102 or 104-2 and 105-2	
102	Introduction to Survey Sampling	20
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory--Continued	10
Third training period--January 5 to March 27, 1981		
108	Control and Evaluation of Nonsampling Error	20
505	Systems Analysis and Management	30
509	Advanced Structured COBOL	50
520-1	Field Demonstration Laboratory in Systems Analysis	10
550-1	Seminar: Selected Topics in Computer Data Systems	10
605	Editing, Coding, and Imputation Principles	20
695-1	Special Programs in Statistical Technology	Varies
	Optional:	
103	Intermediate Statistical Methods and Applications	20
506	Disk Operating System (DOS) Concepts and Job Control Language (DOS JCL)	30
507	Operating System (OS) Concepts and Facilities	Varies
508	Operating System Job Control Language (OS JCL)	Varies
Fourth training period--March 30 to June 19, 1981		
511	COCENTS - COBOL Census Tabulation System	40
512	CONCOR - Editing and Imputation System	40
520-2	Field Demonstration Laboratory in Systems Analysis--Continued	10
550-2	Seminar: Selected Topics in Computer Data Systems	10
606	Management of Statistical Activities	10
609	Workshop: Training for Statistical Activities	1 week
695-2	Special Programs in Statistical Technology--Continued	Varies
	Optional:	
510	Data Base Design and Management	40
513	Programming Language I (PL/I) Coding and Testing	Varies
514	FORTRAN IV Coding and Testing	40
515	IBM Systems 360/370 Assembler Language Coding (ALC)	70
607	Introduction to the Use of Computer Package Programs	40
Fifth training period--June 22 to July 31, 1981		
590	Case Study in Computer Data Systems: Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum (see list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

STATISTICAL TECHNOLOGY AND SURVEY MANAGEMENT

Training objectives

The purpose of the program is to equip participants with the wide range of skills required of the survey statistician in the design and implementation of surveys and censuses. The survey statistician has primary responsibility for specific tasks including design of tables and questionnaires, mapping, recruitment and training of data collection personnel, organization of field operations including procedures for control of nonsampling error, development of data processing specifications, and the presentation and dissemination of survey results. These skills will be the primary focus of the Statistical Technology and Survey Management program.

An important part of the survey generalist's job is planning, scheduling, and overall coordination of the numerous tasks performed by subject-matter specialists, mathematical statisticians, and data processing personnel. Introductory and intermediate level courses in sampling, statistical methods, and data processing are therefore an integral part of the program. The design and operational skills which are central to this program can be readily applied to censuses or surveys in any subject-matter area. However, participants are encouraged to obtain a background in the concepts and content of one of the subject-matter areas.

Training plan

The 1-year program is divided into five training periods. The program strongly emphasizes practical applications of the theories and concepts presented in a lecture format. This is accomplished on two levels. In each course theories and concepts are discussed within the context of actual survey or census experience. Several courses use the seminar or workshop format with practical applications as the primary focus.

A key aspect of the ISPC program, the field demonstration survey, provides extensive practical experience on another level. In the third and fourth training periods participants specializing in Statistical Technology and Survey Management join with participants in other specializations to design, plan, and conduct a field demonstration survey. This affords the participants the opportunity of working closely with participants in other areas of expertise, thus giving them a dimension of experience not usually available in regular coursework.

The recommended curriculum for participants specializing in Statistical Technology and Survey Management appears on the next page. In accordance with the objectives of the program, the curriculum reflects the need for background in a wide range of areas. In addition to a sound grasp of survey methods, the recommended program provides the participants with a working knowledge of sampling, statistical methods and data processing operations. Participants are also encouraged to take a related series of courses in a subject-matter area of their choice.

Duration

To receive a diploma it is necessary for the participant to complete the full 1-year program and earn 36 or more USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ months or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates). Participants in the earlier training periods normally enroll in the survey workshop and field demonstration in the fifth period; however, separate enrollment for the fifth period can be arranged for those with appropriate background.

Candidate requirements

Participants must have a basic knowledge of algebra and should have had some work experience (at least 1 year) in a statistical organization. The candidate should be a person who has, or will have, significant administrative or technical responsibility for a survey program. Since courses in sampling and statistical methods are a required part of this program, the completion of an elementary statistics course or its equivalent is especially desirable.

STATISTICAL TECHNOLOGY

COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
600	Introduction to Design of Surveys and Censuses	10
	Must choose either 101-1 or 104-1 and 105-1; other courses optional	
101-1	Introduction to Statistical Methods	15
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
201	Concepts and Tools for Agricultural Statistics	10
210	Introduction to the 1980 World Census of Agriculture	10
301	Population Dynamics and Introduction to Demographic Analysis	20
Second training period--October 14 to December 19, 1980		
601	Introduction to Data Processing for Subject-Matter Specialists	10
602	Design of Tables and Questionnaires	20
603	Geography and Mapping for Surveys and Censuses	20
	Must choose either 101-2 and 102 or 104-2 and 105-2; other courses optional	
101-2	Introduction to Statistical Methods--Continued	30
102	Introduction to Survey Sampling	20
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory--Continued	10
203-1	Agricultural Census and Current Survey Organization and Methods	20
302	Population and Housing Census Concepts and Applications	20
403	Elements of Economic Survey-Census Operations	20
Third training period--January 5 to March 27, 1981		
108	Control and Evaluation of Nonsampling Error	20
604	Data Collection Field Operations	10
605	Editing, Coding, and Imputation Principles	20
609	Workshop: Training for Statistical Activities	1 week
620-1	Field Demonstration Laboratory in Statistical Technology	10
650-1	Seminar: Selected Topics in Statistical Technology	10
695-1	Special Programs in Statistical Technology	Varies
	Optional:	
103	Applied Regression and Correlation Analysis	20
203-2	Agricultural Census and Current Survey Organization and Methods--Continued	20
405	Applications of Economic Survey-Census Techniques	20
406	Family Income and Expenditure Surveys: Design and Methodology	20
Fourth training period--March 30 to June 19, 1981		
109	Quality Control in Censuses and Surveys	20
606	Management of Statistical Activities	10
607	Introduction to the Use of Computer Package Programs	40
608	Analysis, Presentation, and Dissemination of Data	20
620-2	Field Demonstration Laboratory in Statistical Technology--Continued	10
650-2	Seminar: Selected Topics in Statistical Technology--Continued	10
695-2	Special Programs in Statistical Technology--Continued	Varies
	Optional:	
206	Objective Measurement of Area and Yield	30
308	Alternative Strategies for the Collection and Analysis of Demographic Data	10
310	Collection and Analysis of Migration Data	20
430	Economic Enterprise Survey: Field Demonstration Laboratory	10
Fifth training period--June 22 to July 31, 1981		
690	Case Study in Statistical Technology: Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum (see list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

AGRICULTURAL ECONOMICS

Training objectives

Special training programs can be arranged to provide statisticians, planners, and administrators with an opportunity to gain both theoretical and practical training in agricultural economics. This training will provide participants with concepts and skills needed to enable them to more fully utilize the data collected in an agricultural census or current survey. More effective utilization of these data can provide a guide to expand the productive capacity of the agricultural sector to promote more rapid economic development and to raise the level of living of the rural poor.

Training plan

The 1-year program is divided into five training periods. The first four training periods consist of classroom instruction, seminars, conferences, and discussion and laboratory sessions. In the seminar, experts in agricultural economics are invited to discuss topics of special interest to the participants. In addition, each participant reports on some aspect of agricultural economics or development appropriate to his or her country.

The fifth training period concentrates on the last phase of an agricultural economics workshop and field demonstration, using a case study approach. The laboratory, starting in January, covers all aspects of an agricultural economics data system program - from determining the goals and objectives of the program, through sampling and field operations, to the analysis and publication of the data. The field demonstration involves the participant in an actual field exercise in an agricultural area. The participant takes part in designing the tables, questionnaire, and reference manual, selecting the sample, performing listing operations, interviewing a sample of holdings, and processing the results.

A recommended curriculum for agricultural economics participants is shown on the next page. Agricultural economics is the major area of training emphasis, but clearly related auxiliary fields and skills are included, such as agricultural surveys and censuses and economic surveys and censuses, as well as statistical sampling, mapping, design of tables and questionnaires, and basic data processing operations. Training in areas related to agricultural economics, such as in marketing, international trade, linear programming, and economic development can be arranged at the USDA Graduate School or other agencies in the Washington area. Agricultural economists interested in other courses may select from the list on pages 7 to 9 in accordance with their program objectives and within the constraints imposed by the class schedule.

Duration

Programs varying in length from 5 months to 1 year can be arranged. To receive a diploma it is necessary for the participant to complete the full 1-year program and earn 36 USDA Graduate School credits. Participants are advised to arrive about 10 days before classes begin on September 2, 1980. Short programs of 7½ or 5 months (beginning in January or March, respectively) or for other brief periods are offered; however, participants should have previous education or experience equivalent to the training offered in the preceding periods (see section VI on page 4 for requirements for awarding certificates).

Candidate requirements

Participants must have a basic knowledge of algebra and should have had some experience (at least a year) in agricultural economics, agricultural statistics, planning, or economic development. Academic training in statistics, agriculture, or economics is very helpful. A university degree is also desirable, although formal education may range from high school graduation to an advanced university degree. (For English language requirements, see page 5.)

SPECIAL PROGRAMS

ILLUSTRATIVE SCHEDULE OF COURSES AND WORKSHOPS*

		Total class sessions**
First training period--September 2 to October 9, 1980		
401	Microeconomic Concepts for Statisticians	20
701	Concepts and Tools for Agricultural Economics	10
	Must choose either 101-1 or 104-1 and 105-1; must choose either 201 and 210 or 600	
101-1	Introduction to Statistical Methods	15
104-1	Design of Sample Surveys	15
105-1	Survey Sampling Laboratory	5
201	Concepts and Tools for Agricultural Statistics	10
210	Introduction to the 1980 World Census of Agriculture	10
600	Introduction to Design of Surveys and Censuses	10
Second training period--October 14 to December 19, 1980		
402	Macroeconomic Concepts for Statisticians	20
602	Design of Tables and Questionnaires	20
702	Economics of Agricultural Development	20
703	Collecting Statistics on Agricultural Population and Employment	20
	Must choose either 101-2 and 102 or 104-2 and 105-2; other courses optional	
101-2	Introduction to Statistical Methods--Continued	30
102	Introduction to Survey Sampling	20
104-2	Design of Sample Surveys--Continued	30
105-2	Survey Sampling Laboratory--Continued	10
203-1	Agricultural Census and Current Survey Organization and Methods	20
601	Introduction to Data Processing for Subject-Matter Specialists	10
603	Geography and Mapping for Surveys and Censuses	20
Third training period--January 5 to March 27, 1981		
103	Applied Regression and Correlation Analysis	20
108	Control and Evaluation of Nonsampling Error	20
609	Workshop: Training for Statistical Activities	1 week
695-1	Special Programs in Statistical Technology	Varies
704	Integrated Rural Development Projects: Theory and Application	20
705	Use of Agricultural Statistics for Productivity Measurement and Forecasting	10
720-1	Field Demonstration Laboratory in Agricultural Economics	10
750-1	Seminar: Selected Topics in Agricultural Economics	10
	Optional:	
203-2	Agricultural Census and Current Survey Organization and Methods--Continued	20
204	Sample Survey Design--Applications for Agricultural Data Collection	20
205	Frame Construction for Agricultural Samples	20
Fourth training period--March 30 to June 19, 1981		
109	Quality Control in Censuses and Surveys	20
206	Objective Measurement of Area and Yield	30
408	Statistical Tools for Economic Analysis and Development Planning	20
606	Management of Statistical Activities	10
695-2	Special Programs in Statistical Technology--Continued	Varies
706	Use of Agricultural Statistics in Economic Development Planning	10
720-2	Field Demonstration Laboratory in Agricultural Economics--Continued	10
750-2	Seminar: Selected Topics in Agricultural Economics--Continued	10
	Optional:	
607	Introduction to the Use of Computer Package Programs	40
608	Analysis, Presentation, and Dissemination of Data	20
Fifth training period--June 22 to July 31, 1981		
790	Case Study in Agricultural Economics: Workshop and Field Demonstration	Full time

*Selection may be made from other courses listed on pages 7 to 9 to meet specific objectives. Where advisable, arrangements may be made for training in specialized topics not offered in the regular curriculum (see list of supplemental courses on page 9).

**Each class session lasts 1¼ hours; laboratory sessions are 2½ hours.

SPECIAL-PURPOSE PROGRAMS

Sponsors may wish to send a group of participants to ISPC for training on topics which are not included in the ISPC curriculum (such as, census/survey cartography, printing and reproduction, seasonal adjustment of economic data, or the construction of social indicators). Visitation and consultation programs of a few days to a few weeks in length within the Census Bureau and other agencies also can be arranged by ISPC on a wide variety of statistical topics to meet the objectives of individual participants or small groups of participants. Requests for programs of this type should specify the objectives of the visit in as much detail as possible, listing the agencies or individuals to be visited where feasible. Address requests to the--

Chief
Training Branch
International Statistical Programs Center
Bureau of the Census
Washington, D.C. 20233.

PLANNING AND IMPLEMENTING A HOUSEHOLD SURVEY

In June and July 1981 a workshop will be held at ISPC in Washington to assist survey statisticians and administrators in addressing practical problems of survey design, preparation, and implementation which are faced by developing countries in initiating a continuing multi-subject household survey program. The workshop will be based on guidelines developed by the United Nations Statistical Office for the National Household Survey Capability Program, the Atlantida Case Study in Household Sample Surveys developed by ISPC, and selected reference materials actually used in developing countries which have instituted continuing multi-subject household survey programs recently. The topics to be covered during the workshop include establishing survey objectives and planning for the use of the data; making initial decisions about survey content and design; organization, training, and control of field operations; editing, coding, and tabulating the data; and review, interpretation, and dissemination of survey results. The workshop will be divided into a 4-week lecture-laboratory-discussion phase to be followed by a 4-week socioeconomic household survey field exercise. For more information, write to the--

Chief
Training Branch
International Statistical Programs Center
Bureau of the Census
Washington, D.C. 20233.

Description of Courses

The description below outlines the scope and content of each course, the training period in which it is offered, and the number of class sessions that are held. If the course covers more than one training period, the number of class sessions is the total for the entire course. The courses present theory as needed but emphasize the application or practical aspects.

Sampling and Survey Methods

101 Introduction to Statistical Methods
(First and Second -- 45 sessions)

This course is designed for participants who have had little or no training in statistics and whose major interest is in a field other than sampling. In Course 101-1 the purpose is to provide an understanding of elementary statistical concepts including frequency distributions, measures of central tendency and dispersion, probability, expected value, and the concept of sampling distributions. Course 101-2 continues this basic coverage while including the topics of confidence intervals, hypothesis testing, and simple linear regression.

102 Introduction to Survey Sampling
(Second -- 20 sessions)

Course 102 is designed for statisticians whose major interest is in a field other than sampling. It presents the same basic principles of survey sampling as Course 104, except that Course 102 is an abbreviated course with minimum use of mathematics. The topics include simple random sampling, systematic sampling, stratified random sampling, simple one- and two-stage cluster sampling, and ratio estimates. Included also are such topics as area sampling, control of variation in size of clusters for improved estimation, and optimum designs for a two-stage cluster sample when both cost and variance are considered.

103 Applied Regression and Correlation Analysis
(Third -- 20 sessions)

This course expands the concepts of simple linear regression, introduced in Course 101, to the multiple regression setting. Methods of matrix algebra will be introduced to facilitate the discussion of multiple regression, while computer package programs will also be used for computations. In addition to multiple regression, topics include polynomial regression, analysis of variance, use of indicator variables, multicollinearity, autocorrelation, and "best" regressions. Throughout the course the emphasis will be on applications.

104 Design of Sample Surveys
(First and Second -- 45 sessions)

This course presents the principles of survey sampling from both a mathematical and an applied viewpoint. In the first training period, Course 104-1 covers basic statistical theory, simple random sampling, and simple stratified sampling. In the second training period, Course 104-2 covers simple one- and two-stage cluster sampling, stratified single- and multi-stage sampling, ratio estimation, difference and regression estimation, double sampling, and sampling for time series.

105 Survey Sampling Laboratory
(First and Second -- 15 sessions)

The purpose of the laboratory is to enable the participant to apply simple survey design methods and theory to practical problems. Simulated problems relevant to a developing country have been designed to demonstrate techniques learned in Course 104. The sessions also provide an opportunity for the participant to strengthen the ability to use statistical tools, such as mathematical expectation, needed for understanding the fundamental theory on which sampling is based.

106 Variance Estimation in Sample Surveys
(Third -- 20 sessions)

This course covers variance estimation techniques which have been designed to simplify calculation and reduce the costs of variance estimation for the more complex sample designs. The topics that are described include ultimate cluster estimates, random group method, McCarthy's half-sample replications, Tukey jackknife replications, and Taylor's series approximations.

107 Laboratory in Variance Estimation Techniques
(Third -- 10 sessions)

The purpose of the laboratory is to enable the participant to apply practical variance estimation techniques to the solution of problems that are relevant to a developing country. Participants are given simulated data from which estimates are made.

108 Control and Evaluation of Nonsampling Error (Third -- 20 sessions)

This course covers "total error" in sample surveys and censuses, introduces the basic mean square error model, and provides various methods that can be used to estimate the parameters of the model. When sampling is involved in data collection, both sampling and nonsampling errors exist. However, since sampling error is covered in other courses, the emphasis of this course will be on nonsampling errors. The treatment will cover methods for their control and reduction in the preparatory, data collection, and processing stages of a survey (or census) and methods for evaluating the effects of the remaining errors in the final results. Actual sample survey and census case studies will be used to illustrate control and evaluation techniques.

The course is designed to provide basic information required for a full understanding of the logic underlying specific quality control techniques provided in Course 109.

109 Quality Control in Censuses and Surveys (Fourth -- 20 sessions)

This course covers statistical quality control and its application in a statistical system. Whereas Course 108 in the preceding training period identifies error sources and describes general control and evaluation techniques, Course 109 provides specific quality control procedures to be implemented. The primary objective is to provide the participants with a working knowledge of construction and use of Shewhart control charts and the fundamentals of acceptance sampling in a survey situation. Particular emphasis is given to the study of how quality control procedures can be employed in data collection and data processing operations since these are the major sources of error in census or survey data.

110 Applications of Current Survey Design and Evaluation Techniques (Fourth -- 20 sessions)

This course illustrates actual application of sampling principles in design of surveys and censuses for many different subject areas. In addition, actual applications of different types of post-enumerative surveys and evaluative studies are covered. This is accomplished through study of case histories involving sample censuses, one-time sample surveys, and continuing sample surveys for subject areas such as population, labor force, housing, agriculture, and industry.

120 Field Demonstration Laboratory in Sampling and Survey Methods (Third and Fourth -- 20 sessions)

Participants jointly prepare the technical plans and materials to be used in a sample survey workshop and field demonstration. These include preparation of a sample design; formulation of plans for collecting, processing, and tabulating data; preparation of such materials as table outlines, edit specifications, and instruction manuals for all field operations; and setting up quality control techniques for various operations. The technical knowledge needed to prepare plans and materials will have been acquired in the courses studied earlier; the purpose of the laboratory, therefore, is to apply this knowledge in preparing for a live census-survey demonstratio Specialists in sampling may choose to participate in the agricultural sample survey or the socio-economic sample survey together with participants in agricultural statistics, population statistics, economic statistics, computer data systems, statistical technology, and agriculture economics (see Courses 220, 320, 420, 520, 620, and 720).

150 Seminar: Selected Topics in Sampling and Survey Methods (Third and Fourth -- 20 sessions)

The participant, working under the guidance of the staff sampling adviser, reports on some aspect of sampling and survey methods appropriate to his or her country, using the skills acquired from previous sampling and statistical courses. Additiona experts in sampling applications are invited to discuss topics of interest to the participants.

190 Case Study in Sampling: Workshop and Field Demonstration (Fifth -- 6 weeks full time)

The case study presents techniques for organizing and conducting multi-purpose household sample surveys, with particular emphasis on demographic and economic characteristics, or an agricultural survey. The workshop begins with an intensive 3-week study, with discussion and class exercises. The primary objective is to study the interrelationships between the various skills and techniques needed to implement a survey program and how they can be adapted to the country's needs; the detailed technical knowledge for the various operations will have been acquired earlier in the curriculum. The topics discussed during the workshop include the following: (a) objectives of a survey, (b) content and design, (c) sample design, (d) field operations, (e) distribution and receipt of survey materials, (f) editing and coding, (g) tabulation processes, (h) evaluation of survey procedures and review and analysis of data, and (i) publication and dissemination of survey results.

An important part of the training is the 3-week field demonstration, which gives the participant firsthand experience in locating the sample segments, listing, interviewing, reinterviewing, editing and coding, tabulating, evaluating the results, and preparing a survey data release.

Agricultural Surveys and Censuses

201 Concepts and Tools for Agricultural Statistics (First -- 10 sessions)

Basic concepts relating to agricultural statistics and the linkage of census and current statistics are studied, concepts include holding, holder, crops, livestock, etc. Other topics discussed include timing, scope, legislation, and coverage of censuses and surveys, and the establishment of priorities for different types of data.

203 Agricultural Census and Current Survey Organization and Methods (Second and Third -- 40 sessions)

Both censuses and current surveys are assumed to be based on probability samples and the differences between the two are pointed out where significant. From this point censuses and current surveys are treated the same. The course follows the survey cycle from recognition of data needs through review and analysis of the completed survey. Topics discussed include the statistical organization, making estimates, and writing and distributing results. In addition, major emphasis is placed on planning and survey operations. A few areas discussed briefly are given detailed treatment in separate required courses (e.g., mapping, questionnaires, field operations, data processing, and sample design).

Materials to be used include the Agrostan Census Case Study, examples of actual operational materials for current surveys, and the FAO Program for the 1980 World Census of Agriculture. Prerequisite: Attendance in 201 and 210 or passing grade in 201, 210 exams.

204 Sample Survey Design--Applications for Agricultural Data Collection (Third -- 20 sessions)

Various sample designs can be used for the collection of agricultural data. The purpose of this course is to demonstrate actual application of sample design principles and execution of them in the United States and developing countries. Area frame sampling is developed in the first part of the course, using the June Enumerative Survey design as applied by the U.S. Department of Agriculture as an example. Extensions of the area frame design, including multiple frame and interpenetrating (replicated) samples and specific applications to developing countries, are also discussed. This is followed by alternative sampling designs which provide for one-time, short-term data collection where funds, time, or frame information may be limited. Prerequisite: Adequate knowledge of 104-1 and 104-2 or 102.

205 Frame Construction for Agricultural Samples (Third -- 20 sessions)

Participants study the various activities connected with area sample frame construction. These include techniques in map interpretation, measuring areas from maps for the purpose of delineating counting units, and identifying boundaries. Participants study the selection of sample counting units, using a stratified simple random sample, a systematic sample selection procedure, and an interpenetrating sample. Estimating methods are discussed briefly to place these topics in perspective.

206 Objective Measurement of Area and Yield (Fourth -- 30 sessions)

In many countries, respondents are unable to give even reasonable estimates of field size or total land area in their holdings. A possible solution is objective measurement of each. Techniques include measurement of distances, angles, and elevation, and sketching of the area under survey. Estimating area from maps and aerial photography and the use of sampling techniques for area measurement (including point sampling) are discussed.

As with land measurement, respondents often cannot report good measures of crop production; again, objective measurement is a practical technique. The course covers methods of objectively measuring yield for (a) cereal crops such as wheat and rice, (b) row crops such as maize and cotton, and (c) tree fruits and nut crops such as apples, citrus fruits, and filberts. Topics covered include sample design and selection, field procedures, crop-cutting, forecasting, and estimation procedures. Examples of techniques used in developing countries are discussed. Participants have an opportunity to do some actual measurement in connection with the field work. Prerequisite: Adequate knowledge of subject-matter in 101, 102, and 103, or 104.

207 Agricultural Estimating Techniques (Fourth -- 10 sessions)

This course covers the process of transforming survey results into publishable estimates (or of verifying calculated estimates) of crop and livestock production and forecasts of yield and future production. The course illustrates the practical use of check data, regression and time series charts, balance sheets, and composite estimating techniques.

210 Introduction to the 1980 World Census of Agriculture (First -- 10 sessions)

The background and importance of the World Census of Agriculture are presented along with a discussion of the significance and characteristics of an agricultural census and general issues and considerations in planning a census in a developing country. Items, concepts, and definitions proposed by the FAO are emphasized. Text materials include FAO publications for the 1980 World Census of Agriculture Program.

220 Agriculture Field Demonstration Laboratory (Third and Fourth -- 20 sessions)

Participants manage and operate their own survey organization within the workshop. Survey objectives, organizational outline, and major due dates are given. Participants use these, reference materials, and knowledge from earlier courses to jointly prepare operational and technical plans and materials to be used in a sample survey which will be carried out in a following workshop (Course 290). The work to be done includes developing the schedule of activities, making work assignments, and follow-up review. Participants carry objectives through development of tables and questionnaires. They may implement a recommended multiple frame sample design or develop and implement an acceptable alternative, including frame development and preparation of field mapping materials. Plans and procedures are developed for enumerator training, data collection, editing, processing (both manual and computer), publication, evaluation, and quality control. Instruction manuals are written and published for field and office operations. Prerequisite: Adequate knowledge of subject-matter in 201, 210, 203, 102, 602 and 603.

250 Seminar: Selected Topics in Agricultural Statistics (Third and Fourth -- 20 sessions)

This seminar comprises a series of discussions on various topics related to agricultural statistics and general economic development. For the most part, topics to be discussed are suggested by the participants themselves. The seminar will include reports given by the participants on some aspect of agricultural statistics appropriate to their countries, as well as lectures given by experts in agricultural statistics. Participants should bring with them reference and illustrative materials to describe their country, job, a survey technique, or a statistical or economic problem to be discussed in this seminar.

290 Case Study in Agricultural Statistics: Workshop and Field Demonstration (Fifth -- 6 weeks full time)

The 3-week workshop involves the participants in the study of concepts, procedures, and materials from actual surveys and censuses conducted in selected developing countries, and other materials developed for use in the workshop. During the workshop, participants review these materials and attempt to relate them to current agricultural survey or census problems in their own country.

The 3-week field demonstration involves the participants in conducting an actual agricultural sample survey in a rural farming area for the purpose of putting into practice their earlier classroom training. Materials and procedures developed during the Agriculture Field Demonstration Laboratory, such as survey questionnaires and forms, instruction material, procedures for selection of sample enumeration areas, and table formats, are utilized during the field demonstration. In the field demonstration, participants carry out the principal activities involved in collecting agricultural statistics. They (a) select a sample of area segments; (b) enumerate a sample of holdings; (c) edit, code, and tabulate the data, (d) analyze the tabulations, and (e) prepare a survey data release. Prerequisite: Adequate knowledge of activities in 220 and subject-matter in 220 prerequisites.

Population Statistics and Demographic Analysis

301 Population Dynamics and Introduction to Demographic Analysis (First -- 20 sessions)

This course provides an overview of the world demographic situation as well as an introduction to the principles of demographic analysis. In the first portion of the course, the determinants and consequences of population trends are considered from various perspectives. Emphasis is given to the important relationships between population trends and social, economic, and ecological problems in developing countries. In the second portion, emphasis is placed in the measurement objectives of demographic data collection. Procedures used to estimate the components of population change are introduced.

302 Population and Housing Census Concepts and Applications (Second -- 20 sessions)

In this course selected portions of the Popstan Case Study for 1980 Population and Housing Censuses are used as a basis for studying how censuses are planned and carried out. Planning requirements are emphasized throughout, and major attention is given to initial decisions on content and uses of data; legislation, confidentiality, and publicity; budgeting, scheduling, and reporting systems; and equipment and facilities requirements.

The following topics are discussed with respect to both the complete count and the sample census stages: organization and functions of staff, administrative controls; concepts, questionnaires, and table outlines; pre-enumeration field operations; data collection procedures; data processing operations; publication and analysis of data; and evaluation and use of data. Many of the topics discussed in this course are relevant to current surveys as well as to censuses. The integration of census and continuing household sample survey programs is emphasized.

303 Civil Registration and Vital Statistics Methods (Second -- 20 sessions)

Birth and death statistics, based on civil registration, are an important source of demographic and health data. Based on these data, trends in fertility, mortality, and population growth may be estimated for use in economic planning. Vital data also provide information for the planning and evaluation of health and population programs. This course will emphasize the methods of organizing and operating a civil registration and vital statistics system, including the legal basis for such a system, organizational structures, design of documents and forms, storage and retrieval of information, coding and processing of statistical data, and analysis of data at an elementary level.

304 Techniques of Demographic Analysis: Mortality and Fertility (Second -- 20 sessions)

Basic methods of demographic analysis provide the fundamental methodology for evaluation and analysis of population data of varying quality and scope. This course presents basic methods for analysis of population composition, fertility and mortality, including an introduction to the construction and use of the abridged life table and to selected general methods, e.g., interpolation, cohort analysis. Attention is given to the requirements for good data and consideration of the major types of error. Examples of practical applications are used throughout the course.

305 Demographic Analysis Laboratory (Second -- 10 sessions)

In this supervised statistical laboratory, participants complete exercises which give them practice in the desk calculator computation of the elementary demographic measures of population composition, fertility, and mortality which are introduced in Course 304. Emphasis is on the practical aspects of the calculation of basic demographic functions using data from the participant's own country whenever they are available. Participants also are introduced to the use of the electronic computer for the computation of abridged life tables and various other demographic measures.

306 Demographic Measures from Incomplete Data (Third -- 40 sessions)

In a number of countries, there are major deficiencies in the quantity and quality of population data that are available as a basis for estimating fundamental demographic measures. Participants learn techniques for estimating measures of population composition, fertility, and mortality from limited and incomplete data. Emphasis is placed on the use of model life tables, Brass techniques for estimating levels of mortality and fertility, and "own children" and pregnancy history techniques for estimating fertility. Techniques for evaluating the quality of data and making appropriate adjustments are also discussed.

307 Advanced Demographic Analysis Laboratory (Third -- 10 sessions)

Participants complete laboratory exercises, using data for their own countries, to give them practical experience in the application of the more advanced techniques of demographic analysis. The laboratory is conducted in conjunction with Course 306, Demographic Measures from Incomplete Data.

308 Alternative Strategies for the Collection and Analysis of Demographic Data (Fourth -- 10 sessions)

A fundamental knowledge of the size and direction of population change is needed for social and economic planning on a national scale. Current demographic information required to estimate population change is often difficult to find during intercensal periods, or when censuses have not been taken. This course introduces several plans and methods to measure population change and particularly vital events where such information either does not exist, is statistically unreliable, or is outdated. Emphasis is placed on the dual record collection system, multi-round surveys, and single-round surveys such as the World Fertility Survey, and the types of demographic analysis that stem from each type of data collection system.

309 Workshop: Preparation of Demographic Reports (Fourth -- Varies)

The purpose of this workshop is to familiarize participants with basic principles of report writing and to provide them with an opportunity to apply many of the techniques they have learned in previous courses to a specific research problem. Participants work in groups under the supervision of a training adviser to prepare country-specific demographic profiles or reports on other population-related topics.

310 Collection and Analysis of Migration Data (Fourth -- 20 sessions)

High fertility levels and the resulting rapid rate of population growth usually have been identified as the population problem of developing countries. Recently, however, increased attention has been paid to the effects of massive flows of migrants to the cities in these countries. In the first part of this course, the participant is introduced to the practical application of techniques for measuring international and internal migration. Indirect methods for estimating migration rates when migration data are incomplete or unreliable are emphasized. In the second portion of the course, special emphases are placed on the design and methodology of migration surveys with focus on the upcoming ESCAP migration projects. Consideration also is given to strategies for the analysis of migration data coming from these types of surveys.

311 Population Estimates and Projections: Concepts and Applications (Fourth -- 20 sessions)

The course covers the component method for the preparation of estimates and projections of the size and composition of the population. It also deals with procedures for preparing population estimates by age and sex for use as controls for the development of ratio estimates from surveys. Participants will have the opportunity to practice the preparation of population estimates and projections at the national and subnational level, including special projections of households and families, labor force, and school enrollment. Participants will be introduced to the use of the electronic computer for the preparation of projections and estimates. Data from the participants' countries are used in the exercises.

320 Population Field Demonstration Laboratory (Third and Fourth -- 20 sessions)

Participants jointly prepare the technical materials and procedures to be used in the Field Demonstration (Course 390). These include the survey questionnaire and forms, field instruction manual, table outlines, sample design for selecting the enumeration units, editing and tabulation plans, and quality control techniques for the various operations. The technical knowledge needed to prepare plans and materials will have been acquired in the courses studied earlier; the purpose of the laboratory, therefore, is to apply this knowledge in preparing for a live census-survey demonstration.

350 Seminar: Selected Topics in Population and Demography (Third -- 10 sessions)

The seminar comprises a series of discussions on various topics related to population or demography. It is designed to expand participants' knowledge on various topics and techniques of demographic analysis not regularly included in other scheduled courses. These topics are intended to familiarize participants with various types of demographic research and to provide them with an opportunity to learn how specific techniques can be applied to situations in developing countries.

390 Case Study in Population Statistics: Household Survey Workshop and Field Demonstration (Fifth -- 6 weeks full time)

Concepts and procedures for collecting population data in a multi-subject household sample survey are brought together within the context of a case study and are presented in a 3-week workshop. The primary objective of the workshop is to study the interrelationships between the skills and techniques needed to implement a multi-subject household survey program. Applications of field techniques are accomplished in the 3-week field demonstration.

Economic Surveys and Censuses

401 Microeconomic Concepts for Statisticians (First -- 20 sessions)

The objective of this course is to introduce microeconomic phenomena of the market place, where households and business firms interact through the medium of real and money exchanges. Discussion includes consumer economics, forms of production, and resource allocations, as well as the general equilibrium situation of maximum welfare. The instruction presents basic concepts on which applications of economic principles are based.

402 Macroeconomic Concepts for Statisticians (Second -- 20 sessions)

This course is an introduction to the macroeconomic variables that make up a nation's economy. Emphasis is placed on the measurement of economic activity in both real and monetary terms. Measurements in the household, business and industry, government, and foreign trade sectors stress such common economic indicators as consumer income and expenditures and labor force status, business inputs and outputs, government revenues and expenditures, and imports and exports.

403 Elements of Economic Survey-Census Operations (Second-- 20 sessions)

The course emphasizes the need for economic surveys and censuses in terms of uses of statistical data for decisionmaking by governments and business communities. It develops an understanding of the individual elements which make up a successful survey or census, such as the need for and development of an establishment directory, and the importance of complete coverage and quality data. Alternative operational elements are investigated, for example, alternative methods of collecting data from economic units based on socioeconomic conditions of the country. The United Nations recommendations, including those for the World Programme of Industrial Statistics, are integrated into the discussion of operational elements. Solutions for the special problems of countries initiating or developing economic statistics programs are considered.

404 Economic Index Construction: Principles and Applications (Third -- 20 sessions)

Knowledge of index construction is important for the study of change in many economic aggregates. Use of index techniques as applied to consumer and wholesale prices, production, employment, and productivity are studied. Discussion includes problems of weighting, quality, change, and discontinuity of time series data. Opportunity is provided to calculate test indexes using data from the participant's country.

405 Applications of Economic Survey-Census Techniques (Third -- 20 sessions)

Selected portions of the Providencia Case Study for Economic Censuses are used as a basis for studying how censuses are planned and carried out in practice. In this course, the economic censuses refer primarily to business (wholesale, retail, and service trades) and industry (manufacturing). Emphasis is given to development of operational definitions, procedures, and documents which translate census concepts and objectives into well-structured series of instructions and processes; these become the working guidelines of national technicians responsible for census planning and execution. Many of the applications relate both to censuses and to surveys. Applications that are discussed in this course are put into practice in a field exercise in the next training period.

406 Family Income and Expenditure Surveys: Design and Methodology (Third -- 20 sessions)

Statistics on income and expenditures at the household level are important inputs into the economic planning of a country. The course deals with operations related to the collection, quality control, tabulation, and analysis of data on income and expenditures, with special consideration for situations in developing countries; additionally, emphasis is given to the special problems associated with survey design, recall factors, and estimation procedures. Operations are presented in the context of household surveys as distinct from economic enterprise surveys and censuses.

407 Foreign Trade Statistical Operations (Second -- 20 sessions)

The basic operations of a foreign trade statistics program are studied. Included are such topics as data collection, processing and flow of documents, sampling techniques, data preparation, review and analysis, and timely presentation of data. Emphasis is placed on the continuous coordination and control requirements to successfully produce foreign trade statistics.

408 Statistical Tools for Economic Analysis and Development Planning (Fourth -- 20 sessions)

This course is designed to introduce the participant to the use of statistical tools in quantitative economic analysis. Specific statistical applications are presented for such techniques as regression analysis and time series analysis. Using computer statistical programs, the participant has the opportunity to test the statistical tools in several applications such as demand and supply analysis and growth and development analysis. Other topics included in the course include the development of econometric models and their use as a forecasting tool, and the use of economic statistics for research, analysis, and policymaking.

420 Socioeconomic Field Demonstration Laboratory (Third and Fourth -- 20 sessions)

Participants jointly prepare the technical materials and procedures to be used in the socioeconomic household survey field demonstration (Course 490). These include the survey questionnaire and forms, field instruction manual, table outlines, sample design for selecting enumeration units, tabulation plans, and quality control techniques for the various operations. The technical knowledge needed to prepare plans and materials will have been developed in the courses studied earlier; the purpose of the laboratory, therefore, is to apply this knowledge in preparing for a survey-census demonstration.

430 Economic Enterprise Survey: Field Demonstration Laboratory (Fourth -- 10 sessions)

In the field demonstration laboratory participants prepare materials, develop procedures, and conduct an economic enterprise survey applying techniques learned in Course 405. The laboratory also provides the participants the opportunity to evaluate the results of the field exercise.

450 Seminar: Selected Topics in Economic Statistics (Fourth -- 10 sessions)

The seminar is comprised of a series of discussions on various topics related to economic statistics and economic development. For the most part, topics to be discussed are suggested by the participants. The seminar may include reports given by the participants on some aspect of economic statistics appropriate to their countries, as well as lectures given by experts in economic statistics.

490 Case Study in Socioeconomic Statistics: Household Survey Workshop and Field Demonstration (Fifth -- 6 weeks full time)

Knowledge of economic activity generated by consumer units (households) is needed for social and economic planning in countries with scarce resources. Concepts and procedures for planning and conducting economic sample surveys of households are brought together within the context of a case study and are presented in a 3-week workshop, with particular emphasis on obtaining data on labor force participation and consumer income and expenditures. A major part of the workshop deals with the interrelationships between the skills and techniques needed to implement a multi-subject household survey program. Applications of field techniques are accomplished in the 3-week field demonstration.

Computer Data Systems

501 Computer Processing Fundamentals (First -- 20 sessions)

This course is designed to familiarize the participant with numbering systems, data formats, and use of data processing techniques or tools such as flowcharts, decision tables, and printer spacing charts. Computer components, input/output devices, and types of computer languages and programming systems are discussed.

502 Fundamentals of Programming (First -- 20 sessions)

This course introduces the participant to problem definition and analysis, problem-solving techniques, and procedural documentation. The participant is given practice in analyzing simple data processing problems, preparing programming flowcharts, and printing layout charts. The

participant also learns to chart input and output operations, loops, switching routines, and branches.

503 Computer Programming in Structured COBOL
(Second -- 70 sessions)

The participant learns by theory and practice the Common Business Oriented Language (COBOL) and its applications. The following operations or programming techniques are taught: basic input/output, addition, subtraction, editing, multiplication, division, the COMPUTE verb, comparing, nested IF statement, single- and multiple-level control breaks, and table lookup and table search. Structured program design and coding are emphasized. The course is taught around a series of problems for which the participant designs, codes and tests a solution. Emphasis is placed on giving each participant as much practical experience on a computer as possible with the instructor offering counseling assistance.

504 Concepts of IBM Systems 360/370
(Second -- 30 sessions)

Major topics covered in this course include the central processing unit, program execution, programming systems, input-output channels, and control units and devices. Special attention is given to the specific hardware that will be available to participant technicians during their training.

505 Systems Analysis and Management
(Third -- 30 sessions)

The course is designed to give the participant preliminary training for future responsibilities as a systems analyst, project leader, or manager of an ADP installation. It describes extent and tasks of systems analysis which, in an ADP installation, deals with the analysis of the job requirements and the design of a data processing system to meet these requirements. Topics include the analyst's role in assisting in the designing of a questionnaire or source document; design of record formats and table formats; and planning of clerical and computer operations required, such as coding, editing, sorting, and tabulating. The training emphasizes the principles and techniques of systems analysis and design, feasibility studies and their use, and the establishment of controls and standards for insuring accuracy and timeliness in data processing.

506 Disk Operating System (DOS) Concepts and Job Control Language (DOS JCL)
(Third -- 30 sessions)

The purpose of this course is to enable the participant to acquire in-depth understanding of the Disk Operating System (DOS). Topics that are covered include the development of a program in the DOS system and the respective roles played by the language translators, data management facilities, and the linkage editor program. In addition, the execution of a program is studied with respect to functions of the DOS Control Program, which consists of the initial program loader (IPL), the supervisor program, and the job control program.

This course also presents the functions of the Job Control Language (JCL) for DOS. The participant learns to use the JCL for simple jobs, then progresses to more advanced techniques utilizing the core image and relocatable libraries, as well as those techniques that are concerned with device independence and multi-programming.

507 Operating System (OS) Concepts and Facilities
(Third -- Varies)

In this course, the participant acquires a basic knowledge of the concepts of the more complex and powerful Operating System (OS) and the facilities that it provides. Functional areas within the OS are covered; these include job management, task management, and information management. Control program options, including multi-programming with a variable number of tasks (MVT), are discussed.

508 Operating System Job Control Language (OS JCL)
(Third -- Varies)

The Job Control Language is presented for the more complex and powerful Operating System (OS). Emphasis is placed on the use of this control language to best utilize OS to accomplish the following: multi-programming with a variable number of tasks (MVT), library maintenance, and the creation and retrieval of data sets organized by the sequential, indexed sequential, and direct access methods.

509 Advanced Structured COBOL
(Third -- 50 sessions)

This course further develops the structured design and coding techniques taught in Course 503. The course is taught around a series of problems for which the participant designs, codes, and tests a solution. Problems illustrate the

following concepts: input editing, sequential disk output, use of two input files and matching, sequential file updating, creation of an indexed sequential file, random updating, and retrieval of an indexed sequential file. Emphasis is placed on giving each participant as much practical experience on a computer as possible with the instructor offering counseling assistance.

510 Data Base Design and Management (Fourth -- 40 sessions)

The participant will be introduced to concepts of information storage, classification, and retrieval. Areas covered will include structures, access methods, keyed files, indexing, maintenance, reorganization, error-handling, links, addressing algorithms, and search strategies.

511 COCENTS - COBOL Census Tabulation System (Fourth -- 40 sessions)

The COBOL Census Tabulation System (COCENTS) is a software system designed to accelerate census processing and reduce the time required to write computer programs and tabulate a census by as much as 50 percent compared with the usual methods. Participants study the concepts involved in the software in order to adapt the system to their countries' needs. Additionally, they learn how to prepare parameter cards which utilize the capabilities of the software. Although designed primarily for population and housing censuses, the system is applicable to agricultural censuses, household sample surveys, and many other statistical programs.

512 CONCOR - Editing and Imputation System (Fourth -- 40 sessions)

The CONCOR data editing system is designed to be a general-purpose software tool for the identification and correction of data inconsistencies in various types of surveys and censuses. The concepts involved in the software are studied by the participants in order to adapt the system to their countries' needs. They learn how to prepare the parameter cards in order to use the capabilities of the software.

513 Programming Language I (PL/I) Coding and Testing (Fourth -- Varies)

The course enables the participant to write complete programs for application in PL/I, using basic input/output features. Participants code and test programs. Topics that are covered include basic concepts, PL/I constants and variables, arithmetic statements, function statements, and processing control including basic input/output considerations, loop control, subscripting, and subroutines.

514 FORTRAN IV Coding and Testing (Fourth -- 40 sessions)

The course enables the participant to write complete programs for application in FORTRAN IV, using basic input/output features. The participant codes and tests the programs. Topics that are covered include basic concepts, FORTRAN constants and variables, arithmetic statements, function statements, and processing control including basic input/output considerations, loop control, subscripting, and subroutines.

515 IBM Systems 360/370 Assembler Language Coding (ALC) (Fourth -- 70 sessions)

In this course the participant learns, by theory and practice, the IBM 360/370 assembler language and its use for programming. The participant studies and uses instructions dealing with information movement, binary integer arithmetic, subroutine linkage, conversions, constants, branching, looping, address modification, and decimal arithmetic. In the latter part of the course, the participant extends this knowledge and skill into areas such as advanced ALC instructions, IOCS (the Input/Output Control System), debugging, and macro instructions. Then more emphasis is placed on programming techniques and the design, coding, and testing of participant programs.

520 Field Demonstration Laboratory in Systems Analysis (Third and Fourth -- 20 sessions)

Participants jointly prepare the technical materials and procedures to be used in planning and processing the Field Demonstration Survey (Course 590). These include questionnaire layout, control forms, coding systems, tabulation outlines, decision tables, flow charts, and quality control procedures. The technical knowledge needed to prepare plans and materials will have been developed in the courses studied earlier; the purpose of the laboratory, therefore, is to apply this knowledge in preparing for a live census-survey demonstration.

550 Seminar: Selected Topics in Computer Data Systems (Third and Fourth -- 20 sessions)

This seminar comprises a series of discussions on various topics related to computer data systems. Research in this area is accomplished by

: participants; reports are given by each :ticipant and discussed by the entire group. :se reports pertain to some aspect of data)cessing appropriate to the participant's ıntry. Outside experts may be called upon give a highly specialized presentation on ne phase of computer technology.

) Case Study in Computer Data Systems: Workshop and Field Demonstration (Fifth -- 6 weeks full time)

: workshop is designed to give the par- :ipant practical experience in the analysis the data processing operation and the ıign of a system for a specific illustrative :vey, emphasizing input preparation, up- :ing processing techniques, and maintenance controls. During the field demonstration, : computer specialist joins the subject- :ter specialists in an actual sample :vey operation in the field; the field :k involves not only data collection but ıo editing, processing, and evaluation the results. The workshop and field)erience give the computer data systems ılyst the opportunity to utilize, in a ıctical way, the knowledge gained through- : the training program.

Statistical Technology and Survey Management

Introduction to Design of Surveys and Censuses (First -- 10 sessions)

s course will provide an introduction to the or steps involved in the initial process of ıigning a census or survey. The course will us on the basic design features which are mon to all surveys and censuses, regardless subject-matter content. These include cification of objectives, consideration of get and sample limitations, decisions about ch variables should be measured and how, selection of methods for collecting and cessing data. The course will stress the errelationships among different survey ivities and how these must be taken into ount when decisions are made about over- design. The interdependent nature of ious activities will be illustrated ough the use of flowcharts and GANTT charts.

treatment of major aspects of the survey- sus process given in this course will help ticipants to fully understand the role of er statistical technology courses in the : program.

601 Introduction to Data Processing for Subject-Matter Specialists (Second -- 10 sessions)

The objective of this course is to teach participants the fundamentals of computer technology; it strives to develop an awareness of the capabilities and restrictions involved in the use of the computer as a processing tool. The participant becomes familiar with the functions and interrelations of the major computer components and acquires a working grasp of the unique technical language used in the data processing area. The course emphasizes the importance of communication between the subject-matter specialist and the data processing systems analyst in assuring the processability of the data that are collected in surveys and censuses. Class exercises illustrate the use of the flow chart, decision logic table, and statistical table computer output.

602 Design of Tables and Questionnaires (Second -- 20 sessions)

This course covers the principles and techniques used in the development of questionnaires, forms, and statistical tables for surveys and censuses. Participants learn how to translate subject-matter concepts into questions designed to elicit accurate responses which fulfill survey objectives. Each step in questionnaire design is discussed in detail. Laboratory sessions are an important part of the course since they enable participants to practice applying the principles learned to actual development of questionnaires. Guidelines for tabular presentation and the basic components of the statistical table are introduced. The importance of preparing table outlines and defining concepts very early in the survey planning process is stressed; otherwise the questionnaire may fail to produce the desired results.

Apart from the mechanics of questionnaire design, the course attempts to convey an understanding and appreciation of the role of questionnaire development in the overall design of the survey or census. A major theme throughout the course is the ways in which questionnaires may produce incomplete or inaccurate responses. This must be understood so that these problems can be avoided in designing questionnaires.

603 Geography and Mapping for Surveys and Censuses (Second -- 20 sessions)

A study is made of the geographic aspects of survey and census work, especially practical methodology in the use of maps in preparing for and carrying out surveys and censuses. The course points out the

importance of recordkeeping when compiling maps for the purpose of delimiting areas for which statistical information is to be collected. The use of maps for area sampling is covered. Field survey methods and the techniques of map drafting and reproduction are outlined and explained. The importance of developing skills in map reading and interpretation for data collection field operations is emphasized. Graphic presentation of statistical data is studied by means of practical exercises in plotting and preparing statistical maps and charts. Alternative procedures to be used when adequate maps are not available also are discussed.

604 Data Collection Field Operations (Third -- 10 sessions)

This course covers the principles of data collection field operations which are basic to any survey or census, regardless of subject matter content. Development of a data collection field organization and associated procedures is discussed in light of two major objectives; to minimize costs and to promote data quality. Major topics include alternative organizational structures, administrative control systems, recruitment and training of field staff, pretesting, and implementation of techniques for control and evaluation of nonsampling error as they relate to field operations.

605 Editing, Coding, and Imputation Principles (Third -- 20 sessions)

This course covers basic principles of editing, imputation, and coding and recoding of agricultural, demographic, and economic data. A combination lecture-laboratory approach is used to illustrate various manual field edit and office edit procedures. The desirability of automatic (versus manual) error location and correction procedures is emphasized. Participants learn to set up edit specifications and to verify that processing operations satisfy them. Lectures cover "cold deck" and "hot deck" techniques for imputing data where item nonresponse exists. Participants practice application of these editing and imputation techniques on a sample data set in laboratory sessions.

The course also covers coding operations required to translate non-quantitative information recorded on a questionnaire into numerical form for input to the computer. Combination of several related item codes into a single code for convenience and efficiency in the tabulation is discussed. The importance of minimizing manual coding and recoding to reduce nonsampling error is emphasized.

606 Management of Statistical Activities (Fourth -- 10 sessions)

This course examines in detail the planning, scheduling, organizing, and controlling of work in a statistical organization. An overview of management thought and theory provides the basis for defining the various roles of the manager. Emphasis is on practical application of managerial skills and techniques to the special problems of an organization engaged in conducting surveys and censuses. Consideration is given to allocation and utilization of resources, project evaluation, and determination of long-range goals and needs. Topics are presented in a variety of ways intended to make the classroom experience as close as possible to the "real" work world.

607 Introduction to the Use of Computer Package Programs (Fourth -- 40 sessions)

The objective of this course is to teach subject-matter specialists how to use one of the following computer packages; CONCOR, COCENTS, SAS, or SPSS. This course is designed for participants who have never worked with computers but who have had a minimal introduction to data processing, by completing ISPC Course 601 or equivalent training or experience.

Since only one package can be presented within the available time, an attempt will be made to select the package which is compatible with the interests and needs of the greatest number of participants. CONCOR is a generalize computer edit and imputation software system designed and developed primarily to facilitate processing of the 1980 round of population and housing censuses; however, the system is applicable to processing for agricultural censuses, household sample surveys, and many other types of statistical programs. COCENTS is a tabulation software system developed to reduce the time required to write computer programs to tabulate census and survey data. The SAS and SPSS package programs are designed to perform basic clerical and statistical manipulations, sort and plot data, obtain minimum and maximum values, calculate linear and multiple regressions, and similar procedures.

608 Analysis, Presentation, and Dissemination of Data (Fourth -- 20 sessions)

This course introduces participants to techniques of exploratory data analysis. Emphasis is placed on the application of basic statistical tests to aid in interpreting data obtained in a census or survey. Special attention is paid to developing skill in interpretation of data to answer informational requirements of policymakers and other data users.

This course also covers the role of statistical reports in a census or survey program. Topics include the functions of text, tables, and graphics for transmitting quantitative information; application of standards for the presentation of error; the assembly and production of the report; and the distribution of reports in accordance with census-survey objectives.

609 Workshop: Training for Statistical Activities (Third and Fourth -- 1 week full time)

Improvement of training is one of the best ways a statistical organization can enhance the timeliness and quality of its data. Participants in this workshop identify those statistical activities for which training is required, they examine the ways adults learn, determine the types of training materials that are needed, and study effective instructional techniques. The role of the training staff and the functions performed by the staff are developed. Emphasis is on practical exercises designed to improve skills in classroom instruction and planning and preparation of training materials.

620 Field Demonstration Laboratory in Statistical Technology (Third and Fourth -- 20 sessions)

Participants jointly prepare the technical materials and procedures to be used in the Field Demonstration (Course 690). These include the survey questionnaire and forms, field instruction manual, table outlines, sample design for selecting the enumeration units, editing and tabulation plans, and quality control techniques for the various operations. The technical knowledge needed to prepare plans and materials will have been acquired in the courses studied earlier; the purpose of the laboratory, therefore, is to apply this knowledge in preparing for a demonstration survey.

Participants enrolled in the statistical technology specialization may choose to work on the agricultural sample survey or the multi-subject household survey together with participants in sampling, agricultural statistics, population statistics, economic statistics, computer data systems, and agricultural economics (see Courses 120, 220, 320, 420, 520, and 720).

650 Seminar: Selected Topics in Statistical Technology (Third and Fourth -- 20 sessions)

Participants in the Statistical Technology and Survey Management specialization, working under the guidance of their staff training adviser, do research on various topics related to statistical technologies which are appropriate for use in their countries. Based on his or her research, each participant gives a report that is discussed by the entire group. Outside experts also are called upon to give specialized presentations to the participants on some aspects of statistical technology.

690 Case Study in Statistical Technology: Workshop and Field Demonstration (Fifth -- 6 weeks full time)

Concepts and procedures for collecting data are discussed within the context of a case study and are presented in a workshop format. The workshop is an intensive 3-week study with discussion and class exercises. The primary objective is to bring together the detailed technical knowledge acquired earlier in the curriculum in the various aspects of survey operations. The following topics are covered in the workshop: survey design; developing questionnaires and tables; planning, scheduling and budgeting; sample design and selection; field operations and control of materials; coding, editing, and tabulation processes; review and analysis of data, and preparation of a survey data release.

The workshop is followed by a 3-week field demonstration, in which all of these operations are implemented in an actual survey.

695 Special Programs in Statistical Technology (Third and Fourth -- Varies)

In periodic special programs, participants in all specializations are introduced to new developments in statistical technology which are available and may be adapted for use in their respective countries. Current topics of special interest in the area of applied statistics are also discussed by guest speakers.

The topics of workshop sessions vary and will be announced during the training year. In recent years topics have included the following: practical applications of aerial photography and satellite remote sensing to statistical programs; the Geographic Base File-Dual Independent Map Encoding (GBF-DIME) system developed by the U.S. Bureau of the Census for use in analyzing socioeconomic data; and discussions of recent research and methodological developments at the Census Bureau in the area of control and evaluation of nonsampling error.

Agricultural Economics

701 Concepts and Tools for Agricultural Economics (First -- 10 sessions)

In this course participants will learn basic concepts in agricultural economics. Food and Agriculture Organization concepts will be emphasized including such topics as agricultural labor inputs, productivity, prices, rural education, farm credit, capital, land tenure, agricultural income, infrastructure, and so forth.

702 Economics of Agricultural Development (Second -- 20 sessions)

The course places special emphasis on the role of agriculture in national economic growth, particularly in developing countries. The principles and elementary tools of economic analysis applicable to agricultural production and marketing problems are studied, as well as the effects of technological improvements, institutional arrangements, and other factors associated with economic progress in agriculture. Economic problems in agriculture are identified, and the development of research procedures for the analysis of these problems is discussed; emphasis is placed on the application and adaptation of research methods to the economic problems of development. Additionally, uses of agricultural census and survey data in development planning are covered in the course.

703 Collecting Statistics on Agricultural Population and Employment (Second -- 20 sessions)

For many developing countries the agricultural sector is the predominant sector within the national economy. A substantial proportion of the population derives its economic livelihood from agriculture. There exists a need for more detailed data on the economic and social characteristics of the agricultural holder, the holder's dependents, the landless agricultural worker, and the rural poor. Topics to be covered include a review of basic concepts and definitions such as holder, rural population, agricultural household, farm income, wealth, economically active population, and dependents. Also to be included are such topics as main sources of data for the agricultural population and those employed in the agricultural sector, evaluation of censuses of population and agriculture as potential sources of data, using follow-on sample surveys, and an integrated approach to the collection of such data. The FAO publication Collecting Statistics on Agricultural Population and Employment will be used as the basic text for this course.

704 Integrated Rural Development Projects: Theory and Application (Third -- 20 sessions)

A continuing goal in development planning has been to raise the standards of living of all people; however, special emphasis has recently been directed toward raising the living standards of the poorest of the poor--the rural poor, the landless agricultural workers, and others. An integrated rural development approach will be emphasized in this course. Topics to be discussed include rural education and investment in human capital, improved infrastructure, income redistribution, farm credit, effects of market facilities, land ownership, and land reform, impact of taxation and inflation, and investment in rural development projects. Emphasis will be placed on discussion of integrated rural development projects in the participants' countries.

705 Use of Agricultural Statistics for Productivity Measurement and Forecasting (Third -- 10 sessions)

This course discusses the compilation and analysis of statistics from agricultural censuses and surveys for the purpose of preparing crop and livestock production estimates and forecasts of future production. Emphasis is placed on the use of statistics on agricultural inputs (fertilizer, machinery, agricultural labor, etc.) in measuring current productivity and in forecasting output. Influence of factors such as prices and weather on production will be considered.

706 Use of Agricultural Statistics in Economic Development Planning (Fourth -- 10 sessions)

In this course participants learn to apply the concepts and theories of economic development presented in Course 702. Discussions include how agricultural data are used in effective measurement and evaluation of agricultural development projects. Measurement tools to be introduced are cost-benefit analysis, discounted present value, internal rates of return, and shadow pricing. Participants will get experience by evaluating an agricultural project using one or more of these techniques.

720 Agricultural Economics Field Demonstration Laboratory (Third and Fourth -- 20 sessions)

Participants jointly prepare the technical materials and procedures to be used in the Field Demonstration (Course 790). These include the survey questionnaire and forms, field instruction manual, table outlines, sample design for selecting enumeration units, tabulation plans, and quality control techniques for the various operations. The technical knowledge needed to prepare plans and materials will have been acquired in the courses studied earlier; the purpose of the laboratory, therefore, is to apply this knowledge in preparing for an actual census-survey demonstration.

750 Seminar: Selected Topics in Agricultural Economics (Third and Fourth -- 20 sessions)

This seminar comprises a series of discussions on various topics related to agricultural economics and economic development in general. For the most part, topics to be discussed are suggested by the participants themselves. The seminar may include reports given by the participants on some aspect of agricultural economics appropriate to their countries, as well as lectures given by experts in agricultural economics and development.

790 Case Study in Agricultural Economics: Workshop and Field Demonstration (Fifth -- 6 weeks full time)

The 3-week workshop involves the participants in the study of concepts, procedures, and materials from actual surveys and censuses conducted in selected developing countries, and other materials developed for use in the workshop. During the workshop, participants review these materials and attempt to relate them to current agricultural or agricultural economics survey or census problems in their own countries.

The 3-week field demonstration involves the participants in conducting an actual agricultural economics sample survey in a rural farming area for the purpose of putting into practice their earlier classroom training. This survey will involve the collection of farm management data such as farm labor, input costs, production costs, farm earnings, land tenure, and socioeconomic characteristics of the farmer. Materials and procedures developed during the Agricultural Economics Field Demonstration Laboratory, such as survey questionnaires and forms, instruction material, sample enumeration areas, and table formats, are utilized during the field demonstration. In the field demonstration, participants carry out the principal activities involved in collecting agricultural statistics. They (a) select a sample of area segments; (b) enumerate a sample of holdings; (c) edit, code, and tabulate the data; (d) analyze the tabulations; and (e) prepare a survey data release.

George Washington University
Graduate School of Arts and Sciences

offers an interdisciplinary degree program
leading to the Master of Science in Special Studies
with a concentration in

SOCIAL AND ECONOMIC STATISTICS

1980-1981

This program is open only to students participating in the Statistical Training Program offered at the International Statistical Programs Center of the U.S. Bureau of the Census.

It is administered by GWU's College of General Studies, the off-campus division of the University.

The George Washington University, located in the District of Columbia, had its beginning with the approval of its congressional charter by President James Monroe in 1821. It is a private, nonsectarian university dedicated to "the aspiration of Washington, Jefferson, and Madison for the erection of a University at the seat of the federal government." Over the years, it has worked to develop the university ideal in the nation's capital and to meet the changing needs of society while continuing to pursue the traditional principles of learning and research. It has developed as a major national university with strong traditional ties to the federal community in Washington,D.C., as well as growing involvements in international areas.

The University has accepted the challenge to develop each student's potential abilities to the fullest extent. Its enrollment is coeducational, and admission is determined only on the basis of personal character and academic qualifications. The University's total program is founded on a broad base of the liberal arts and sciences and expanded into more specialized areas through upper level, graduate, and professional study and research programs. The equivalent of twelve thousand and six hundred full-time students are enrolled annually in the 11 colleges, schools, and divisions of the University.

GWU's Graduate School of Arts and Sciences directs advanced study and research in the arts and sciences leading to the Master of Arts, Master of Science, and Doctor of Philosophy degrees. The University has offered graduate programs since 1905. Recently the graduate school introduced a new type of degree program, providing a more flexible approach to graduate study which may relate to several of the traditional academic disciplines. Such programs are directed toward a goal defined by the students involved and approved by the graduate school. Course work is scheduled to provide a structured sequence of study toward this goal. Students completing such programs are awarded either the Master of Arts in Special Studies or Master of Science in Special Studies degree.

THE DEGREE

The George Washington University's Graduate School of Arts and Sciences offers an interdisciplinary degree program leading to the Master of Science in Special Studies degree with a concentration in Social and Economic Statistics. The program is designed to give persons involved in official statistical activities a knowledge of the theories, concepts, principles, and literature of social and economic statistics; to enable these persons to increase their potential for analytic creativity and intellectual inquiry; to help them stay abreast of their field of specialization; and to provide them with a background in management leadership and staff development in organizations devoted to the planning and implementation of statistical analyses.

Qualified students must pursue this degree in conjunction with the course of instruction at the International Statistical Programs Center (ISPC) of the U.S. Bureau of the Census. At the present time, it is available only to students in the ISPC Statistical Training Program. Each student must satisfactorily complete the entire selected ISPC program; the ISPC program is not reduced for a student taking the combined program.

This combined master's degree and Statistical Training Program (the Combined Degree Program) is a very demanding undertaking designed for highly motivated, mature students who want to make their leaves of absence from their professional positions as productive as possible. In order to complete the combined program, students must schedule a four-month extension, through December 1981, of the leave of absence.

University courses offered as a part of this program are open only to ISPC students. Advisers from both the University and ISPC meet regularly to coordinate the course work from the various disciplines. Although courses in the Combined Degree Program are offered at the graduate level, it is expected that some students have not had normal introductory courses in all areas during undergraduate study; when necessary, instructors present needed review material during initial class meetings, and supplementary reading assignments are suggested for students who require additional preparation. In certain instances, students may be required to take preparatory course work.

There are no language (other than English) or thesis requirements for this degree. During the last semester of course work, a master's comprehensive examination, in the form of a written essay, is given on campus to enable the student to demonstrate understanding of the integrated and coordinated nature of the diverse subject matter.

THE CURRICULUM

The Combined Degree Program in Social and Economic Statistics requires a total of 36 semester hours of graduate course work. This includes both University course work and credit granted for work satisfactorily completed through the ISPC Statistical Training Program.

A participant satisfactorily completing the entire selected ISPC program also acquires necessary prerequisites for certain University courses.

The following University courses are required and must be completed with a minimum cumulative grade average of B (3.00).

Course	*Semester Hours*
Management Science 200: ORGANIZATION AND MANAGEMENT Integrative approach to organizational concepts, management principles, philosophy, and theory in public and private organizations. Evolution of management thought, functions, and practices, stressing present management approaches, to include general systems theory and contingency management.	3
Management Science 207: INDIVIDUAL AND GROUP DYNAMICS IN ORGANIZATIONS For graduate students who wish to improve their skills in dealing with human behavior in organizations. Theoretical and personal understanding of the roles of interpersonal and group dynamics in management. Focus on individuals and groups in various organizational settings. Intensive work group experience focusing on theory, research, and group analysis.	3
Sociology 351: SELECTED TOPICS IN SOCIOLOGY (CENSUS ANALYSIS AND SOCIAL DEVELOPMENT) Intensive investigation of special topics in sociology. The sociological implication of census analysis in the scheme of economic progress in developing countries.	3
Economics 251: ECONOMIC DEVELOPMENT THEORIES Basic theories of economic growth and development. Emphasis on theories inspired by the underdevelopment process.	3
Economics 252: ECONOMIC DEVELOPMENT PLANNING Development planning techniques and practice at both the macro and micro levels. Macro-planning tools analyzed include input/output, multi-sector models, simulation, and linear programming. Micro-planning includes the use of cost-benefit techniques in project analysis. Prerequisite: Econ 251.	3

In consultation with the academic advisory committee, each student selects one of the following *on-campus* courses:

Economics 275: ECONOMETRICS I: INTRODUCTION	3
Management Science 241: INFORMATION SYSTEMS DEVELOPMENT AND APPLICATION	3
Public Administration 252: PUBLIC EXPENDITURE ANALYSIS AND PLANNING	3
Sociology 230: SOCIOLOGICAL RESEARCH METHODS	3
Statistics 201: MATHEMATICAL STATISTICS	3
Statistics 287: MODERN THEORY OF SAMPLE SURVEYS	3

The overall emphasis of the ISPC Statistical Training Program has been and continues to be on practical applications which enable participants to acquire specific skills applicable to their professional duties. However, the program includes some study of background theories and underlying principles, and by satisfactorily completing the following portions of the ISPC program the participants earn additional academic credits toward the requirements for the master's degree:

ISPC No.603: GEOGRAPHY AND MAPPING FOR SURVEYS AND CENSUSES (GWU: Geography 295)	3
ISPC Nos. 190, 290, 390, 490, or 590: TOPICAL SOCIOLOGICAL CASE STUDIES AND SAMPLE SURVEYS (GWU: Sociology 295)	3
ISPC No. 103: APPLIED REGRESSION AND CORRELATION ANALYSIS (GWU: Statistics 118)	3
Finally, a participant satisfactorily completing the remainder of the selected ISPC Statistical Training Program receives nine semester hours of advanced standing toward the master's degree when all other degree requirements have been met.	9
Total Semester Hours	36

Students who do not complete the degree program receive George Washington University transcript credit for individual University courses satisfactorily completed. These credits may be transferred to other colleges and universities, provided they meet the requirements of those colleges and universities.

This uniquely designed curriculum in no way diminishes the objectives of ISPC's current program. Rather, it is a natural companion to the practical skills and applications developed by the participant in the ISPC program.

ADMISSIONS

Students applying for admission to degree candidacy in the Combined Degree Program must meet the entrance requirements of the Graduate School of Arts and Sciences. A bachelor's degree from a recognized college or university is required. Preference in admission is given to those students with the strongest credentials and most appropriate undergraduate preparation. Applicants are not required to take the Graduate Record Examination.

Students who come from a country whose official language is not English should take the Test of English as a Foreign Language (TOEFL). Students who have earned a bachelor's degree or higher degree from a university in an English-speaking community may omit the test. Information on TOEFL may be obtained from the local American embassy. In some countries, tests may be given only once or twice a year. The George Washington University will arrange additional diagnostic testing in English language proficiency for any student upon arrival in Washington, D.C.

All students must submit transcripts and letters of reference.

SCHEDULE AND LOCATION

The Combined Degree Program requires 16 months of study beginning September 2, 1980 and ending in late December 1981. It is an intensive educational challenge which should be attempted by only the most dedicated and energetic student.

During the first 12 months students complete their full ISPC Statistical Training Program, as well as some of the GWU course study. During this time, the GWU courses meet during the early evening hours. During the last four months, students complete the Combined Degree Program as full-time students with George Washington University. To alleviate commuting problems, both the ISPC program and the GWU degree program are offered at the ISPC facility. During the four-month extension, however, certain courses may be offered on the University campus in downtown Washington, in order to give the students direct contact with an American university.

FINANCIAL REQUIREMENTS

Tuition for the graduate degree program is based on the group contract fee schedule of the University, which allows reduced rates for groups based on the economies of larger enrollments. Individual tuition depends on the number of registrations from the group, with the exact fee determined when courses begin.

For students not sponsored by the Agency for International Development, a reasonable estimate for the Combined Degree Program, including application fee, tuition, books, and graduation fee, is $2,000. This amount excludes living costs and any expenses connected with the ISPC Statistical Training Program.

For students sponsored by AID, the standard AID allowance for non-academic participants applies. The allowance for the four-month extension is allocated to the Combined Degree Program costs and the student's subsistence.

APPLICATION PROCEDURE

Persons who desire to apply for the Combined Degree Program should submit a letter of intent to ISPC no later than May 31,1980containing the following information:

1) full name and country
2) mailing address
3) age, sex, marital status
4) field of specialization (population, agriculture, economics, sampling, computer data systems, or statistical technology)
5) education (including degrees)
6) employment experience
7) TOEFL test results (if applicable)

Applicants sponsored by the Agency for International Development, the United Nations, the Food and Agricultural Organization, or the Organization of American States should forward the letter of intent through usual channels; it should accompany the application or nomination for the ISPC Statistical Training Program. Applicants sponsored by other organizations should send the letter of intent directly to ISPC.

As soon as the letter of intent requesting admission to the Combined Degree Program is received, an official application form is sent to each person. This form should be completed and returned directly to ISPC. An official transcript, in English, from each college or university attended and four letters of reference are required. Applicants and/or their sponsors should immediately make arrangements to have these items forwarded directly to ISPC. The Center coordinates all admissions materials and forwards them directly to the George Washington University, together with a nonrefundable fee of $25 per applicant.

Admission to the graduate degree program is determined after the official application, certified transcripts, and reference letters are received and reviewed. Although every effort is made to advise applicants and their sponsors of the admission status prior to September, 1980 in some cases special circumstances may delay formal admission until later. If an applicant does not qualify for admission to the degree program, both applicant and sponsor are notified as promptly as possible. Non-acceptance for the Combined Degree Program does not affect the applicant's consideration for admission to the ISPC Statistical Training Program.

All correspondence should be addressed to:
Chief, Training Branch
International Statistical Programs Center
U. S. Bureau of the Census
Washington, D.C. 20233
U. S. A.

GEORGETOWN UNIVERSITY

The Graduate School

The Sociology Department and Center for Population Research offer a degree program leading to the

MASTER OF ARTS IN SOCIOLOGY (DEMOGRAPHY)

1980—1981

This program is open only to students participating in the Statistical Training Program offered at the International Statistical Programs Center of the U.S. Bureau of the Census.

Founded in 1789, Georgetown University is one of the oldest institutions of higher learning in the United States, granting its first graduate degree in 1821. It contains schools of law, medicine, dentistry, nursing, arts and science, foreign service, languages and linguistics, business administration, and continuing education, as well as the Graduate School. A basic objective of the Graduate School is to provide opportunities for the advanced study of theoretical and practical disciplines, thereby seeking to prepare students for careers of leadership and service in teaching, government, and private industry and research.

The Demography Degree Program

The aim of this degree program, offered jointly by the Department of Sociology and the Center for Population Research, is to provide intensive graduate instruction and research experience in demography and related disciplines. Fulfillment of the degree requirements entitles the degree candidate to receive the Master of Arts in Sociology (Demography) degree. The degree requirements consist of:

(a) Course requirements

A minimum of 24 graduate credits of coursework. For the successful completion of each course the studen earns 3 credits. The following courses are required of all students: General Demography, Techniques of Demographic Analysis I and II, Research Methods in Social Science, Principles of Biostatistics I, and two (selected by the student) of the following three courses - Fertility, Migration, and Mortality and Morbidity. The student may choose from among a large variety of additional graduate courses in demography and other disciplines to complete the required number of course credits. A minimum average grade of "B" is required to remain in good standing.

(b) Comprehensive examination

Each candidate for the M.A. degree must pass a written examination, which generally covers the fields of general demography, research methods, techniques of demographic analysis, and one of fertility, mortality, or migration.

(c) Thesis or nonthesis option

Each student must either (1) submit a master's thesis on an approved topic in demography, or (2) complete an additional 6 credits of approved graduate course work, for a total of at least 30 graduate credits. In addition, the student selecting the nonthesis option must submit a research paper of high quality for the approval of the faculty. This paper is not a disguised master's thesis, but it must demonstrate an ability to do professional demographic analysis and to report the results in an appropriate style and clear English. The master's thesis or the research paper is written near the end of the student's training.

(d) Language requirement

There is no language requirement other than proficiency in English.

Students who satisfactorily complete the entire course of instruction in Population Statistics and Demographic Analysis provided by the International Statistical Programs Center (ISPC) of the U.S. Bureau of the Census will receive 12 graduate credits for the equivalent of Techniques of Demographic Analysis I and II, Research Methods in Social Science, and Principles of Biostatistics I. ISPC students admitted into The Demography Degree Program (DDP) will begin their study toward the degree concurrently with their study in the ISPC program. ISPC courses are given during the day and the University demography courses are offered in the evening. During the months of ISPC course work, the ISPC student accepted into the degree program will take only one University course during each of the fall and spring semesters, and another course during one of the summer sessions. The remaining degree requirements are to be completed in the 6 months following completion of the ISPC program. The student studies full-time during this 6-month period, completing the remaining required course work from September through December. The last two months of the DDP are devoted to taking the comprehensive examination and completing the master's thesis or research paper by February. Thus, the total time needed to complete the ISPC training and earn Georgetown University's M.A. in Sociology (Demography) degree is 18 months.

The Curriculum

In addition to Techniques of Demographic Analysis I and II, Research Methods, and Principles of Biostatistics I, for which ISPC students will receive credit when they successfully complete the ISPC training program, other required University courses are:

184-501 GENERAL DEMOGRAPHY

Survey of the major substantive, methodological, and theoretical topics in demography in historical perspective. Population issues and policies.

184-704 FERTILITY

Problems of data collection and fertility measurement. Causal models in the analysis of fertility. Biologic, demographic, and socioeconomic determinants of fertility and fertility control.

184-708 MIGRATION

Major internal and international population movements. Sources of data, methods of analysis, differentials, selectivity, motivation, and assimilation. Social and economic causes and effects. Governmental regulation.

222-507 MORTALITY AND MORBIDITY

History, development, and uses of mortality and morbidity data. Trends and differentials. Emphasis on interpretation and explanation, with special attention to topics of current interest.

Other Courses Offered Include:

184-504 METHODS OF SOCIAL RESEARCH
184-691 DEMOGRAPHY OF THE U.S.S.R.
184-693 POPULATION AND SOCIAL CHANGE IN THE MIDDLE EAST
184-702 POPULATION AND THE AMERICAN FUTURE

133-418 POPULATION, RESOURCE USE, AND ECONOMIC GROWTH
133-514 POPULATION GROWTH AND ECONOMIC DEVELOPMENT IN LATIN AMERICA
184-901 SPECIAL TOPICS IN DEMOGRAPHY
184-902 TUTORIAL IN DEMOGRAPHY

Students who do not complete the DDP receive transcript credit for the University courses satisfactorily completed. These credits may be transferred to other colleges and universities provided they meet the requirements of those colleges and universities.

Admission Requirements

Students applying for admission to degree candidacy in the DDP must meet the entrance requirements of the Georgetown University Graduate School. A bachelor's degree with acceptable achievement from a recognized college or university is required. Applicants are not required to take the Graduate Record Examination.

Students who come from a country whose official language is not English should take the Test of English as a Foreign Language (TOEFL) or the ALIGU examination. Information on TOEFL and ALIGU may be obtained from the local American embassy. Students who have earned a bachelor's or higher degree from a college or university in which instruction was given in English may omit the language test. The applicant should point this out in his or her application.

Schedule

The DDP requires 18 months of study beginning August 25, 1980 and ending in late February 1982. Participants are advised to arrive about 10 days before Georgetown classes begin on August 25, 1980.

Financial Requirements

The cost for students in the DDP is estimated at about $3,600. This includes application fee, tuition, and graduation fees. It excludes the cost of the ISPC training program and living costs and other expenses incurred during the six-month extension needed to complete the degree requirements.

Application Procedure

Persons who want to apply for the DDP should submit a letter of intent through normal channels for applying to the ISPC training program. As soon as the letter of intent is received an official application form will be sent to each person. This form should be completed and returned, together with an official transcript in English from each college or university attended and three letters of recommendation. Georgetown University would like at least two letters from former college or university teachers who can evaluate the applicant's academic ability. All application materials should be sent directly to ISPC, which will coordinate and forward them to Georgetown University.

Admission to the DDP is determined after all the admissions documents have been received and after the performance of the student in courses scheduled during the first four months of the training program has been evaluated. Under most circumstances, applicants and their sponsors can be advised of the admission status in early January 1981. Applicants who are not accepted for the DDP may continue in the ISPC Diploma program in Population Statistics and Demographic Analysis.

Participants who have previously received a diploma from ISPC in Population Statistics and Demographic Analysis also may apply for admission to the DDP by following the procedures outlined above. While it is possible for ISPC graduates entering the DDP to earn the M.A. in Sociology (Demography) in less than 18 months, appropriate schedules will be constructed on an individual basis for each former participant accepted into the DDP.

All correspondence should be addressed to:

Chief, Training Branch
International Statistical Programs Center
U.S. Bureau of the Census
Washington, D.C. 20233
U.S.A.

STATISTICAL TRAINING BY CORRESPONDENCE

(Conducted by the U.S. Bureau of the Census under a Resources Support Services Agreement of the Agency for International Development, U.S. Department of State.)

ATL SERIES

The U.S. Bureau of the Census, through its International Statistical Programs Center (ISPC), conducts training programs for foreign statisticians and technicians in the fields of population and demographic analysis, sampling and survey methods, data processing, economic statistics, and agriculture statistics. The trainees enrolled in these programs are sponsored by various international organizations, private foundations, or their own governments.

For the benefit of qualified personnel who cannot come to the U.S. for training, ISPC offers a short program of statistical training by correspondence. The program (the ATL Series of courses) is designed to enable statistical personnel to obtain training in carrying out household sample surveys to measure demographic, social, and economic characteristics of the population. The courses are offered primarily to qualified persons who for a number of reasons cannot be away from their jobs for an extended period. The courses provide such personnel an opportunity to update their knowledge and to acquire new skills in various statistical techniques relating to household sample surveys.

NOTE: The correspondence training does not duplicate courses in the ISPC Training Program described in the 1980-1981 booklet.

SOURCE MATERIALS

The basis for the ATL Series is the set of materials, *Atlantida: A Case Study In Household Sample Surveys*. The case study was developed to provide a realistic setting for discussion of the interrelated complex of designs, estimates, and procedures that are necessary for establishing a continuing survey program. A mythical country, Atlantida, was created and assumed to be in the process of planning and implementing a household survey program. The case study deals with all phases of a survey program—determining the objectives, developing and testing questionnaires, designing the sample, training interviewers, conducting and supervising the field operations, processing the data, and analyzing the results. Conceptual and procedural guidelines were developed for this undertaking, utilizing the recommendations of international and regional organizations and the experience of various nations in similar survey programs. Practical rather than theoretical aspects of household sample surveys are emphasized. The materials include narrative discussion, illustrations, worksheets, charts, diagrams, maps, questionnaires, table outlines, instruction manuals, computations, problems, and the like.

OVERALL PROCEDURE

Correspondence study is individual instruction by mail. The text materials, study guides, and tests are sent to the students from Washington, either directly or through their sponsor. The completed lessons are returned to Washington for review and evaluation. The mailing schedule will be set in accordance with the progress of each student.

STRUCTURE

The ATL Series consists of five separate courses, each of which covers a specific aspect of a household sample survey. Only the first course, ATL-101, is a prerequisite for any of the four other courses. Students may study as many courses as they choose after completion of ATL-101. The courses in the series are:

ATL-101 Survey Planning
ATL-102 Sample Design
ATL-103 Field Operations
ATL-104 Data Processing
ATL-105 Demographic Analysis

The USDA Graduate School will grant two credits for successful completion of each course. Thus, a student may receive from two credits for ATL-101 to 10 credits for completion of the five courses.

How to obtain additional information

If you wish additional information and an application blank please detach this form. Fill the reverse side and mail to:

Correspondence Statistical Training
International Statistical Programs Center
U.S. Bureau of the Census
Washington, D.C., U.S.A., 20233

STUDY PLAN

Each course consists of a series of short lessons; and a study guide is provided for each lesson. The guide contains the instructions for the lesson; it specifies which pages to study, what concepts to look for, when to complete the tests, etc. Each course comprises 9 or 10 lessons. The lessons are short enough that the average student can complete one lesson in roughly 2 hours.

Each course has three tests, which are based on the materials in the Case Study. The tests are designed to determine whether the student understands the concepts, the statistical terminology, and the objectives of the units. A "Comprehensive" or final examination is administered at the end of each course. The examination generally consists of discussion-type questions to test the student's comprehension of the interrelated concepts and techniques involved in household surveys and his or her ability to apply such knowledge. Because of its importance, the comprehensive examination counts heavily in the awarding of academic credits for the course.

The program is designed to permit completion of each course within 4 to 6 weeks after receiving the course materials. Some courses may require more time to complete than others, due to the complexity of the subject. Students must plan their own study schedule carefully and follow this schedule consistently, in order to meet the time limits.

REQUIREMENTS

All students must be able to read English with understanding and to write in English. The reading materials and study exercises are comparable to a graduate-level university course. Students who have completed university courses for which English was the language of instruction, or whose work requires the use of materials written in English, would be able to meet the minimum standards required to enroll in the correspondence courses. The evaluation of the student's English language comprehension rests with the sponsor and the applicant.

The correspondence courses are offered primarily to statistical personnel who have had at least one year of experience in national, international, or private statistical agencies, or in research organizations. The work experience should be in statistics or a related field.

Formal education background may range from high school graduation (secondary license, lycee, senior Cambridge, etc.) to undergraduate or graduate university degrees. Academic work in mathematics, statistics, economics, or sociology is especially desirable.

SPONSORSHIP AND COSTS

Students may be sponsored by AID, the UN, FAO, OAS, or other international organizations or they may be sponsored by a statistical agency, government ministry, university, or research organization. In some cases, students themselves may choose to be their own sponsor.

The enrollment fee per student is $100 (U.S.) for each ATL course or $500 for the five courses in the series. This fee covers all costs of materials, postage to send materials to the student, review of tests, transcripts and certificate of credit. The sponsor may pay for one course at a time, for several courses, or for the entire series. Paying for the entire series has the advantage that there would be no delay between courses. If a student withdraws from the program, money is refunded only for individual courses which he or she has not started.

An additional cost is the cost to air mail completed tests and other correspondence to CST in Washington. It is estimated that the materials (tests and answer sheets) which the student must send to Washington will amount to roughly 20 sheets of paper for each course.

*U.S. GOVERNMENT PRINTING OFFICE : 1980 O-311-046/1119

Mail To:

Correspondence Statistical Training
International Statistical Programs Center
U.S. Bureau of the Census
Washington, D.C., U.S.A. 20233

Please send me additional information concerning Statistical Training by Correspondence.

Name _____

Mailing Address _____

Occupation or Position _____

Organization _____