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International Statistical Programs Center

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# SCHOOL FOR APPLIED STATISTICS AND DATA PROCESSING TECHNOLOGY

SPANISH-LANGUAGE TRAINING PROGRAMS:  
1987-1988



**FOR:**

**Statisticians**

**Computer Processing  
Professionals**

**Managers of Data Collection  
and Data Processing  
Operations**

**Data Users and Analysts**

**U.S. Agency for  
International Development**

**U. S. Department of Commerce  
BUREAU OF THE CENSUS**

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## CALENDAR OF TRAINING ACTIVITIES

This calendar includes training activities scheduled to be conducted during the 12-month period from May 1987 to April 1988. Three additional workshops are planned to be conducted during this period but are excluded from this calendar because the dates and topics are tentative. They will be announced separately as soon as all details are final.

### Workshops

August 3 to August 21, 1987	Introduction to Microcomputer Applications for Statistical Organizations (in Washington)
August 24 to September 4, 1987	Advanced Microcomputer Applications for Statistical Organizations (in Washington)

### Modular Courses

September 13	Arrival in U.S.
September 14 to 16	Orientation at Washington International Center
September 17 to 18	Orientation and training needs assessment at ESAYTEC
September 21 to December 18	Module 1 (12 weeks)
December 21 to January 3, 1988	Recess
January 4 to February 26	Module 2 (8 weeks)
February 29 to April 29	Module 3 (9 weeks)
March 14 to 18	Management-Communications Seminar
April 27 to 29	Consultation, evaluation, exit interviews, and departure

### Location of ESAYTEC:

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### Address:

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

# SCHOOL FOR APPLIED STATISTICS AND DATA PROCESSING TECHNOLOGY

SPANISH-LANGUAGE TRAINING  
PROGRAMS: 1987-1988

*NOTE: This is an official translation of the original  
publication, which appears in Spanish.*



**U.S. Agency for  
International Development  
Bureau for Latin America  
and the Caribbean  
Washington, D.C.**



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

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UNITED STATES DEPARTMENT OF COMMERCE  
Bureau of the Census  
Washington, D.C. 20233

Dear Colleague:

On August 11, 1986 the International Statistical Programs Center of the U.S. Bureau of the Census inaugurated the Escuela de Estadística Aplicada y Técnicas de Computación (ESAYTEC). The ESAYTEC provides training in the Spanish language for the countries of Latin America. The program's initial training activities were well received; 60 participants from 15 countries were trained during 1986. We are pleased to announce the 1987-1988 ESAYTEC training program, which includes additional training courses that will build upon the success of the first year's activities.

You and members of your organization are invited to participate in this exciting and important new program. The Census Bureau is developing ESAYTEC over a 5-year period with funding from the U.S. Agency for International Development. The regular cycle of training activities is being gradually expanded as additional courses are developed each year. Several new workshops will be conducted during the 1987-1988 training year, and a 7-month modular course in Population Censuses and Surveys will be introduced.

The 7-month modular courses provide in-depth technical training and are conducted at the Census Bureau's training facility in Washington. They are comprised of 2- and 3-month modules that can be taken individually or in combinations suitable to the trainee's experience and background. Seminars and workshops are offered on specific topics of interest to a country, group of countries, or particular organization. The seminars and workshops are conducted in Washington and in Latin America.

The costs of participating in ESAYTEC training programs include international travel, subsistence, and course fees. Although the Bureau of the Census unfortunately has no funds of its own for this purpose, there are a number of possible sponsors that can provide fellowships to qualified candidates. These include missions of the U.S. Agency for International Development (or the U.S. Embassy in countries that do not have a U.S. AID Mission); The United Nations Development Program, Food and Agriculture Organization, or another of the UN specialized agencies; the World Bank; the Organization of American States; the Inter-American Development Bank; the Pan American Health Organization; private foundations; or an agency of the participant's own government.

Detailed information on courses and costs for the 1987-88 training year are included in this booklet. A place in the training program can be assured by submitting your application early.

I look forward to welcoming you to Washington and having you join us at the International Statistical Programs Center. I hope to hear from you soon regarding your training plans.

Sincerely,

A handwritten signature in dark ink, appearing to read "John H. Berry". The signature is fluid and cursive, written over the typed name.

JOHN H. BERRY  
Chief, International Statistical  
Programs Center  
Bureau of the Census

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**PART ONE:**

**GENERAL INFORMATION**

## I. INTRODUCTION

In 1986 the Bureau of the Census inaugurated the Escuela de Estadística Aplicada y Técnicas de Computación (ESAYTEC) to make available to the countries of Latin America a program of applied training in the Spanish language. ESAYTEC training activities will be gradually phased in over a 5-year period through 1990. The U.S. Agency for International Development is funding the preparation of the curriculum and training materials.

The International Statistical Programs Center (ISPC) of the U.S. Bureau of the Census has conducted training programs for foreign statisticians for 40 years, and through these programs has contributed substantially to statistical development in many countries. These training programs serve urgent and changing needs of developing countries for trained personnel to collect, process, and analyze statistical data. Since its inception, the ISPC program has trained more than 5,000 statisticians, computer specialists, and data analysts from nearly 150 countries. Until the creation of ESAYTEC, these programs were offered only in the English language.

The ESAYTEC program enjoyed a very successful first year of operation; 60 participants from 15 countries were trained. Two training activities were conducted in Washington; a 3-week workshop on Microcomputer Applications for Statistical Organizations and the 7-month modular course in Computer Data Systems. A 2-week workshop on Effective Coordination Between Users and Producers of Statistical Data was given in Mexico City. It was hosted by Mexico's Instituto Nacional de Estadística, Geografía e Informática. A 2-week workshop on coordination of data processing activities was taught jointly with Spain's Instituto Nacional de Estadística in Madrid.

This booklet describes in detail the training activities that will be offered during the 12-month period from May 1987 through April 1988 and also gives a preview of other programs

that will be introduced subsequently. Two types of training activities are conducted by ESAYTEC: workshops and seminars of up to 3 weeks in duration and intensive technical training courses lasting from 2 to 7 months. The workshops and seminars are designed to provide short-term training ranging from very specific technical topics for specialists to broader executive-level training in areas such as census planning and use of data in the policy-making process.

The technical courses consist of 2- and 3-month modules that can be taken individually or in various combinations appropriate to the participant's experience and background. The purpose of the modular programs is to provide in-depth technical training in the specific skills needed to carry out many different phases of ongoing statistical activities. Each program consists of three modules progressing from introductory to advanced material over the 7-month period. Although participants elect an area of specialization, they are given a background in related fields and skills in order to understand how their particular specialty fits into the total statistical program or system.

The modular courses are conducted on a fixed schedule at ESAYTEC headquarters in Washington. Courses begin in September of each year and last through April of the following year. The course in Computer Data Systems will be repeated during the 1987-88 training year. A new modular course in Population Censuses and Surveys will be offered concurrently. Several additional modular courses will be added in subsequent years (see Part Three of this booklet).

Workshops and seminars are conducted in Washington and overseas at the subregional or national level. The schedule of seminars and workshops varies from year to year. Five workshops are planned during 1987.

Two workshops dealing with microcomputers will be given in Washington in August and September. The topics, locations, and dates of the remaining

workshops were not definite at the time this booklet went to print. These activities will be announced separately.

## II. OBJECTIVES AND TRAINING METHODS

The program is designed to provide practical training for professionals who have responsibility for data collection and processing operations and for those engaged in research and analysis. The principal objectives of ESAYTEC are to:

- Train statisticians and computer professionals in the variety of skills needed to plan and conduct surveys, censuses and numerous other statistical activities;
- Train managers of these activities in the techniques and technologies required to produce reliable and timely data in a cost-effective manner;
- Train data users in how to define data needs and to use data effectively in social and economic policy-making; and
- Train all of these professionals in the knowledge and skills needed to support the application of advanced computer technologies, such as microcomputers, to the improvement of statistical systems.

These objectives are achieved through a program that has an applied, practical orientation in all aspects of design and implementation. In workshops and modular courses, participants learn by doing; classroom work includes case studies, exercises, demonstrations, and hands-on practice in order to make training as close as possible to real-world situations. Principles and theory also are presented to provide a basis for

practical applications. Participants' own experiences are used extensively in the training process.

Special attention is given to ensuring that what is learned at ESAYTEC is actually transferred to the participant's job after returning home. Aside from making the training as applied as possible, an in-depth diagnosis of training needs and background is done upon arrival for each participant attending the modular courses. This forms the basis for setting realistic training objectives and identifying the most appropriate curriculum of courses. A Training Advisor is assigned to each participant to assist him or her in setting training objectives and to provide guidance in achieving them.

Participants are encouraged to bring projects and work materials from home to serve as examples in class projects. In some cases, participants will be able to return home with a finished product or solution to a particular problem that they brought with them. Action planning exercises, whereby participants develop specific plans and ideas on how to apply classroom learning to problems they face back home, are an integral part of all the training. For participants attending the modular courses, the culmination of the program is the preparation of a comprehensive action plan for how they will apply what they have learned to specific problems on their jobs.

A program of post-training follow-up will further ensure that the training is relevant and is being transferred to participants' jobs after returning home. Technical visits and consultations by instructional staff with returned participants will be arranged in conjunction with seminars and workshops when possible. Participants will complete follow-up questionnaires to evaluate the training they have received and to make suggestions for improvements. Returned participants also will be encouraged to maintain correspondence with the instructional

staff regarding their progress. This follow-up program will generate valuable information for evaluating the effectiveness of the training and making any necessary improvements.

Another critical element in achieving the program's objectives is the need to maintain close communication with the Latin American statistical community. This is achieved through regular consultation with national statistical organizations, data user organizations, and donor organizations of all types that are involved in development efforts. Whenever possible, collaborative training efforts will be arranged with other institutions in the region.

### III. PROGRAM LOCATION AND SCHEDULE OF ACTIVITIES

The ESAYTEC headquarters are located at the Census Bureau's training facility in the suburbs of Washington, D.C. All of the 7-month modular courses and some of the seminars and workshops are conducted there. Overseas seminars and workshops will be carried out at cooperating institutions in Latin America. Seminars and workshops on topics of particular interest to a country, agency, or project can be designed and presented upon request.

#### Seven-Month Modular Programs

The full training program, including initial orientation and predeparture activities, requires 7 1/2 months. Most participants will derive maximum benefit from the program by attending the entire 7 1/2 months of training. Each specialization consists of three modules, with progressively more advanced material presented in each. The modules are interrelated, and the knowledge and skills acquired in successive modules are to a large extent cumulative.

A calendar of activities appears on the inside cover of this booklet. It

lists the major elements of the modular programs and their 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. Special orientation arrangements can be made for persons who come to ESAYTEC for programs beginning after the first module. Participants should be scheduled to arrive in the U.S. approximately 10 days before their training program begins to allow time for orientation and to make their housing arrangements.

A 1-week Management-Communication Seminar is an important part of the training offered in Module 3. The seminar is conducted in March at a location outside the Washington area.

#### Short-Term Modular Programs

Persons who cannot attend the full 7-month course, or for whom the entire course is not appropriate, are encouraged to enroll in short-term programs consisting of one or two modules selected from the full program. Individuals wishing to enroll for programs beginning after Module 1 should have prior education or experience equivalent to the courses they miss by not attending previous modules. Since modules are either 2 or 3 months in duration, short-term programs of 2, 3, 4, or 5 months can be arranged. When Washington-based workshops are scheduled either immediately before or after a given module, it will be possible to attend the workshop in conjunction with the module.

#### Seminars and Workshops

Five workshops are planned during the 12-month period from May 1987 to April 1988. Two of these will be conducted in Washington and are described in detail in Part Two of this booklet. The workshop on Effective Data User-Data Producer Interface is also described in Part Two; however, the date and location have not yet been

decided. This information and the details on the other two workshops planned will be announced separately as soon as possible.

In general, the only regularly scheduled workshops will be those conducted at ESAYTEC headquarters in Washington. Other workshops and seminars will be funded by various sponsors to meet the needs of a specific country or group of countries. These activities will be scheduled and announced on an ad hoc basis.

#### IV. STAFF AND FACILITIES

The International Statistical Programs Center (ISPC) of the Census Bureau provides the staff and facilities for ESAYTEC. All staff are fluent in Spanish and most have extensive experience working as technical advisors in Latin America and other regions of the world. Staff from the domestic programs area of the Census Bureau are available to share with participants the latest technologies and statistical methodologies used by the Bureau.

ESAYTEC takes full advantage of the unique combination of instructional resources that exist in the Washington area. The full-time staff are augmented by guest lecturers and resource people drawn from other agencies in the U.S. statistical system and the numerous international donor and development organizations based in Washington. Major international organizations with headquarters in Washington include the World Bank, International Monetary Fund, Inter-American Development Bank, Organization of American States, and the Pan American Health Organization.

The ISPC training center is located near Census Bureau headquarters in Marlow Heights, a suburb of Washington. In addition to classrooms, the training center includes mainframe computing facilities, microcomputer laboratories, library of Spanish-language references and periodicals, and various amenities for partici-

pants. ISPC's modern classroom facilities will include simultaneous translation equipment to accommodate guest lecturers who are not fluent in Spanish.

The staff assists participants in obtaining living accommodations. There are several nearby apartment complexes that are linked to the training center by shuttle bus; however, the availability of these apartments is sometimes limited. Apartments located in Washington offer an alternative and can be reached by a combination of public transportation and shuttle bus.

Classes in basic English are provided to participants to help them cope with everyday language requirements. A workshop in learning skills is also conducted for participants attending Module 1. The purpose of the workshop is to assist participants in gaining maximum benefit from their training program.

#### V. ELIGIBILITY REQUIREMENTS

##### Modular Programs

The ESAYTEC training programs are conducted primarily for statisticians and technicians who have at least 1 year (preferably more) working experience in national statistical programs. Persons employed in the private sector should have a similar level of experience in work related to the type of ESAYTEC training they intend to pursue. The formal educational background of participants may range from completion of high school to advanced university degrees. Academic training in mathematics, statistics, and economics is desirable; at least a basic knowledge of algebra is required.

In addition to these general eligibility requirements, there are specific candidate requirements for each specialization. It should be noted that all candidates for enrollment in the training program must also fulfill

the requirements of their sponsoring agencies.

Seminars and Workshops

The eligibility requirements for seminars and workshops will depend upon the particular topic being covered. Generally, the only requirements will be that participants have adequate experience and background in the area of discussion. Any additional requirements will be specified when seminars and workshops are announced.

**VI. DIPLOMAS AND CERTIFICATES**

A diploma is awarded by ESAYTEC upon satisfactory completion of the full 7-month modular curriculum in any of the specializations offered. To complete the curriculum in any area of specialization, a participant must satisfactorily complete a minimum number of courses, as specified by the participant's Training Advisor.

The required courses for the areas of specialization offered are indicated in the recommended curriculum in Part Two. In addition to taking these courses, all diploma candidates must satisfactorily complete an independent project approved by their Training Advisor.

Completion of the curriculum also requires that participants arrive in the United States early enough to begin Module 1 on time. Sponsors are cautioned that if they nominate participants who lack basic mathematical skills, those persons will have difficulty with the required statistical methods and sampling courses.

A certificate is awarded upon successful completion of a workshop, seminar, or partial completion of a modular course. An official transcript of credits for each course satisfactorily completed will be provided, regardless of the length of the participant's program.

**VII. COST AND SPONSORSHIP**

Modular Programs

The costs of attending a modular program at ESAYTEC include international travel, subsistence, and course fees. Course fees include the ISPC program fee, computer usage fees, fees for training provided by agencies other than ISPC, transportation for program-related travel in the U.S., books, and shipping of books upon completion of training. Approximate course fees for the modular programs are listed below.

Modules 1, 2, and, 3 (full 7-month program)	\$9,800
Modules 1 and 2 (5 months)	\$6,700
Modules 2 and 3 (4 months)	\$5,200
Module 1 only (3 months)	\$3,300
Module 2 only (2 months)	\$2,100

Depending upon the policy of the sponsoring agency, costs also will be incurred for the purchase of calculators and health insurance.

Course fees are paid directly to ISPC by the participant's sponsoring agency. Possible sponsors include Missions of the U.S. Agency for International Development (or the U.S. Embassy in countries where there is no AID representative); the United Nations Development Program, Fund for Population Activities, Food and Agriculture Organization, or another of the UN specialized agencies; the World Bank; the Inter-American Development Bank; the Organization of American States; the Pan American Health Organization; private foundations or business enterprises; or an agency of the participant's own government. The U.S. Bureau of the Census has no fellowship funds nor can we make recommendations to a sponsoring agency on behalf of a prospective participant.

The sponsoring agency also pays a subsistence allowance to the participant, either directly or through the administrative office of ISPC. A supplemental stipend usually is provided to cover exceptional costs during the first month of the training program and while the participant is engaged in program-related travel. The amounts of the regular and supplemental subsistence allowances vary slightly by sponsor.

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.

#### Seminars and Workshops

The types of costs and financial arrangements for seminars and workshops conducted in Washington are similar to those described above for the modular courses. The total costs will vary depending upon the duration of the seminar or workshop. Approximate course fees for the workshops that will be conducted in Washington in August and September of 1987 appear below.

#### Introduction to Microcomputer Applications for Statistical Organizations (3 weeks)

Course fees	\$2,450
Software purchase (optional)	\$1,800
Total cost with software purchase	\$4,250

#### Advanced Microcomputer Applications for Statistical Organizations (2 weeks)

Course fees	\$1,700
Software purchase (optional)	\$ 900
Total cost with software purchase	\$2,600

#### Introduction to Microcomputer Applications and Advanced Microcomputer Applications (5 weeks)

Course fees	\$3,600
Software package (optional)	\$1,800
Total cost with software purchase	\$5,400

The costs for participation in overseas workshops and seminars will depend upon the sponsorship arrangements and the topic and duration of the training. Information on costs will be included in specific workshop announcements.

#### VIII. PROCEDURES FOR OBTAINING FUNDING AND NOMINATING CANDIDATES

As explained above, the Census Bureau does not have fellowship funds nor can we request funding for a specific candidate. Individuals and organizations interested in participating in ESAYTEC training are responsible for identifying a source of funds and for completing the paperwork required to obtain them. This section provides some suggestions on how to seek funding and summarizes the procedures to follow for the principal sources of training funds.

We strongly recommend that those interested in attending one of the modular courses begin seeking a source of funds at least 6 months prior to the beginning of the course. Therefore, funding requests should be initiated no later than March for the modular courses that begin in September. Three to four months lead time should be allowed for obtaining funding to attend workshops or seminars.

#### General Procedure

Following is an outline of the major steps in obtaining funding and nominating candidates to attend ESAYTEC. Information on specific sponsoring agencies is given in the next section.

Step 1. Individual or organization identifies a training need and an appropriate ESAYTEC training activity.

In the case of an organization, the candidate or candidates also must be selected.

Step 2. Obtain necessary approval or clearance from other organizations.

In many government agencies, the nominating organization must receive approval or clearance from another government agency prior to submitting a request for funding to a donor. For example, the national statistical office may have to receive approval from the ministry of planning before requesting funding for its candidates.

Step 3. Send a written request for funding to a potential sponsor.

In some countries this may be done directly by individual candidates or nominating organizations. In many cases, however, all requests for overseas training must be made through a designated ministry, such as the ministry of planning or foreign affairs.

Regardless of the funding agency to whom the request is directed, it should include the following information as a minimum: a detailed description of the training activity to which the nomination pertains; the estimated cost; a summary of the candidate's qualifications; and a brief justification of how the training would benefit the organization and the work it does.

Step 4. Once funding is approved, the sponsor should send an official nomination to ISPC.

This nomination, which may be sent by letter or by cable, should state that the sponsoring agency will fund the training requested. It should also

provide, at minimum, a brief outline of the candidate's education, experience, and current duties.

Step 5. Upon receipt of the nomination, ISPC will review the nomination information and candidate's qualifications. Assuming that the candidate's qualifications are satisfactory and that there is available space in the training course requested, ISPC will officially notify the sponsor of the candidate's acceptance by letter or cable. Further information regarding arrival dates and accommodations will be provided at that time.

Note that the primary responsibility for evaluation and selection of candidates rests with the sponsoring organization and the organization that employs the candidate. The ISPC conducts only a general review of candidate qualifications to ensure that they meet the minimum requirements as outlined in this booklet.

Step 6. Upon receipt of the official acceptance from ISPC, candidates must obtain a visa, make travel arrangements, and obtain any other clearances required in order to travel overseas.

### Specific Procedures

#### United Nations

Requests for funding and nominations for training are handled by the resident country representative of the United Nations Development Program (UNDP). The various United Nations agencies fund development projects in a given country within the framework of an overall country program. The duration of country programs varies from 2 to 5 years.

Individuals or organizations interested in training should contact the local UNDP office to determine whether there is a project in progress that includes funds for training in the

appropriate area. If there is a project, the next step is to fill out a UN nomination form. The UNDP will forward the nomination form to the appropriate executing agency for review. The UN executing agencies that usually fund training in the area of applied statistics and data processing technology include the Fund for Population Activities (UNFPA), the Food and Agriculture Organization (UNFAO), the Department for Technical Cooperation for Development (UNTCO), and the UN Education, Science, and Culture Organization (UNESCO).

While it is much easier to obtain funding under an ongoing project that includes a training component, it is possible to make a special request for such funding. If the current country program does not include projects that will fund training in the area of applied statistics and data processing, the host country may officially request that funds be made available under the next country program.

#### Organization of American States

The OAS funds training in two ways; in conjunction with a technical project development in a given country or under the OAS Regular Training Program (PRA). All training requests should be made through the OAS resident country representative. Contact the OAS representative to determine whether there are any technical projects in progress that include funds for the desired training. The OAS office can provide further information on the nomination process.

The PRA provides full scholarships for training lasting 3 months or more. Candidates are selected by an advisory board that meets in June and October of each year at OAS headquarters in Washington. Applications and related documents should be submitted no later than April 30 of each year for the June selection of candidates and by August 31 for the October selection. Applications and other information about PRA can be obtained from the OAS

resident representative in each country.

#### U.S. Agency for International Development

The AID funds training in two ways; through technical assistance projects that have a training component and through separate training projects. Training funds may be available in countries that have an AID mission under a bilateral program of assistance. These include Bolivia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Panama, and Peru. Training funds may also be available through the U.S. Embassy in countries with an AID representative. These include Brazil, Colombia, Mexico, Paraguay, and Uruguay.

In countries with AID missions, individuals or organizations interested in obtaining funding for training should contact the Education Officer or Training Officer in the mission. A joint committee of AID and host country officials reviews all requests and decides whether funding will be granted. In countries with an AID representative, requests for funding should be directed to him.

For candidates sponsored by AID, the mission or AID representative should send a PIO/P and biographical data to AID/Washington for transmittal to the Census Bureau.

#### Inter-American Development Bank (IDB) and World Bank

These organizations do not provide direct funding for training. Loans made by the banks may support development projects with training components. The banks periodically send missions to the countries to review development needs and to prepare a country program of assistance. Projects to support the development of statistical and data processing capability, including training, must be requested by the appropriate officials

of the recipient country when the country program is being discussed with bank missions.

Projects supported by loans from the IDB or the World Bank are administered by agencies of the recipient country government. Information concerning the availability of funds for training therefore must be obtained through the appropriate executing agency.

#### Other Sources of Funding

There are a number of other potential sources of funding for the training offered by ESAYTEC. Due to the wide variation in policies and procedures, it is not practical to provide details here. A partial list of other potential sources of funding appears below.

- Pan American Health Organization,
- Private foundations such as Ford, Rockefeller, Tinker, and Hewlett,
- Private business firms; many firms provide funding for employees to improve their skills through job-related technical training.

#### IX. OTHER CONSIDERATIONS

Participants are requested to bring with them materials used in their jobs and materials that describe the statistical programs in which they may be

engaged. Examples of pertinent materials include questionnaires, instructions, descriptions of procedures, publications, evaluation studies, etc. These materials will be of practical value to participants throughout their training, whether they are attending modular courses, seminars or workshops.

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. For those who will attend the modular program, this process will be aided by a packet of diagnostic materials designed to help prospective participants evaluate their training needs and begin to develop specific training objectives.

#### X. ADDITIONAL INFORMATION

For further information about the ESAYTEC program, refer to the country or regional representative of one of the potential sponsoring organizations, such as the USAID Mission or the UN Resident Representative. Alternatively, information may be obtained by writing directly to:

Preston (Tim) Brown  
 Chief, Latin American Training Branch  
 International Statistical Programs  
 Center  
 U.S. Bureau of the Census  
 Washington, D.C. 20233 U.S.A.

**PART TWO:**

**DESCRIPTION OF TRAINING ACTIVITIES  
SCHEDULED DURING THE PERIOD  
MAY 1987 TO APRIL 1988**

**XI. MODULAR COURSE IN POPULATION CENSUSES AND SURVEYS**  
(September 1987 to April 1988)

Training Objectives

The objective of the Population Census and Surveys curriculum is to provide participants with the knowledge and skills required to collect and process population statistics. Participants learn how to plan and implement a population census or survey, as well as methods for improving the overall quality of existing data collection programs. This course is intended to support the development of staff to plan and conduct the 1990 round of population censuses in the hemisphere.

Who Should Attend

This program is intended for professional personnel working in population censuses, household surveys, demographic surveys, fertility surveys, and vital statistics. The types of professionals who can benefit from this program of training are listed below.

Statisticians who wish to improve their skills and knowledge in the collection and processing of population statistics.

Managers of population censuses or survey programs who need to improve their skills in one or more of the following areas: data collection, data processing, and management of statistical activities.

Demographers who wish to acquire skills and knowledge in the collection and processing of population statistics.

Candidate Requirements

Participants must have basic knowledge of algebra and should have some working experience (at least a year) in a statistical organization. Formal education background may range from high school graduation to advanced university degrees. Academic training in mathematics, statistics, sociology, and demography is especially helpful. Participants who begin the program in Module 2 must have previous education or experience equivalent to the training offered in Module 1. The knowledge and skills acquired in the first two modules are cumulative and provide the foundation for the advanced work in Module 3. Individuals are discouraged from taking Module 3 unless they have taken Module 2, as a minimum.

Training Plan

The 7-month program is divided into three modules. Training methods include classroom work, seminars, conferences, and discussion and

laboratory sessions. The classroom work gives participants the basic knowledge and skills to collect and process population statistics. Modules 1 and 2 focus on the methods and techniques used in the collection and processing of survey-census data. Module 3 concentrates on the management of statistical programs and related topics such as data user interface.

A recommended curriculum for participants specializing in Population Censuses and Surveys appears on the next page.

**MODULAR COURSE IN POPULATION CENSUSES  
AND SURVEYS (Continued)**

<u>Recommended Curriculum</u>	<u>Classroom Hours</u>
Module 1--September 21 to December 18, 1987	
Part One:	
300 Population Dynamics and Introduction to Demographic Analysis.....	20
200 Introduction to Census-Survey Methodology.....	20
204-1 Geography and Mapping for Censuses and Surveys..	15
201-1 Introduction to Statistical Methods.....	25
	80
Part Two:	
301 Techniques of Demographic Analysis: Mortality and Fertility.....	20
302 1990 World Census of Population and Housing.....	15
201-2 Introduction to Statistical Methods--Continued..	20
202 Introduction to Survey Sampling.....	30
204-2 Geography and Mapping for Censuses and Surveys-- Continued.....	20
205 Design of Tables and Questionnaires.....	25
112 Computer Data Processing Concepts.....	15
	160
Module 2--January 4 to February 26, 1988	
303 Strategies for Collection of Population Statistics.....	20
304 Demographic Measures from Incomplete Data.....	15
206 Editing, Coding, and Imputation Techniques.....	25
207 Quality Control of Census-Survey Operations.....	20
208 Development of Operational Documentation.....	20
113 Microcomputer Applications for Census-Survey Operations.....	30
305-1 Independent Project in Population Statistics....	25
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**MODULAR COURSE IN POPULATION CENSUSES  
AND SURVEYS (Continued)**

	<u>Classroom Hours</u>
 Module 3--February 29 to April 29, 1988	
209 Presentation and Publication of Data.....	15
210 Data Dissemination and User Interface.....	15
211 Management of Statistical Activities.....	20
212 Budgeting, Scheduling, and Controlling of Census-Survey Operations.....	15
213 Recruitment and Training of Field and Office Staff.....	20
306 Techniques for Evaluation of Census-Survey Data.....	40
305-2 Independent Project in Population Statistics-- Continued.....	35
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**MODULAR COURSE IN POPULATION CENSUSES  
AND SURVEYS (Continued)**

**DETAILED COURSE DESCRIPTIONS**

Module 1

Part One:

300 Population Dynamics and Introduction to Demographic Analysis  
(20 hours)

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 on the measurement objectives of demographic data collection. Procedures used to estimate the components of population change are introduced.

200 Introduction to Census-Survey Methodology (20 hours)

This course provides an introduction to the major steps involved in the initial process of designing a census or survey. The course stresses the interrelationships among different survey activities and how these must be taken into account when decisions are made about overall design. The interdependent nature of various activities is illustrated through the use of flow charts and operations calendars.

204-1 Geography and Mapping for Censuses and Surveys (15 hours)

A study is made of the geographic aspects of census and survey work, especially practical methodology in the use of maps in preparing for and carrying out surveys and censuses. Topics covered include map sketching, area sampling, physical and cultural landscape evaluation, census operations, statistical areas, publication maps, and case studies. The importance of developing skills in map reading and interpretation for data collection field operations is emphasized.

201-1 Introduction to Statistical Methods (25 hours)

This course is designed for participants who have had little or no training in statistics. The purpose of the course 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. Confidence intervals and hypothesis testing are also discussed.

## Part Two:

301 Techniques of Demographic Analysis: Mortality and Fertility  
(20 hours)

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, logistic function, cohort analysis, and measurement of degree and tempo of urbanization. The analysis of migration data is also discussed. Attention is given to the requirements for good data and consideration of the major types of error.

302 1990 World Census of Population and Housing (15 hours)

This course provides participants with an understanding of the concepts and principles involved in planning a census of population. The experience and problems encountered by the Latin American countries in taking the 1980 round of censuses are reviewed and used as a basis for discussing plans for the 1990 round.

205 Design of Tables and Questionnaires (25 hours)

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.

201-2 Introduction to Statistical Methods--Continued (20 hours)

The topics covered in the first part of this course are treated in greater detail. In addition, extensive coverage is given to the calculation of confidence intervals and to hypothesis testing.

202 Introduction to Survey Sampling (30 hours)

The purpose of this course is to provide participants with a basic understanding of survey sampling. The materials in the course are presented with minimal emphasis on theory. The topics covered include simple random sampling, systematic sampling, stratified random sampling, simple one- and two-stage cluster sampling, and ratio estimation. The following are also discussed: 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.

204-2 Geography and Mapping for Censuses and Surveys--Continued (25 hours)

This is the second part of Course 204. The course description is given above.

112 Computer Data Processing Concepts (15 hours)

The objective of this course is to introduce participants who have no prior data processing experience to basic concepts used in the computer field, particularly in statistical processing. Topics covered include the functions and interrelations of the major computer components, pre-machine processing of data, organization of data for input and processing, and the data entry process. Microcomputers are used throughout the course as a teaching tool.

Module 2

303 Strategies for Collection of Population Statistics (20 hours)

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 multi-round surveys, single-round surveys such as the World Fertility Survey and its continuation, the Family Health and Demographic Survey, and dual record collection systems. Methods of organizing and operating a civil registration and vital statistics system are also discussed.

304 Demographic Measures from Incomplete Data (15 hours)

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. This course provides an overview of techniques for estimating measures of the population composition, fertility, and mortality from limited and incomplete data. Emphasis is placed on the use of model life tables, techniques for estimating indirectly levels of mortality and fertility, and "own children" and pregnancy history techniques for estimating fertility.

206 Editing, Coding, and Imputation Techniques (25 hours)

The primary objective of this course is to teach principles and procedures for editing data. A combination lecture-laboratory approach is used to illustrate the application of these principles to manual and computer-assisted editing of data. Participants learn the importance of clear, written specifications and of close coordination between the subject-matter and computer staffs in data processing operations. The course also covers coding operations required to transform information into numerical form so that it can be processed. Alternative methods of imputation for item nonresponse also will be introduced.

### 207 Quality Control of Census-Survey Operations (20 hours)

The emphasis of this course is on nonsampling error. The course covers methods for control and reduction of nonsampling error in the preparatory, data collection, processing, and publication stages of a survey or census and introduces 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.

### 208 Development of Operational Documentation (20 hours)

Improvements in operational documentation are one of the most cost-effective ways of enhancing the quality of the data collected. Furthermore, good documentation provides a basis upon which methods and procedures can be progressively improved over time. This course covers the function of operational documentation and the desired scope and content of such materials. Techniques for effective writing, presentation, and organization of reference manuals are discussed. Manuals for interviewers, supervisors, and office staff are outlined and drafted in intensive laboratory sessions.

### 305-1 Independent Project in Population Statistics (25 hours)

With the guidance of the instructional staff, the participant develops and executes a project specifically related to the work of his or her organization. This project gives the participant an opportunity to synthesize and apply the knowledge and skills acquired in Modules 1 and 2. As such, it functions as a bridge between classroom instruction and on-the-job application of theoretical concepts.

### 113 Microcomputer Applications for Census-Survey Operations (30 hours)

This course will demonstrate commonly used software packages and their applications to statistical operations, including collecting, processing, editing, tabulating, and presenting data, and for budgeting, scheduling, and controlling projects. The primary emphasis of the course will be on actual use of software packages on an IBM-PC or IBM-compatible microcomputer. Participants will acquire a working knowledge of packages for word processing, spreadsheet presentation of data, and data base management.

## Module 3

### 209 Presentation and Publication of Data (15 hours)

This course covers the role of the statistical report in a survey-census operation. Methods of effectively presenting data are discussed, including the functions of text, tables, and graphics, and the application of standards for the presentation of errors. The assembly, production, and distribution of statistical reports also are discussed.

210 Data Dissemination and User Interface (15 hours)

This course examines the role of the data user in the planning and implementation of surveys and censuses and ways in which coordination between data producers and data users can be improved. The development of an effective program of data dissemination and user services also is discussed. In laboratory exercises, participants will evaluate programs of data dissemination and user services in their countries and will identify possible improvements.

305-2 Independent Project in Population Statistics (35 hours)

Participants will either continue work on the project begun in Module 2 or will develop a new project that applies what they have learned to their jobs.

211 Management of Statistical Activities (20 hours)

This course examines in detail the four basic functions of a manager in a statistical organization: planning, organizing, directing, and controlling. An overview of management thought and theory provides the basis for defining the roles of the manager. Leadership styles and their relationship to employee motivation also are studied. Emphasis is given to aiding participants in acquiring personal skills in planning and the effective use of time.

212 Budgeting, Scheduling, and Controlling of Census-Survey Operations (15 hours)

This course gives participants an understanding of the planning process and equips them with the practical skills that the manager needs in this area. Emphasis is placed on understanding the steps involved in effective progress monitoring, and the use of corrective measures where appropriate. Individual and group exercises are used extensively to teach topics such as estimating time and staffing requirements, preparation of schedules and budgets, and development of operational control systems.

213 Recruitment and Training of Field and Office Staff (20 hours)

This course covers two areas critical to developing quality staff in statistical organizations: recruitment and training. Effective techniques for screening and hiring enumerators, field supervisors, and office clerical staff are discussed first. The design and conduct of training programs that achieve the desired results are discussed next. In laboratory sessions participants design a training module, prepare the training materials, and practice presenting it.

306 Techniques for Evaluation of Census-Survey Data (40 hours)

Evaluation studies measure accuracy, identify sources of error, and provide guidance for future censuses and surveys. They are an important part of efforts to improve the quality of the data that are collected. Three methodologies for census-survey evaluation are presented in this course: use of demographic techniques, coverage measurement through separate surveys, and content measurement through separate surveys.

## XII. MODULAR COURSE IN COMPUTER DATA SYSTEMS

### Training Objectives

The purpose of the Computer Data Systems curriculum is to provide participants with skills and knowledge in the following three areas:

- Design, development, and implementation of automated systems;
- Increased productivity and effectiveness of data processing organizations and computer centers; and
- Improved understanding of the role of data processing in the organization and of the coordination necessary between the computer staff and subject-matter staff.

The program is offered in a modular format to accommodate the training needs of participants with varying experience and background. The full 7-month program is designed to provide training that will qualify persons with little or no experience as programmers and systems analysts. Upon completion of this training, participants will be ready to work as computer programmers and/or systems analysts. They will require some supervision, however, until they complete the transfer of newly acquired knowledge to real life situations faced in their own countries.

The program is designed primarily to train personnel who work in the automated processing of census and survey data. The basic skills and applications taught, however, are relevant to the work done in nonstatistical organizations that collect, process, and analyze data.

### Who Should Attend

This program is intended for junior- to intermediate-level programmers. Some prior experience or training in data processing would be useful, particularly in a statistical processing environment. This program is not aimed at individuals with an extensive background in programming or systems analysis and design.

### Candidate Requirements

All candidates must have completed secondary-level education and must have knowledge of basic algebra. Work experience in computer data systems is not required for participants taking Module 1. Participants who wish to begin the program with Module 2, however, must have work experience equivalent to the training offered in Module 1. The knowledge and skills acquired in the first two modules are cumulative and provide the foundation for the advanced work in Module 3. Individuals are discouraged from taking Module 3 unless they have taken Module 2, as a minimum.

### Training Plan

The 7-month program is divided into three modules. The first module is 3 months in duration and the second and third each last 2 months. Training methods include formal lectures, laboratory sessions, take-home study assignments, and individual study projects. Structured design, structured programming, and program and system testing are standard components of computer language classes.

Participants enter and test programs using the mainframe computer laboratory or the microcomputer laboratory. The mainframe laboratory includes on-line interactive terminals and a remote job entry subsystem connected to an IBM 370 computer system. The microcomputer laboratory features state-of-the-art hardware and software.

The training program is designed to give participants numerous opportunities to analyze, design, code, test, debug, and implement individual programs and complete systems. The program includes instruction in software maintenance and modification to enable participants to adapt programming languages and procedures to other types of equipment they may use in their countries. The knowledge and skills acquired in programming languages are readily adaptable to various types of computers.

The recommended curriculum for participants specializing in the Computer Data Systems program appears on the next page. Computer Data Systems is the major area of emphasis, but several related fields are included, such as basic survey-census methods, statistics, sampling, and management concepts. These related topics are considered essential for better understanding the subject-matter concepts underlying computer applications and the operational content within which computer processing takes place.

Field trips to large-scale telecommunication and computer facilities and visits to selected vendors are arranged to provide exposure to current technology, the latest products, and different organizational structures.

## COMPUTER DATA SYSTEMS COURSE (Continued)

Classroom  
Hours

Recommended Curriculum

Module 1 -- September 21 to December 18, 1987

## Part One:

100	Computer Data Processing Fundamentals.....	25
101	Fundamentals of Structured Programming.....	30
200	Introduction to Census-Survey Methodology.....	20
201-1	Introduction to Statistical Methods.....	25
		<u>100</u>

## Part Two:

102-1	Structured COBOL I.....	60
103	Microcomputer Applications for Statistical Processing.....	30
104	Operating Concepts and Utilities.....	20
105	Analysis and Design of Computer Systems.....	40
202	Introduction to Survey Sampling.....	40
		<u>190</u>

Module 2 -- January 4 to February 26, 1988

102-2	Structured COBOL II.....	60
106	Census Tabulation System (CENTS 4).....	50
107	Statistical Systems Analysis and Design Workshop.....	30
203	Preparation of Operational Documentation and Computer Processing Specifications.....	20
		<u>160</u>

Module 3 -- February 29 to April 29, 1988

108	Generalized Editing and Imputation Concepts (CONCOR).....	60
102-3	Structured COBOL III.....	35
109	Project Management Techniques.....	20
110	Data Base Management Systems.....	35
111	Independent Project in Computer Data Systems....	30
		<u>180</u>

**COMPUTER DATA SYSTEMS COURSE (Continued)****DETAILED COURSE DESCRIPTIONS**Module 1

## Part One:

100 Computer Data Processing Fundamentals (25 hours)

This course is designed to familiarize the participant with the basic concepts needed to understand and work with computers: number systems, data formats, data structures, computer systems structure and hardware and software components, including communication links and operating systems.

101 Fundamentals of Structured Programming (30 hours)

This course introduces the participant to computer programming in terms of the development of algorithms. Emphasis is placed on programming as a methodology using top-down, structured design. The participant learns fundamental programming operations using the three basic control structures of sequence, repetition, and decision. Basic algorithm development and pseudo code are used to teach principles without reference to a particular programming language. In addition, the participant is introduced to data processing tools and techniques, such as flowcharts, structure charts, and decision tables.

200 Introduction to Census-Survey Methodology (20 hours)

This course provides participants specializing in computer data systems with an overview of the major operations in a survey or census. The principal objective of the course is to improve participants' understanding of the operational context within which data processing takes place. Particular attention is given to the procedures used in designing questionnaires that are suitable for computer-assisted processing. Emphasis also is given to the principles and procedures used by subject-matter staff to develop edits and statistical tables.

201-1 Introduction to Statistical Methods (25 hours)

This course is designed for participants who have had little or no training in statistics. The purpose of the course 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. Confidence intervals and hypothesis testing are also discussed.

## Part Two:

102-1 Structured COBOL I (60 hours)

The participant learns the fundamentals of the Common Business-Oriented Language (COBOL) through practical application. This includes the following concepts: basic input/output, arithmetic, comparison, report editing, and data manipulation operations. Structured program design and coding are emphasized.

The course is taught by presenting 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 assistance where necessary.

103 Microcomputer Applications for Statistical Processing  
(30 hours)

This course is designed to give the participant a practical, working knowledge of microcomputers and an understanding of their capabilities and their limitations from the standpoint of both hardware and software. The participant will be introduced to microcomputer operating systems and will become familiar with the functional capabilities of selected software packages for word processing, graphics, and data base management.

104 Operating Concepts and Utilities (20 hours)

In this course the participant acquires a basic knowledge of operating system concepts. Through a series of lectures and laboratory sessions, the participant learns to use the Disk Operating System (DOS), the most popular operating system used on microcomputers. Topics covered include: commands for creating, storing, and managing data stored on diskettes or fixed disks; printing operations; and the redirection and piping of standard input and output files.

105 Analysis and Design of Computer Systems (40 hours)

This 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 a methodology which is used in an ADP installation to analyze the requirements of a job and to design a data processing system to meet those requirements.

Topics covered in this course are: the analyst's role in designing a questionnaire, record formats, edit specifications, and table formats, and in planning the 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 ensuring accuracy and timeliness in data processing.

202 Introduction to Survey Sampling (40 hours)

The purpose of this course is to provide participants with a basic understanding of survey sampling. The material in the course is presented with minimal emphasis on theory. The topics covered include simple random sampling, systematic sampling, stratified random sampling, simple one- and two-stage cluster sampling, and ratio estimation. The following are also discussed: 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.

Module 2

102-2 Structured COBOL II (60 hours)

This course further develops the structured design and coding techniques encountered in earlier segments and is taught through a series of problems for which the participant designs, codes, and tests a solution. Problems illustrate the following concepts: input editing, single- and multiple-level control breaks, table lookup and search, and the sort/merge functions. Emphasis is placed on giving each participant as much practical experience on a computer as possible, with the instructor offering assistance where necessary.

106 Census Tabulation System (CENTS 4) (50 hours)

The Census Tabulation System is a special-purpose language designed to accelerate census processing and significantly reduce the time required to write computer programs for tabulation of census data. Although designed primarily for population and housing censuses, CENTS 4 is appropriate for agricultural censuses, household sample surveys, and many other statistical applications. In this course, the participant learns how to code statements in the CENTS 4 language to produce desired tabulations.

107 Statistical Systems Analysis and Design Workshop (30 hours)

This course is designed to apply the theories learned in the course Analysis and Design of Computer Systems. Participants work in teams to design a major data processing system for survey data. Emphasis is placed on the design of the following components: questionnaires, file structures, check-in and control, data entry, file creation, editing for valid values and completeness, and table formats. Also considered is the clerical interface with the processing system in such areas as field and office coding and editing, questionnaire check-in and control, and production quality control. Participants can elect to implement one of the systems designed in this course during the Independent Project in Module 3.

203 Preparation of Operational Documentation and Computer Processing Specifications (20 hours)

This course provides the participant with the knowledge and skills necessary to prepare clear and accurate specifications for the computer editing

and tabulation of data so that the specifications may then be used by programmers to prepare the required computer programs. In addition, the participant learns appropriate techniques for the preparation of systems documentation.

### Module 3

#### 108 Generalized Editing and Imputation Concepts (CONCOR) (60 hours)

The CONCOR data editing system is a special-purpose language for the identification and correction of invalid or inconsistent data in surveys and censuses. Although designed primarily for housing and population censuses, CONCOR is appropriate for agricultural censuses, household sample surveys, and many other statistical applications. During the course, the participant learns how to prepare CONCOR statements and develops a complete program to edit and automatically correct data.

#### 102-3 Structured COBOL III (35 hours)

Building on the previous courses in structured COBOL, this course examines such concepts as subprograms and library usage, file matching and updating, and nonsequential file structures. By coding solutions to practical exercises, the participant will learn to create subprograms and call them from main routines, manipulate two or more files in update operations, and perform update and random retrieval operations on indexed sequential files.

#### 109 Project Management Techniques (20 hours)

Basic concepts of project planning and organization and tools for project management are presented in this course. The participant learns project management techniques in the following areas: initial definition of the problem, organization of the project team, developing a project plan and scheduling of activities and resources, budgeting, and definition of control procedures and reports. The use of microcomputer software to implement management tools, such as Program Evaluation and Review Techniques (PERT) and Critical Path Method (CPM), will be emphasized.

#### 110 Data Base Management Systems (35 hours)

The participant is introduced to concepts of information storage, classification, and retrieval. Areas covered include data structures, access methods, keyed files, indexing, maintenance, reorganization, error handling, links, addressing algorithms, and search strategies. Using a microcomputer, the participant develops an application using a data base package and conventionally-coded programs.

#### 111 Independent Project in Computer Data Systems (30 hours)

With the guidance of the instructional staff, the participant develops and executes a project specifically related to the work of his or her organization. This project gives the participant an opportunity to synthesize and apply the knowledge and skills acquired in Modules 1 and 2. As such, it functions as a bridge between classroom instruction and on-the-job application of theoretical concepts.

**XIII. WORKSHOP ON INTRODUCTION TO MICROCOMPUTER APPLICATIONS  
FOR STATISTICAL ORGANIZATIONS**

Date and Location

August 3 to 21, 1987 in Washington, D.C.

Target Audience

Project managers and technical staff who would like to use microcomputers for collecting, processing, editing, tabulating, or presenting data, or for budgeting, scheduling, and controlling of projects. No previous experience with computers is necessary.

Description

This workshop will introduce participants to fundamentals of microcomputing and will demonstrate commonly used software packages and their applications to statistical operations and project management. Participants will learn microcomputer hardware and software concepts, how to select hardware, how to determine when the use of microcomputers is appropriate, and how to plan for their introduction.

The primary emphasis of the workshop will be on actual use of software packages on an IBM-PC or IBM-compatible microcomputer. Participants will acquire a good working knowledge of the following packages: Word-Perfect, dBase III Plus, Lotus 1-2-3, and a data entry package (either Entrypoint or Rode PC). These packages may be purchased by paying an additional amount with the tuition fee for attending the workshop.

The workshop on Advanced Microcomputer Applications for Statistical Organizations will be conducted in the 2 weeks immediately following this introductory workshop. Participants with no prior microcomputer experience are encouraged to attend both workshops. A detailed description of the advanced workshop appears below.

**XIV. WORKSHOP ON ADVANCED MICROCOMPUTER APPLICATIONS  
FOR STATISTICAL ORGANIZATIONS**

Date and Location

August 24 to September 4, 1987 in Washington, D.C.

Target Audience

Project managers and technical staff who would like to improve their skills in using microcomputers for collecting, processing, editing, tabulating or presenting data, or for budgeting, scheduling, and controlling of projects. Participants must meet one of the following requirements: (1) prior attendance at the workshop on Microcomputer Applications for Statistical Organizations or (2) good working knowledge of Lotus 1-2-3 and one of the following: dBase II, dBase III, or dBase III Plus.

Description

In this workshop participants will practice applications of microcomputers to real-life work situations and will learn selected advance features of dBase III Plus and Lotus 1-2-3. Participants will bring with them materials relating to a project on which they work. They will develop a specific microcomputer application for this project using dBase III Plus, Lotus 1-2-3, or both packages. The packages may be purchased by paying an additional amount with the workshop tuition fee.

## XV. WORKSHOP ON EFFECTIVE DATA USER-DATA PRODUCER INTERFACE

### Date and Location

This workshop is 2 weeks in duration and will be conducted during the second half of 1987. The exact date and location have not yet been determined. This information will be announced separately.

### Target Audience

Executives and managers in organizations that produce data and use data. It is desirable to have users and producers participate together as a team. Countries should send groups that include both data users and data producers who work, or will work together, on the same statistical activities.

### Description

The objective of this workshop is to teach data producers how to work together effectively in three key areas: (1) definition of data needs; (2) presentation of data; and (3) dissemination and use of data. Participants will learn how to convert these into tabulation plans and questionnaires that produce the data needed. The use of effective presentation techniques, including tables, graphs, charts, and maps will be discussed and practiced. The development of regular channels of communication between users and producers and a program of data user services also will be discussed.

Data users and data producers attending the workshop will be encouraged to use this opportunity to learn from each other. The workshop will promote this process through team exercises, role plays, and simulations.

Subject to the availability of hardware and software, microcomputer applications for presentation and dissemination of data will be demonstrated.

**PART THREE:**

**TRAINING ACTIVITIES TENTATIVELY  
SCHEDULED DURING THE PERIOD  
MAY 1988 TO APRIL 1989**

## XVI. INTRODUCTION TO THE 1988-1989 TRAINING PROGRAM

The program of training activities conducted in 1987-1988 will be repeated during the 1988-1989 training year. In addition, two new modular courses are scheduled to be introduced: Economic Development Statistics and Food and Agriculture Statistics. Workshops cannot be scheduled this far in advance; however, at a minimum, the three workshops described above in Part Two will be repeated. The activities tentatively scheduled for the 1988-1989 training year are listed below.

### Modular Courses (September 1988 to April 1989):

Economic Development Statistics

Food and Agriculture Statistics

Population Censuses and Surveys

Computer Data Systems

### Workshops (Summer of 1988):

Introduction to Microcomputer Applications for Statistical Organizations

Advanced Microcomputer Applications for Statistical Organizations

Effective Data User-Data Producer Interface

Detailed descriptions of the modular courses in Economic Development Statistics and Food and Agriculture Statistics appear below.

## XVII. NEW MODULAR COURSE IN ECONOMIC DEVELOPMENT STATISTICS

### Training Objectives

The objective of the course in Economic Development Statistics is to provide participants with the knowledge and skills needed to plan and conduct a variety of economic surveys and censuses and to analyze the data that are collected. Participants receive training in planning and implementing data collection activities for the traditional and nontraditional sectors of an economy. Participants are also trained in the development of indicators of economic activity, basic economic theory, and the use of economic data for national planning purposes. Applications of microcomputers to the collection and analysis of statistical data are taught throughout the course.

### Who Should Attend

This course is designed for professionals working in organizations that have responsibility for collecting and using economic statistics. These may include a wide variety of government agencies, such as the national statistical office, central bank, or ministry of planning. In addition, attendance at one or more modules of this course may be useful to professionals working in universities, research institutions, or private sector organizations who wish to improve their understanding of how economic statistics are collected and analyzed.

### Training Plan

The 7-month program is divided into three modules. The first module is 3 months in duration and the second and third each last 2 months. Depending upon the trainee's needs, the modules may be taken individually or in various combinations. Training methods include formal lectures, seminars, laboratory sessions, take-home study assignments, and individual study projects.

A preliminary outline of the Economic Development Statistics curriculum appears on the next page.

**ECONOMIC DEVELOPMENT STATISTICS COURSE (Continued)**

	<u>Classroom Hours</u>
<u>Tentative Curriculum Outline</u>	
Module 1 -- 3 months	
Part One:	
Microeconomic Concepts for Statisticians.....	20
Elements of Economic Surveys and Censuses.....	20
Introduction to Statistical Methods.....	20
Geography and Mapping for Surveys and Censuses.....	20
	80
Part Two:	
Macroeconomic Concepts for Statisticians.....	20
Selected Topics in Economic Statistics.....	10
Small-Scale and Household Industries.....	10
Measures of Economic Activity.....	20
Questionnaire and Table Design.....	30
Introduction to Computer Data Processing.....	15
Introduction to Survey Sampling.....	30
Intermediate Statistical Methods.....	25
	160
Module 2 -- 2 months	
Foreign Trade Statistics.....	20
Selected Topics in Economic Development.....	10
Use of Microcomputers in Survey-Census Operations.....	20
Regression and Correlation Analysis.....	20
Quality Control of Survey-Census Operations.....	20
Editing, Coding, and Imputation Techniques.....	25
Development of Operational Documentation.....	20
Independent Project.....	25
	160
Module 3 -- 2 months	
Role of Economic Statistics in National Development.....	20
Presentation and Publication of Data.....	15
Data Dissemination and User Interface.....	15
Fundamentals of Management.....	20
Hiring and Training of Field and Office Staff.....	20
Budgeting, Scheduling, and Controlling Survey-Census Operations.....	20
Survey Evaluation Techniques.....	25
Independent Project.....	25
	160

## XVIII. NEW MODULAR COURSE IN FOOD AND AGRICULTURE STATISTICS

### Training Objectives

The objective of this training program is to provide participants with the knowledge and skills required to plan and implement surveys and censuses in the area of food and agriculture statistics. Training is also provided in the subject-matter concepts and theory associated with the analysis of agriculture statistics. Emphasis is placed on teaching the skills required to improve the reliability and timeliness of estimates of agricultural output and other measures of activity in the agriculture sector. Applications of microcomputers to the collection and analysis of statistical data are taught throughout the course.

### Who Should Attend

This course is designed for professionals working in organizations that have responsibility for collecting and using food and agriculture statistics. These may include national statistics offices, ministries of agriculture, national planning agencies, or central banks.

### Training Plan

The 7-month program is divided into three modules. The first module is 3 months in duration and the second and third each last 2 months. Depending upon the trainee's needs, the modules may be taken individually or in various combinations. Training methods include formal lectures, seminars, laboratory sessions, take-home study assignments, and individual study projects.

A preliminary outline of the Food and Agriculture Statistics curriculum appears on the next page.

**FOOD AND AGRICULTURE STATISTICS COURSE (Continued)**

	<u>Classroom</u> <u>Hours</u>
<u>Tentative Curriculum Outline</u>	
Module 1 -- 3 months	
Part One:	
Concepts and Tools for Agriculture Statistics.....	20
Agriculture Survey Operations and Methods.....	20
Introduction to Statistical Methods.....	20
Geography and Mapping for Surveys and Censuses.....	<u>20</u>
	80
Part Two:	
Agriculture Survey Operations and Methods--continued.....	15
1990 World Census of Agriculture.....	15
Economics of Agricultural Development.....	20
Selected Topics in Food and Agriculture Statistics.....	10
Questionnaire and Table Design.....	30
Introduction to Computer Data Processing.....	15
Introduction to Survey Sampling.....	30
Intermediate Statistical Methods.....	<u>25</u>
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Module 2 -- 2 months	
Frame Construction and Sample Survey Design for Agriculture Surveys.....	35
National Information System for Food and Agriculture.....	15
Use of Microcomputers in Survey-Census Operations.....	20
Quality Control of Survey-Census Operations.....	20
Editing, Coding, and Imputation Techniques.....	25
Development of Operational Documentation.....	20
Independent Project.....	<u>25</u>
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## Module 3 -- 2 months

Objective Measurement of Area and Yield.....	30
Use of Food and Agriculture Statistics in Economic Development Planning.....	15
Presentation and Publication of Data.....	15
Data Dissemination and User Interface.....	15
Fundamentals of Management.....	20
Hiring and Training of Field and Office Staff.....	20
Budgeting, Scheduling, and Controlling Survey-Census Operations.....	20
Independent Project.....	25
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**PART FOUR:**

**OTHER SEMINARS AND  
WORKSHOPS AVAILABLE**

## XIX. ILLUSTRATIVE LIST OF OTHER SEMINARS AND WORKSHOPS AVAILABLE

ESAYTEC can offer a variety of seminars and workshops to help meet specific needs. Seminars and workshops can be arranged upon request for topics of interest. Cost estimates and other details can be obtained by contacting ISPC (see page 11). An illustrative list of topics appears below.

### Data Collection Methods

Design of Tables and Questionnaires  
 Preparation of Manuals and Operational Documentation  
 Preparation of Computer Processing Specifications  
 Organization and Control of Field Operations  
 Design and Implementation of Training for Field and Office Staff  
 Microcomputer Applications for Management of Survey-Census Operations

### Sampling and Statistical Methods

Survey Sample Design  
 Introduction to Statistical Analysis of Data  
 Control and Evaluation of Nonsampling Error

### Computer Data Processing

CONCOR (CONSistency and CORrection software package)  
 CENTS IV (CENSus Tabulation System software package)  
 Data Processing Project Management  
 Systems Analysis and Design

### Dissemination and Use of Data

Planning and Implementing a Data User Services Program  
 Microcomputer Applications for Effective Presentation and Dissemination of Data  
 Use of Social and Economic Data for Policymaking

### Population Statistics

Microcomputer-Based Information Systems for the External Sector (Foreign trade and tourism)  
 Agriculture Censuses and Surveys

### Evaluation Studies

Design of Studies to Evaluate the Impact of Development Projects  
 Demographic Methods for Evaluation of Census Data  
 Post-Enumeration Surveys for Censuses of Population  
 Statistical Methods for Measuring Content Error in Censuses of Population