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A G U I R R E I N T E R N A T I O N A L

TECSUP AND THE STRATEGIC PLANNING PROCESS

A REPORT OF THE THIRD AI
TECHNICAL ASSISTANCE VISIT
AND
THE 1985-1990 STRATEGIC PLAN FOR
TECSUP

Submitted to

TECSUP
U.S. Agency for International Development, Peru
USAID -Bureau for Private Enterprise

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A G U I R R E I N T E R N A T I O N A L

TECSUP AND THE STRATEGIC PLANNING PROCESS
A REPORT OF THE THIRD AI TECHNICAL ASSISTANCE VISIT
March, 1986

EXECUTIVE SUMMARY

This report summarizes the work accomplished with, and for, TECSUP, a private-sector training institute providing industrial and technical training for post-secondary students in Peru. The report describes the background of the Institute, as well as its extensive accomplishments. The report also addresses the technical assistance provided, and the resulting outcomes or products, which culminated in the 1986-1990 STRATEGIC PLAN.

TECSUP has demonstrated impressive progress since the Aguirre organizational analysis in December 1984. As March 1986 ends, the Institute has 10 students beginning their last year of training in the Three-year program, some 70 students entering their second year and 90 students admitted for their first year of training in three fields: electronics, industrial electricity, and plant maintenance.

TECSUP has obtained approval from the Peruvian Ministry of Education to offer training in three additional fields - iformatica (data processing), supervision de operaciones (chemical/metallurgical process technology), and maquinaria pesada (heavy machinery). TECSUP plans to offer the six fields by 1990, with a total of 540 students admitted that year: 120 electronics, 120 in data processing, 90 in plant maintenance, 90 in heavy machinery, 60 in industrial electricity and 60 in process supervision.

An Office of Continuing Education has been established to prepare, implement and administer the "short courses" program. This program will offer refresher classes based on adaptations of courses prepared by Delaware Technical and Community Colleges and received by TECSUP between August 1985 and February 1986. Nineteen of an original twenty courses have been received and accepted by TECSUP; one is being modified. A twenty-first course has been offered by DTCC for delivery sometime in 1986.

Extensive planning has been completed, and a determined effort is being mounted to offer at least twenty courses in 1986. DTCC has been sending experts to assist the Continuing Education staff and the prospective instructors in the preparation and delivery of these courses. The report provides information on the process, objectives, expectations, and recommendations regarding this program. In 1990, TECSUP is hoping to offer 40 short courses.

The increased activity and movement toward the implementation of the refresher courses is beginning to benefit the Three-year program, and the institution as a whole. TECSUP planners have acknowledged the benefits of working with a sister institution in the vanguard of technological training. They have expressed the intent to continue such a

relationship in the future.

As a new organization, TECSUP has been in the process of establishing the procedures and practices necessarily required of a technical institute of high quality. The financial and administrative systems are being developed along with the instructional ones. External consultants have analyzed TECSUP operations and procedures, and have prepared an extensive manual of procedures. These consultants are also analyzing administrative functions, and have assisted in the development of the latest organizational chart. The report compares the current status of these systems, to those observed during previous visits.

During 1985, Peruvian industry has contributed $645,739.67 US (or 6,583,241,638 soles) to the support of TECSUP. In addition, seven highly knowledgeable representatives of Peruvian industry have joined the Technical Advisory Committee. This committee has met and has provided advice which Executive Director Inchaustequi reported as being highly useful in the planning of new courses and service offerings.

With the offering of four "refresher" or short courses in April 1986, TECSUP will have a market test of the current market demand in four training areas. A systematic in-depth market demand study continues to be necessary for assessing long-term success. Initial responses to the advertising for the short courses suggest high levels of interest in the April course offerings. Inquiries indicate industry interest in in the services offered by TECSUP. These inquiries include calls for services beyond those originally planned, but are now contemplated with interest and excitement by TECSUP staff. For example, one company called asking for training for 15 of its employees in a specific area of need.

Current financial data indicates an improvement in the control and planning ability of the organization. TECSUP has developed its 1986 budget as a managerial tool that reflects the TECSUP Operational Plan in financial terms. With the technical assistance of Aguirre International, TECSUP staff created spreadsheets in Lotus 1-2-3 to maintain and control the budget, and to be able to derive and test budget projections over the next five years. The budget projections are based on revenues from the numbers of students and trainees anticipated over the next five years. The difference between costs and those revenues pinpoint the amount to be financed through donations.

In 1986, the operating revenue from student/trainee fees and tuition are expected to comprise 44 percent of all revenues. This operating revenue is expected to cover 51 percent of the expenses. Revenue is expected to increase progressively through 1990, when operating revenue should virtually cover operating expenses. Mid September 1986 budget projections indicate that operating revenues will cover 84% of the anticipated operating costs by 1990.

These budget figures, and the above-mentioned computerized spreadsheets collaboratively produced by TECSUP and AI, will enable TECSUP to monitor its budget and current financial health, as well as project its future financial circumstances.

As part of the strategic planning process, TECSUP planners reviewed: the

TECSUP domain, mission, status, short-term and long-term objectives, and potential problems in the major components of the Institute. These included discussion of the TECSUP: mission, organizational structure, Three-year program, Continuing Education program, financial, administrative and data processing system, and private sector involvement. The discussions concluded with a summary of organizational strengths and weaknesses.

Factors external to TECSUP were also analyzed, including the current impact they were having and were anticipated to have, given the best guesses possible within the volatile crucible of its current environment. The planners discussed the national economy, inflation rate, current markets, donors, competitors, government regulations, and national social and political conditions.

TECSUP directors also discussed organizational objectives, strategies and tactics currently being employed. They also considered several other tactics, actions or activities which might be appropriate or desirable for the organization.

The report includes an analysis of the risks and resources which confront TECSUP as it moves toward financial viability and full capacity in 1990. Detailed information on the specific objectives and tasks to be accomplished are included in the report as part of the operational plans for 1986, for the Executive Director and major departments. Critical among these was consideration of a new chemistry building. DTCC visiting experts assisted TECSUP and AI in the strategic planning process by conducting an analysis of current facilities, and determining the need for such a building. They concluded that the projected enrollment will require a new building in the very near future.

MAJOR CONCLUSIONS AND RECOMMENDATIONS TECSUP has demonstrated outstanding effort, accomplishment and need during 1985-1986. Its strengths include highly capable and dedicated personnel working in a facility unique for its outstanding resources. While no longer an infant, the Institute is still in its start-up phase, and needs to establish a record, an institutional history for the quality of its services and its trainees. It deserves support and will likely get it from its clients. It will continue to require donations through 1990.

One TECSUP objective is to be able to support at least 90% of its operational costs from training revenues by 1990. Current market analyses and projections through 1990 suggest that this 90% goal is a realistic and challenging target. With a few minor changes in strategies and practices, TECSUP can attain this objective.

We thus recommend the following to TECSUP: Continue the current work toward determining and implementing effective and efficient administrative and financial systems. Continue the planning and implementation of the Three-year program and the Continuing Education short courses. Monitor the needs of the market through the response to the short course offerings in 1986. While this market test will provide incontrovertible evidence of market demand, a systematic market demand study will still be necessary for obtaining information on the depth and breadth of market demand, thus enabling TECSUP to plan more effectively. Such a

study need not be exhaustive, since some information had already been gathered prior to, and subsequent to, the inception of the Institute. The short course offerings will also provide market test data. We recommend a focused, culturally informed and sensitive study be conducted as soon as possible, concentrating on the specific areas in TECSUP's domain.

We recommend that, in order to implement the six-field plan approved by the Ministry of Education, TECSUP complete its facilities and equipment acquisition, enabling them to offer basic courses, particularly those in basic mechanics.

To AID, we recommend that it continue its support of TECSUP, for at least four years of donations, with technical assistance, to assure the optimum package of equipment, facilities, and services addressing the needs of Peru. This support should continue with the market study mentioned above. It should include a systems and financial audit, to balance the audit conducted by Deloitte Haskins and Sells, and to document the extensive progress made by TECSUP.

AID funds should include the development of a project paper using the 1986-1990 Strategic Plan as a starting point, to systematically determine the specific services, equipment and materials which would most benefit the Institute. This multi-year support should include periodic evaluations, with annual determination of the effectiveness of the aid, and the resultant decisions on continuation of that support.

ACKNOWLEDGMENTS

This report would have been impossible to prepare without the conscientious cooperation of the TECSUP Directors and staff. Their competence enhanced the quality of the study and of the plan. Their sense of humor and hospitality made the work itself delightful.

We wish to thank Luis Hochschild, President of The Board of Directors, and Rodolfo Beeck, former Executive Director, for their cooperation and support, beginning with the December 1984 trip by Edward Aguirre. Numerous staff members welcomed and helped us. We thank Executive Director Juan Inchaustegui, and Directors Manuel Rivas, Pablo Cabieses and Fernando Guzman, and Continuing Education Coordinator Miguel Angel Martino. Mr. Guzman and Roger Mecias devoted extensive time and effort to the study throughout this visit, which we gratefully acknowledge.

We also want to express our appreciation to the AID/Peru Project Officer Gerardo Arabe for his support throughout the visits, and to Mission Director John Sanbraillo and Norma Parker for their time and involvement. To the AID/Washington Project Officers, Andrea Boumann and Sandy Reinhardt, we extend our thanks for their helpful suggestions.

PART ONE

DEVELOPMENT OF THE 1986-1990 STRATEGIC PLAN FOR TECSUP

BACKGROUND

TECSUP, the Asociacion Promotora de Institutos Tecnologicos Superiores, is a private Peruvian non-profit educational institution organized in May 1984, as a result of a perceived need for technical specialists essential to the development of an emerging national industrial economy. Both the U.S. Agency for International Development and the State of Baden-Wurttemberg of Germany, have invested in this effort along with the private sector in Peru.

To support the development of TECSUP, AID funded studies of TECSUP in late 1984. One of the studies included a situational analysis and diagnostic assessment of the TECSUP program by Edward Aguirre, former United States Commissioner of Education, and President of Aguirre International. Dr. Aguirre formulated short and long-term recommendations, including a strategic planning process for TECSUP.

AID subsequently contracted with Aguirre International to provide follow-up assistance to PRE/AID and TECSUP in implementing the recommendations, particularly the strategic planning process and liaison with the Delaware Technical and Community Colleges (DTCC), AID-PERU, and PRE.

This report describes the results of the technical assistance provided by Aguirre International to TECSUP between June 1985 and March 1986. The report documents the progress made by TECSUP in developing and implementing the strategic planning process.

Strategic planning is a planning process based on intensively and systematically analyzing an organization, its "business" or nature and purpose, and the internal and external aspects or components which

affect its effectiveness and success. It includes the study of alternative strategies to achieve organizational success followed by the production of dynamic plans and systems for monitoring the implementation of those plans. Strategic planning involves the monitoring of the implementation and changing of the plans as a result of the systematic collection of information and of decision making.

That process produced the 1986-1990 Strategic Plan of TECSUP, presented in Part Two of this report. A major component of that Strategic Plan is the 1986 Operational Plan. This Operational Plan includes: (a) statements of major TECSUP objectives by department, and the time schedule for their attainment, (b) the resources needed to attain those objectives, and (c) expected outcome, e.g., the numbers of students to be trained per field.

The report concludes with a brief summary of the status of the critical elements of TECSUP administration and functioning. The summary also presents recommendations to assist AID in making decisions concerning their future relationship with TECSUP.

OBJECTIVES OF AGUIRRE INTERNATIONAL TECHNICAL ASSISTANCE

AID/Washington contracted Aguirre International to accomplish three major tasks:

1. Facilitate project management and coordination of U.S. technical assistance with the activities of TECSUP, DTCC, the AID/Peru Mission and AID/PRE. (Aguirre International was to be informed of all plans and developments so that these could be integrated into the strategic planning process.)
2. Transfer to TECSUP the principles and methods underlying strategic

planning and management/educational data systems. Refine and extend the strategic planning accomplished thus far to produce an institutional TECSUP Strategic Plan for 1986-1990. Train TECSUP staff, as needed, in the implementation of specific strategic planning components.

3. Provide assistance in refining the TECSUP/AID decision data system to produce on-going information for TECSUP, AID/PRE, and AID/Peru for long-term planning and operations. (Design and pilot computerized data base of management activities, including agreements, tasks to be performed, materials developed, and evaluations for this project based upon the recommendations made in the December 1984 Aguirre report.)

SCOPE OF WORK FOR THE THIRD AI VISIT

The specific tasks which needed to be accomplished during the third and last trip of this contract were to:

1. Update the previously developed components of the TECSUP Strategic Plan, incorporating results of work done since the October 1985 visit; determine the status of completion of those tasks detailed in the October 1985 Memorandum of Agreement.
2. Review and provide necessary training on the final steps necessary to produce the 1986-1990 Strategic Plan.
3. Conduct the final interviews and draft the final project report, including the TECSUP STRATEGIC PLAN FOR 1986-90.

METHODOLOGY/PROCESS

The process followed during this technical assistance visit resembled previous AI visits to Lima in certain aspects. As in previous visits, the visit began with meetings with top TECSUP and AID personnel.

Aguirre and Garcia met with TECSUP Executive Director Juan Inchaustegui and Credit Fund Director/Planning Coordinator Fernando Guzman followed by a meeting with AID Project Officer Gerardo Arabe.

In this trip, however, DTCC coordinator Anthony Digenakis and three other DTCC professors were also on-site, enabling the two groups (AI and DTCC) to work together to make assessments, and to provide TECSUP with immediate, coordinated technical assistance.

For example, Executive Director Inchaustegui raised several issues which AI analyzed as critical for funding. During this visit, TECSUP was considering the construction of a chemistry building. On AI recommendation, Mr. Inchaustegui requested that the DTCC team evaluate the needs for the additional building. In response, Anthony Digenakis and chemist Helen Howard assessed current and anticipated TECSUP facilities needs and presented their professional judgment of construction and capital outlay requirements during 1986. (See Appendix A.)

The second major difference between the process followed during this trip and previous trips, was the team planning chaired by Director Inchaustegui. To complete the strategic plan, AI requested a meeting of the top administrators to review the strategic plan components prepared and the information gathered by March 10, 1986, and to complete the examination, analysis and selection of organizational strategies, strengths, weaknesses, risks and resources. Director Inchaustegui chaired the highly productive planning meetings over two days. These meetings were essential for the completion of the TECSUP Strategic Plan and also served in technology transfer, namely the training in the strategic planning techniques of group analysis and decision making.

ASSISTANCE PROVIDED AND PRODUCTS OF THIRD VISIT

At the beginning of the AI third visit, TECSUP was focused on two consuming priorities: the examinations and admissions process for the entering 1986-87 students, and the preparation for the short courses to be offered in April 1986. Executive Director Juan Inchaustegui had assumed the helm of TECSUP two months previously and was proceeding to implement the major organizational objectives articulated during the previous two AI visits: continuing its Three-Year Program, implementing the Short Courses Program, plus systematically examining and formalizing its administrative structure and procedures.

AID priorities, with respect to TECSUP, focused on the completion of the donation stipulations -- the offering of the short courses developed by DTCC.

TECSUP Status and Strategic Plan Activities

Upon our arrival at TECSUP, we immediately observed the severe time constraints under which the staff was working. The Department of Instruction was in the final stages of correcting the admissions exams and identifying students to be admitted. The Student Credit Fund Director and the social worker were interviewing applicants to determine which qualified for BID loans. Professors were preparing for the beginning of the new academic year.

Concurrently, the Continuing Education Office Coordinator was preparing for the short courses, coordinating with the course translation specialist, the translators and the prospective instructors, as well as with experts from DTCC visiting to assist in the preparation and offering of the refresher courses. The development and implementation of the promotional campaign was also in progress.

The Administration Department was developing the new TECSUP budget, continuing the installation of the Basic IV computer system and the newly acquired microcomputers, and was beginning to work with the newly written procedures for its major administrative processes.

While supervising these efforts, the Executive Director was also supervising the development of the new budget, and the analysis of the organizational structure and administrative procedures. Additionally, he was coordinating the visits of AI and DTCC consultants, and was continuing fund raising, to enable the Institution to continue its programs.

Technical Assistance and the Planning Process

The strategic planning process not only continued in the midst of these efforts, but was an integral part of many of them. As in the previous AI visits, TECSUP personnel cooperated conscientiously and extensively. The Director of the Student Credit Fund contributed again as the planning coordinator, facilitating and assisting in the planning efforts throughout the two week visit.

TECSUP's examination of its organizational structure and functioning was a critical component of strategic planning. With the assistance of Peruvian organizational consultants, TECSUP studied several organizational charts and selected one by the end of our visit. The study of administrative functions and responsibilities was to continue through March.

The preparation of a budget for the organization is an even more critical element of strategic planning. Budget analysis and projections are essential in selecting alternative strategies for the organization.

Given the importance of the budget, the Associate Director of the

Administration Department Roger Mecia worked jointly with AI in developing Lotus 1-2-3 spreadsheets for the current budget and its projections over the next five years. (Lotus is a trademark of Lotus Development Corporation, 1983.)

These spreadsheets were not only essential for the TECSUP 1986-1990 Strategic Plan, but were also to be used for reporting to the Board of Directors in March.

As part of the strategic planning process, each of the major department heads, and the Coordinator of the Office of Continuing Education (charged with implementation of the short courses) developed operational plans articulating their major objectives and resource requirements for 1986.

In the United States, a formal strategic planning process usually requires extensive resources in staff time and monies to conduct formal studies of the internal functioning of an organization, and of the external factors which affect the success of an organization, such as market demand or regional or national economic development. The strategic planning organization usually includes an in-house team of planners assisting top administrators in their planning responsibilities.

While TECSUP did not have the time or the resources which strategic planning usually requires, it used a variety of resources both internal and external, donated by Board members and by foreign entities such as U.S. AID and the German State of Baden-Wurttemberg.

PART TWO

TECSUP STRATEGIC PLAN
1986-1990

PURPOSE OF THIS PLAN:

This plan has been developed by top TECSUP administrators and the Board of Directors to enhance it's institutional effectiveness and to ensure it's eventual financial independence as it strives to become the supreme technical training institute of Peru.

TYPES OF ORGANIZATIONAL PLANNING:

Two types of planning were undertaken with and by TECSUP: Operational and Strategic Planning.

Operational Planning, or short-term planning, guides an organization's day-to-day activities. To ensure the usefulness of this type of planning, TECSUP directors need to determine on an on-going basis whether their objectives are realistic, and whether the resources are available to carry them out.

Operational plans benefit an organization to the extent that they remind personnel about what the objectives are, what tasks are scheduled, who should carry them out, and how they can best be accomplished. The operational plan also makes clear each objective's contribution toward the organization's financial independence, the resources needed to carry them out, and the time frame required for their completion.

TECSUP Directors developed major objectives with time frame and resource requirements for each department, and for the Office of Continuing Education, in constructing the TECSUP Operational Plan for 1986.

These are presented below in the Operational Plan section.

Budgets are a critical part of operational plans. Such plans should accurately assess the cost benefit of each element of a project; hence, they must reflect the cost of each unit of operation involved. Associate Director of the Administration Department Roger Mecias worked closely with AI to produce the budget spreadsheets which are described in the section on internal characteristics. (See Appendix D for component budgets.)

Strategic Planning enables an organization to design long term strategies based on the best available data. It is "the continuous process of making present risk-taking decisions systematically and with the greatest knowledge of their futurity; organizing systematically the efforts needed to carry out these decisions; and measuring the results of these decisions against the expectations through organized, systematic feedback." (Peter Drucker, Management, London: Pan Books, 1977; p. 120)

The major components of strategic planning are:

- Analysis of the external environment within which the organization functions.
- Self analysis of internal operations and characteristics of the organization.
- Statement of the mission of the organization, identification and selection of the organizational strategy or strategies, and development and implementation of the Operational Plan.
- Evaluation of the effectiveness of the strategy selected and other possible alternative strategies.

The major steps in developing these components are described, as

adapted for TECSUP, in the following pages.

THE PLANNING PROCESS AT TECSUP

The TECSUP Planning Unit

The TECSUP Executive Director, the directors of Administration, Instruction, and the Student Credit Fund developed the Strategic Plan with significant involvement and contributions from the German Coordinator of Instruction, the Associate Director of the Administration Department and the Coordinator of the Continuing Education Office.

The TECSUP Planning Format

The planning format selected included a strategic planning process which was customized for TECSUP and U.S. AID needs and circumstances. The strategic planning process began with analysis of the TECSUP domain--internal organizational characteristics and conditions, and the external environment within which TECSUP operated. These domain analyses began in December 1984 and were updated in June and October 1985, and in March 1986. The most recent results are described below.

THE TECSUP DOMAIN: INTERNAL CHARACTERISTICS

To define the domain of their organization, TECSUP planners answered two major questions: What is TECSUP now? How can or could TECSUP develop to meet the demands for its services in a competitive market? This involved clarifying both the services currently offered and the markets to which they were being offered. It also involved an examination of current strengths, weaknesses, market position, competition, and objectives.

To be effective in defining the organization's domain, an objective evaluation needs to be conducted of all operations for the organization

as a whole, as well as by department or work unit. Toward that end, AID funded Deloitte, Haskins, and Sells to conduct an audit of financial and administrative systems in 1985. The Hochschild businesses donated the services of a systems specialist to analyze certain internal procedures and documentation.

TECSUP itself hired a Peruvian organizational expert to analyze administrative procedures and to draft documentation; to analyze internal functions and responsibilities; and to propose alternative organizational structures and division of responsibilities for optimum efficiency and effectiveness.

The Organizational Mission

The TECSUP mission is "To produce highly trained technicans by providing training in the latest technologies to postsecondary youth and current Peruvian technicians and other industry employees." TECSUP aims to meet this mission through the offering of a Three-Year Training Program approved by the Ministry of Education and through the offering of "cursos vespertinos," short or evening courses as part of a Continuing Education Program.

During the March 17-18 planning meeting, TECSUP directors identified four major objectives to meet this mission:

Objective 1: By the 1989-90 school year, 540 students will be admitted and enrolled in the regular Three-Year Program in each of the following fields:

120	students in electronics
120	students in data processing
90	students in heavy machinery
90	students in plant maintanance
60	students in industrial electricity
60	students in process supervision (chemical)

Objective 2: By December 1986, 20 short courses will be offerred; four by 4/86; four more by 10/86, 13 by 12/86.

Objective 3: By 1990, 40 short courses will be offered annually.

Objective 4: By 1990, TECSUP training and tuition revenues will support at least 90% of all operating costs.

The Organizational Structure

The TECSUP self-examination, assisted by the Peruvian organizational consultants, resulted in alternative organizational charts analyzed during the strategic planning meetings. Figure 1 presents the organizational chart selected as a result of the March 1986 analysis. This chart signifies several changes from the organizational structure anticipated in June 1985, the time of the first AI team visit. Figure 2 presents that chart.

The March 1986 chart also indicates a major anticipated change discussed during the planning meeting. An assistant to the Department of Instruction director is scheduled to be hired to handle the increasing workload related to record keeping, transcripts and other responsibilities of a registrar.

figure 1

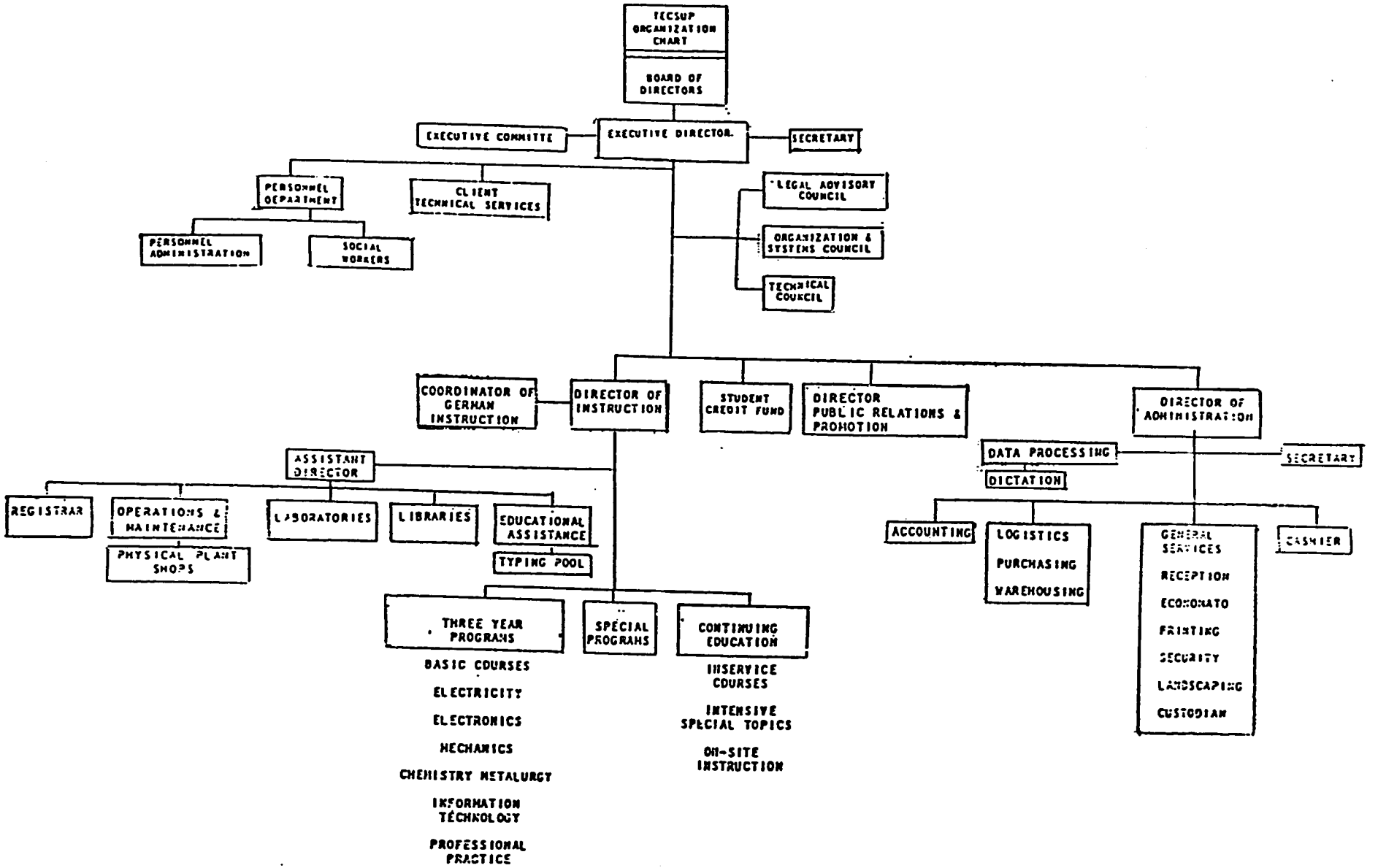
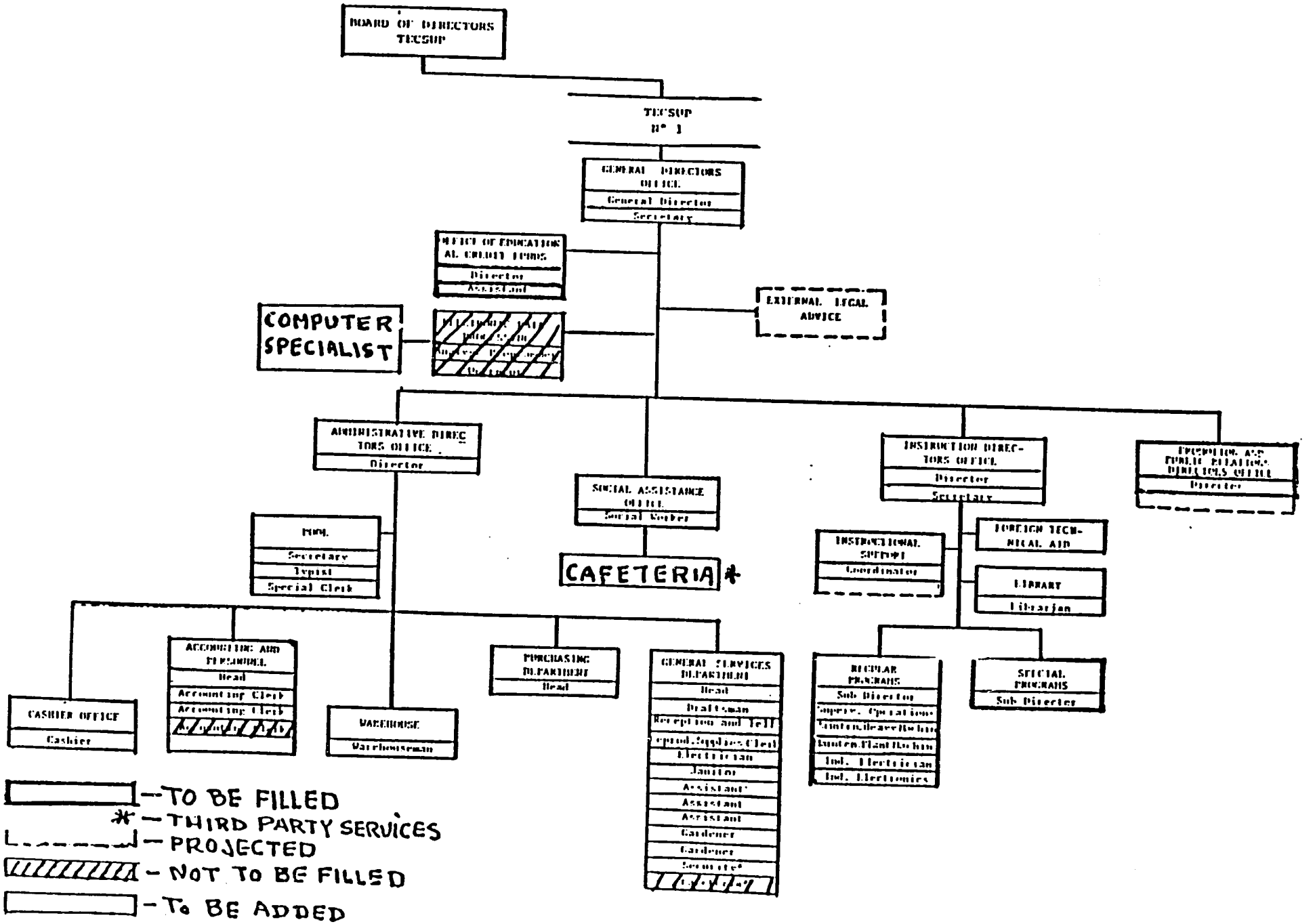

TECSUP ORGANIZATION CHART
BOARD OF DIRECTORS
EXECUTIVE COMMITTE
EXECUTIVE DIRECTOR
SECRETARY
PERSONNEL DEPARTMENT
CLIENT TECHNICAL SERVICES
PERSONNEL ADMINISTRATION
SOCIAL WORKERS
LEGAL ADVISORY COUNCIL
ORGANIZATION & SYSTEMS COUNCIL
TECHNICAL COUNCIL
COORDINATOR OF GERMAN INSTRUCTION
DIRECTOR OF INSTRUCTION
STUDENT CREDIT FUND
DIRECTOR PUBLIC RELATIONS & PROMOTION
DIRECTOR OF ADMINISTRATION
DATA PROCESSING
SECRETARY
DICTATION
ASSISTANT DIRECTOR
REGISTRAR
OPERATIONS & MAINTENANCE
PHYSICAL PLANT SHOPS
LABORATORIES
LIBRARIES
EDUCATIONAL ASSISTANCE
TYPING POOL
ACCOUNTING
LOGISTICS
PURCHASING
WAREHOUSING
GENERAL SERVICES
RECEPTION
ECONOMATO
PRINTING
SECURITY
LANDSCAPING
CUSTODIAN
CASHIER
THREE YEAR PROGRAMS
BASIC COURSES
ELECTRICITY
ELECTRONICS
MECHANICS
CHEMISTRY METALURGY
INFORMATION TECHNOLOGY
PROFESSIONAL PRACTICE
SPECIAL PROGRAMS
CONTINUING EDUCATION
INSERVICE COURSES
INTENSIVE SPECIAL TOPICS
ON-SITE INSTRUCTION

FIGURE 2


BOARD OF DIRECTORS TECSUP
TECSUP N° 1
GENERAL DIRECTORS OFFICE
General Director
Secretary
OFFICE OF EDUCATIONAL CREDIT UNIONS
Director
Assistant
COMPUTER SPECIALIST
EXTERNAL LEGAL ADVICE
ADMINISTRATIVE DIRECTORS OFFICE
Director
SOCIAL ASSISTANCE OFFICE
Social Worker
CAFETERIA *
INSTRUCTION DIRECTORS OFFICE
Director
Secretary
EXPOSITION AND PUBLIC RELATIONS DIRECTORS OFFICE
Director
MRM.
Secretary
Typist
Special Clerk
INSTRUCTIONAL SUPPORT
Coordinator
FOREIGN TECHNICAL AID
LIBRARY
Librarian
CASHIER OFFICE
Cashier
ACCOUNTING AND PERSONNEL
Head
Accounting Clerk
Accounting Clerk
WAREHOUSE
Warehouseman
PURCHASING DEPARTMENT
Head
GENERAL SERVICES DEPARTMENT
Head
Draftsman
Reception and Tell
Janitor
Assistant
Assistant
Assistant
Gardener
Gardener
REGULAR PROGRAMS
Sub Director
Ind. Electrician
Ind. Electronics
SPECIAL PROGRAMS
Sub Director
— TO BE FILLED
* — THIRD PARTY SERVICES
— PROJECTED
— NOT TO BE FILLED
— TO BE ADDED

Internal Administrative and Financial Operations

As part of this organizational restructuring, TECSUP will be updating all of it's organizational systems, including the instructional, administrative, and financial systems discussed during the Deloitte, Haskinc, and Sells (DHS) study, mentioned in the report which followed the previous two AI visits. The current organizational study has resulted in several differences from the structure proposed by DHS. With these and other new developments, TECSUP will continually need to examine and revise its structure to meet the changing demands of its environment.

Management Information Systems are highly important to the organization's functioning. At TECSUP, electronic data processing has been the responsibility of the Administration Department. The Director of that department currently supervises the DATELSA consultants modifying the accounting program on the BASIC IV minicomputer. Department staff are also responsible for the the other donated microcomputers--two Multitech micros with 20 megabyte hard disks, and two Farraday micros, all IBM compatible.

As of the March visit, TECSUP had still not received all the hardware and software needed to fully utilize this donated hardware. It lacked printers and cables. In addition, the Scantron machine that was to be used for the arduous and time-consuming task of scoring admissions exams had not yet cleared customs, thus requiring hand scoring of the hundreds of tests administered to applicants.

Private Sector Involvement

Private sector support of TECSUP has been crucial for its survival and success. Private business has already contributed significant funds. During 1985 alone, Peruvian industry contributed $645,739.67 US (or 6,583,241,638 soles) to support TECSUP.

In addition, seven highly knowledgeable representatives of Peruvian industry have joined the Technical Advisory Committee.

This committee met and provided advice which Executive Director Inchaustegui reported as highly useful in planning new courses and service offerings. Appendix B presents the minutes of the first formal Technical Advisory Committee meeting, held February 27, 1986. During that meeting, the technical advisors provided information on the current training needs of their sectors of Peruvian industry. Several of the training areas were within TECSUP scope of offerings, whereas others could well be added to the TECSUP short course, or Continuing Education offerings.

THE TECSUP BUDGET

TECSUP budget development evolves from the reality of a start-up organization presently dependent on donations. The automation of budget development, revision, and monitoring is absolutely essential to ensure rapid and accurate changes in the working budget, which will reflect the latest donations and expenses, and will take into consideration the latest developments in the national and international economy.

Toward that budget automation, TECSUP and AI worked intensively during the March 1986 visit, and extensively through September 1986, to develop and update numerous related spreadsheets. The spreadsheets utilize Lotus 1-2-3, a spreadsheet software program developed for use on IBM PC compatible microcomputers.

The value of this extensive Lotus work will become evident in hours saved when TECSUP administrators change and update the numbers provided in these tables. These spreadsheets will enable TECSUP administrators to closely monitor their financial status, and modify their plans and activities accordingly. They will also be able to provide current information to colleagues, Board members and donors.

The financial data presented in this section, and in Appendix C, reflects the latest financial information, provided by TECSUP in mid-September 1986. The resulting 32 tables are divided into two sets.

Appendix C contains 17 tables labeled A1 - A17, presenting detailed and consolidated budget data for major organizational components, divisions and time periods. Figure 3 presents the interrelationship of the 17 tables resulting from the current TECSUP budgeting process.

TECSUP had initially separated the Three-Year Program and the special program. However, the two are now considered to be two mutually dependent and supportive parts. The budget is constructed to reflect the contribution of each program to the total institution. This one budget derives from more detailed budgets focusing on different components or sectors of the organization. Hence, tables or budget information can be disseminated with appropriate levels of detail depending upon what sector of the organization requires the information. For example, the Executive Director would receive reports outlining the consolidated revenues and expenditures for TECSUP.

More detailed spreadsheets are available, and can be accessed as needed by each department. The intent of this system is to make available figures on revenues and expenditures for specific areas of the organization. The detailed spreadsheets for each area thus enable financial projections to be calculated and examined for all or any major part or sector of TECSUP.

This fiscal information is crucial to the successful implementation of the strategic planning efforts carried out by TECSUP. Projections for future needs in the areas of facilities, technical assistance, or operational costs can be made through use of this system.

Fifteen other tables were developed to analyze revenues and expenses. These were combined with assumptions about the national economy and future TECSUP functioning in order to project annual operating expenditures and revenues through 1990. The 15 tables are presented from the global to the specific, beginning with Table 1, which presents the overall 1986 organizational summary and projections through 1990. The assumptions upon which these projections were developed are provided in Tables 2-15 which follow the Organizational Summary and

Projections. The tables in Appendix C provide additional details for individual departments and programs, for further clarification of Table 1.

TABLE 1

TECSUP - ORGANIZATIONAL SUMMARY AND PROJECTIONS FOR 1986-1990

CONCEPT	1986	1987	1988	1989	1990
REVENUE					
Operating revenues					
- Tuition	1,992,000	5,275,200	9,948,960	16,793,280	24,894,000
- Admission examinations	150,000	375,000	630,000	882,000	1,234,800
- Fees	74,700	527,520	994,896	1,678,920	2,489,400
- Special Programs	672,000	1,097,600	1,756,160	2,458,400	3,441,760
- On Site Courses	140,000	294,000	411,600	576,240	806,736
- Interest from bonds & C.D.'s	82,917	107,792	140,130	182,169	236,819
Total Operating Revenue	3,111,617	7,677,112	13,881,746	22,571,009	33,103,515
INITIAL BALANCE					
Funds Available					
- Peruvian	6,870,414	6,870,414	7,557,455	8,313,201	9,144,521
- AID	6,870,414	7,557,455	8,313,201	9,144,521	10,058,973
- Baden Wurttenberg	698,600	0	0	0	0
- Others	3,758,800	4,000,000	6,000,000	6,000,000	0
	2,560,400	0	0	0	0
Total Donations	13,888,214	11,557,455	14,313,201	15,144,521	10,058,973
TOTAL REVENUES	23,870,245	26,104,981	35,752,402	46,028,731	52,307,009
EXPENSES					
Operating Expenses					
- Personnel	3,747,188	7,448,428	12,402,091	19,517,983	28,342,630
- Instructional materials	485,960	1,202,456	2,233,829	3,755,228	5,619,337
- Institutional costs	1,351,636	1,892,290	2,649,206	3,708,888	5,192,443
- On Site Courses	44,000	92,400	129,360	181,104	253,548
Total Operating Expenses	5,628,784	10,635,574	17,414,486	27,163,203	39,407,958
Capital Investment					
Equipment (Installed)	8,653,397	4,000,000	6,000,000	6,000,000	0
Total Capital Investment	8,653,397	4,000,000	6,000,000	6,000,000	0
TOTAL EXPENSES	14,282,181	14,635,574	23,414,486	33,163,203	39,407,958
ANNUAL SURPLUS (DEFICIT) (Between Operational Revenues and Operational Costs)	(2,517,167)	(2,958,462)	(3,532,740)	(4,592,194)	(6,304,443)
ANNUAL SURPLUS (DEFICIT) Funds Available - Expenses	9,588,064	11,469,408	12,337,916	12,865,528	12,899,051

ORGANIZATIONAL SUMMARY AND PROJECTIONS; 1986-1990

Table 1 represents both current and projected financial information for revenues and expenditures for years 1986-1990. It provides an overview for the entire institute, summarizing the financial data for individual departments and programs within one spreadsheet. The numbers for 1986 should be viewed as actual amounts. The numbers contained in projections for years 1987-1990 are based upon carefully outlined assumptions detailed below.

Several assumptions serve as the basis for development of TECSUP's financial projections through 1990. The assumptions for both revenues and expenditures are outlined on the following pages. These assumptions were developed as the result of extensive discussion between TECSUP Staff and Aguirre International.

MAJOR ASSUMPTIONS

BUDGET PROJECTION FOR TECSUP - 1986-1990

INCOME PROJECTIONS FROM THE REGULAR THREE-YEAR PROGRAM

Tuition

At the beginning of the 1986 academic year program activities, TECSUP had 166 students enrolled. TECSUP anticipates this enrollment number to increase each successive year up to 540 in 1990, when training will be offered in five fields of specialization.

For the 1986 year, full-time tuition is set at 12,000.00 intis. Tuition is expected to increase 40% per year, in keeping with the projected rate of inflation. Table 2 presents the projections for enrollment, the tuition anticipated in each subsequent year and the resulting revenues.

TABLE 2

ENROLLMENT AND TUITION PROJECTIONS - 1986-1990

Year	Enrollment	Tuition* per student	Total Revenue* Generated Through Tuition
1986	166	I/12,000	I/1,992,000
1987	314	16,800	5,279,200
1988	423	23,520	9,948,960
1989	510	32,928	16,793,280
1990	540	46,100	24,894,000

*Figures in intis.

Admission Exams

Over the last two years, five applications have been received for each admission slot available. Applicants must pay an admission fee. The admission examination fee for 1986 was 300 intis. It will be raised to 500 intis in 1987, and in subsequent years will be raised in accordance with the national inflation rate, estimated at 40% per year. The anticipated revenues derived from admission examination fees are

contained in Table 3, which also presents the number of applications anticipated each year, and the projected examination fees to be charged per year.

TABLE 3

INCOME FROM ADMISSION EXAMINATION FEES IN INTIS

Year	New students	Applicants	Fees	Total
1986	-----	500	I/300	I/150,000
1987	148	750	500	375,000
1988	109	900	700	630,000
1989	87	900	980	882,000
1990	30	900	1,372	1,234,800

Matriculation Fees

For the first semester of 1986, the matriculation fee is set at 150 intis; this will rise to 300 intis per student with the start of the second semester. From the end of the 1987 academic year to 1990, this matriculation fee will equal one fifth of the total tuition required for a full-time student who must attend five semesters to complete his program. Table 4 presents the projected revenues from these anticipated fees through 1990.

TABLE 4

PROJECTIONS OF MATRICULATION FEES - 1986-1990

Year	Number of students	Fee per student	Fees collected for each year
1986	166	I/.450.00	I/. 74,700.00
1987	314	1,680.00	527,520.00
1988	423	2,352.00	994,896.00
1989	510	3,292.00	1,678,920.00
1990	540	4,610.00	2,489,400.00

INCOME PROJECTIONS FROM SPECIAL CONTINUING EDUCATION PROGRAMS

Special Programs

TECSUP anticipates that it will offer 30 short Continuing Education courses in 1986. This figure is projected to rise to 35 in 1987, and to 40 courses in subsequent years, with an average of 20 trainees per course.

For 1986, the registration fee for Continuing Education courses averaged 1,120 intis per course. In subsequent years, the fee for each course is set to rise in keeping with the expected inflation rate of 40% per year, producing the projections presented in Table 5.

TABLE 5

PROJECTED INCOME FROM CONTINUING EDUCATION COURSES - 1986-1990

Year	Number of Courses	Students	Fee per Course	Revenue
1986	30	600	I/1,120.00	I/.672,000.00
1987	35	700	1,568.00	1,097,600.00
1988	40	800	2,195.00	1,755,600.00
1989	40	800	3,073.00	2,457,840.00
1990	40	800	4,302.00	3,441,600.00

On-Site Courses

In the same way, it is expected that special courses will be offered on the premises of organizations which contract for such training. Table 6 presents the number of on-site course offerings anticipated through 1990 and the subsequent revenues, per year.

TABLE 6

REVENUE FROM ON-SITE SPECIAL COURSES - 1986-1990

Year	Number of Courses	Fee per Course	Revenue
1986	4	I/35,000.00	I/.140,000.00
1987	6	49,000.00	294,000.00
1988	6	68,600.00	411,600.00
1989	6	96,040.00	576,240.00
1990	6	134,456.00	806,736.00

INTEREST EARNINGS, INVESTMENTS, AND DONATIONS

Interest

The 1986 budget includes an estimate of interest earnings from bonds and bank certificates of deposit equal to 82,917 intis. In subsequent years, interest earnings are expected to increase 30% over the previous years' earnings. These projected interest figures appear in Table 7.

TABLE 7

PROJECTED ANNUAL INTEREST EARNINGS - 1986-1990

1986	1987	1988	1989	1990
I/82,917.00	I/107,792.00	I/140,130.00	I/182,169.00	I/236,820.00

Investments

Investments will be based on non-Peruvian donations. Peruvian donations will be used for working capital.

Donations

Over the next five years, donations are expected from four major sources: private Peruvian donors, US AID, the government of Baden Wurttemberg and others. Table 8 presents the anticipated donations from each of these sources over the next five years.

TABLE 8

ANTICIPATED DONATIONS BY DONOR - 1986-1990

Year	Sources			
	Peruvian	AID	Baden Wurttemberg	Others
1986	I/6,870,414.00	I/698,600.00	I/3,758,800.00	I/2,560,400.00
1987	7,557,455.00	0.00	4,000,000.00	0.00
1988	8,313,201.00	0.00	6,000,000.00	0.00
1989	9,144,521.00	0.00	6,000,000.00	0.00
1990	10,058,973.00	0.00	0.00	0.00

INITIAL BALANCES

The TECSUP Board of Directors projects initial balances for each year based on an estimated annual increase in donations of 10%.

TABLE 9

ANTICIPATED INITIAL BALANCE - 1986-1990

Year	Initial Balances
1986	I/.6,870,414
1987	6,870,414
1988	7,557,455
1989	8,313,200
1990	9,144,521

1986-1990 EXPENDITURES PROJECTIONS

Personnel Costs

The cost of personnel is expected to increase at 40% per year beginning in 1987, through 1990.

The number of administrative and teaching personnel is expected to remain the same, with changes taking place as required by an increased demand for instructors, due to increased enrollment for the regular programs, and for the Continuing Education courses.

The number of full-time instructional personnel needed for the

Three-Year program is based on the following anticipated developments. It is anticipated that there will be groups of 30 students per section for each of the fields of study offered. Each theory course will be attended by 30 students. Practicum classes (shop and lab courses) will train 15 students each. Thus for each group, 40 hours of education will consist of 18 hours of theory and 22 hours of practicum.

Based on these figures, the following figures were calculated:

Hours/Week/Groups:	18 Theory (30 students)
	22 practicum (15 students per group)
	22 practicum (15 students per group)
	62 Total instructional hours per group

Theory courses constitute 30% of this total amount of instructional time per group, practicum courses comprise 70%.

Since the mix of theory and practicum varies depending on the semester, an average of 65 hours of instruction per group is used for calculation purposes.

It is anticipated that an instructor teaching a theory course will be able to teach a maximum of 20 hours per week, and a shop or lab instructor a maximum of 24 hours per week. Based on these assumptions, TECSUP administrators calculated the following number of instructors needed per year for each type of course through 1990.

For 1986 ..... 11.7 Instructors

For 1987 ..... 30.13 Instructors
The student population for 1987 is set at 314 or the equivalent of 10.5 sections.
10.5 sections x 65 hours = 682.5 instructional hours

Theory hours	204.75
Practicum hours	477.75

Number of Instructors

Theory	10.23
Practicum	19.90
Total.....	30.13 Instructors

For 1988 ..... 40.5 Instructors
The student population for 1988 is calculated at 423 or the equivalent

of 14.1 sections.

14.1 sections x 65 hours = 916.5 hours of instruction
Theory hours 274.95
Practicum 641.55

Number of Instructors
Theory 13.75
Practicum 26.75
Total ..... 40.5 Instructors

For 1989 ..... 48.85 instructors
The student population for 1989 is calculated at 510 or the equivalent of 17 sections.
17 sections x 65 hours = 1,105 hours of instruction
Theory hours 331.55
Practicum 773.55

Number of Instructors
Theory 16.6
Practicum 32.25
Total ..... 48.85 Instructors

For 1990 ..... 51.67 instructors
The student population for 1990 is calculated at 540 or the equivalent of 18 sections.

18 sections x 65 hours = 1,170 hours of instruction
Theory hours 351
Practicum 819

Number of Instructors
Theory 17.55
Practicum 34.12
Total ..... 51.67 Instructors

Table 10 presents a summary of the number of students expected each year through 1990, and the resulting number of instructors needed per year.

TABLE 10

EXPECTED THREE-YEAR PROGRAM STUDENT ENROLLMENT
AND REQUIRED INSTRUCTORS - 1986-1990

Year	Students	Instructors
1986	166	11.7
1987	314	30.13
1988	423	40.5
1989	510	48.85
1990	540	51.67

For 1986, it is estimated that the annual income of each instructor will be 110,389 intis, including taxes. Table 11 presents personnel costs anticipated for the Three-Year Program through 1990.

TABLE 11

PROJECTED EXPENDITURE FOR THREE-YEAR PROGRAM INSTRUCTORS - 1986-1990*

Year	Theory Courses	Shop Courses	Lab Courses	Total
1986	---------	--------	----------	1,291,551.30
1987	1,580,991.30	1,537,718.80	845,750.00	3,964,460.10
1988	2,974,499.13	2,893,855.10	1,591,625.00	7,459,979.23
1989	5,028,276.10	4,884,394.70	2,686,425.00	12,599,096.00
1990	7,442,454.50	7,234,659.40	3,979,074.40	18,656,188.30

*Figures in intis.

The calculation of instructional personnel salaries is based on instructors of shop courses earning 55% of the salary of instructors of theory and lab courses.

The instructional personnel required for the Continuing Education courses is projected to be one instructor for four courses. Given that assumption, Table 12 provides the number of course offerings per year, and the required number of full-time instructors.

TABLE 12

PROJECTED NUMBER OF INSTRUCTORS REQUIRED
FOR CONTINUING EDUCATION COURSES - 1986-1990

Year	Courses	Instructors
1986	30	7.5
1987	35	8.75
1988	40	10.0
1989	40	10.0
1990	40	10.0

These analyses of Three-Year and Continuing Education personnel costs are combined with the costs for non-instructional administration

personnel and presented in Table 13. The figures given for personnel costs include taxes.

TABLE 13

PROJECTED PERSONNEL COSTS BY DIVISION - 1986-1990*

Year	Administration	3-Yr Program Instructors	Continuing Education Instructors	Total Personnel Costs
1986	2,258,166.20	1,291,551.30	197,470.50	3,747,188.00
1987	3,161,432.70	3,964,460.10	322,535.15	7,448,427.95
1988	4,426,005.80	7,459,979.23	516,056.24	12,402,091.27
1989	6,196,408.10	12,599,096.00	722,478.74	19,517,982.84
1990	8,674,971.30	18,656,188.30	1,011,470.20	28,342,630.00

*Figures in intis.

Instructional Materials

The 1986 budget sets the expenditure of 391,755.84 intis for instructional materials, for a student body of 166 in the Three-year Program. Consequently, the per student costs are 2,360 intis.

The projection for subsequent years is based on the projected student increases to 1990, including an annual inflation rate of 40%. Table 14 presents the anticipated per student cost for materials, times the number of students expected per year, to produce total material costs per year through 1990.

TABLE 14

PROJECTED MATERIALS COSTS AND NUMBER OF STUDENTS IN THE THREE-YEAR PROGRAM - 1986-1990*

Year	Students	Materials Costs	Total
1986	166	2,360.00	391,760.00
1987	314	3,304.00	1,037,456.00
1988	423	4,625.60	1,956,628.80
1989	510	6,475.84	3,302,678.40
1990	540	9,066.18	4,895,737.20

*Figures in intis.

The same criteria are used with the projections for the Continuing Education Program. For 1986, TECSUP anticipates that 600 trainees will attend 30 courses per year, with a per student cost of 157 intis. The projections for subsequent years (including the assumption of an annual inflation rate of 40%) are presented in Table 15.

TABLE 15

PROJECTED MATERIALS COSTS FOR CONTINUING EDUCATION TRAINEES - 1986-1990*

Year	Trainees	Cost per Trainee	Total
1986	600	I/157	I/94,200
1987	750	220	165,000
1988	900	308	277,200
1989	1,050	431	452,550
1990	1,200	603	723,600

*Figures in intis.

These projected costs for instructional materials, and the estimated figures for trainees, include the courses expected to be offered on-site at the facilities of client organizations.

Institutional Costs

Table 16 presents the 1986 institutional costs and projected through 1990. The usual anticipated annual inflation rate of 40% is included in the projections.

TABLE 16

PROJECTED INSTITUTIONAL COSTS - 1986-1990*

Year	Institutional Costs
1986	I/1,351,635.54
1987	1,892,289.70
1988	2,649,205.60
1989	3,708,887.80
1990	5,192,442.90

*Figures in intis.

On-Site Continuing Education Courses

The expenses for 1986 are anticipated at 11,000 per course. The costs for providing on-site programs are anticipated to increase at a rate of 40% per year through 1990. Table 17 presents the number of on-site courses which TECSUP expects to offer from 1986 through 1990, the costs anticipated per course each year through 1990, and the subsequent total of on-site course costs anticipated over the five years.

TABLE 17

PROJECTED ON-SITE COURSE COSTS - 1986-1990*

Year	Number of Courses	Expense per Course	Total Expenses
1986	4	I/11,000	I/44,000
1987	6	15,400	92,400
1988	6	21,560	129,360
1989	6	30,184	181,104
1990	6	42,258	293,548

*Figures in intis.

CAPITAL INVESTMENT

Capital Investments expenditures will be based upon an amount equal to the amount of revenues secured through non-Peruvian donations.

Discussion

A major objective identified by TECSUP administrators, through the strategic planning process conducted in March 1986, specified that revenues obtained through training and tuition would support 90% of all operating costs by 1990. The attainment of this objective is crucial for TECSUP to ensure fiscal viability, and to allow future expansion and growth.

The projected data contained in TABLE 1 indicates that operating revenues are expected to be able to support approximately 84% of the operating expenditures in 1990. This is extremely close to the goal of 90%

as stated in the strategic planning process.

Several strategies could be employed to attain the stated objective of 90% support of operating expenditures. These strategies are outlined below. Aguirre International is not recommending any one specific strategy, or combination of strategies, over another. Rather, the intent is to offer potential solutions which TECSUP can examine, adopt or modify, to produce the appropriate and feasible action for the organization. These solutions include:

1) Increase the admission examination fees to increase revenue.
2) Increase the tuition rates for both the Three-Year and the Continuing Education Programs.
3) Increase the number of on-site course offerings. The revenues obtained through on-site courses well exceed expenditures, resulting in an extremely profitable situation.
4) Consider reductions in the area of institutional costs. While many of the expenditures in this area are fixed, there is still room for adjustments in this area which would reduce expenses. TECSUP staff should explore possibilities in this area.
5) Evaluate the possibility of reducing costs in the area of instructional materials. TECSUP staff should conduct a careful analysis to determine what savings may be possible in this area, thereby leading to potential expenditure reductions.
6) Consider increasing the teacher-student ratio so that more students are assigned to a teacher than is currently the practice.

In conjunction with the above, Aguirre International recommends that TECSUP take the following steps to ensure the accuracy of their fiscal data, both current and projected.

1) TECSUP should employ the services of an external auditor to review 1986 financial figures. The actual revenues and expenditures for 1986 serve as the basis for future projections. The more accurate the figures for 1986, the more assured TECSUP can be about the projections for 1987-1990.

2) TECSUP staff should review financial reports (both revenues and expenditures) at least quarterly, if not more often. Additionally, future projections should be adjusted accordingly, to ensure their accuracy. Expenditures should also be monitored closely to maintain established budgets. All efforts should be made to ensure that individual programs and departments do not overspend.

While TECSUP will be largely self-supporting by 1990, the organization will require continued support from external donations, both Peruvian and others, i.e., AID, Baden Wurttemberg, to allow further expansion of TECSUP programs, unless those expansions produce a higher ratio of revenue to expenditure.

Aguirre International recommends that TECSUP secure a long-term commitment of all current donations, both Peruvian and others. Only through securing continued funding derived from donations, can TECSUP staff appropriately plan for the expansion of existing and future programs, resulting in a strong operational base for future independence.

TECSUP STRENGTHS AND WEAKNESSES

As of March 1986, TECSUP strengths included:

1. Extensive facilities to house the classes have been constructed. They are adequate for the instruction of both the current number of Three-Year Program students, and for the four Continuing Education courses being offered in April and May 1986.
2. A wide range of donors, including private citizens, foreign benefactors, and local industries, have contributed or are involved. They have donated money, land, and other resources, such as computers, trucks and automobiles, and time--that of staff consultants, and of technical advisory committee membership.
3. A highly trained and capable staff. Five Peruvian professors were trained at DTCC. (DTCC reported that their work was excellent.) Top administrators include managers with extensive experience and skills crucial to TECSUP at its present phase of development.
4. The current availability of, and cooperation with, foreign experts--the five German instructors donated by Baden-Wurttemberg, and the DTCC professors being sent from the Delaware as part of the U.S. AID donation. The DTCC assistance included the development of 20 short courses which TECSUP adapted for the Continuing Education Program.
5. The recognition by top administrators of (a) the need to systematically examine and develop organizational practices, (b) the usefulness of organizational planning; and (c) the value of having a "sister institute" at the cutting edge of technology to assist TECSUP in continuing to offer courses at the forefront of technology.

6. Peruvian industries require the types of training that TECSUP provides, and will probably continue to require them for the foreseeable future. This is evident from the large numbers of applicants to its Three-Year Programs.

7. A successful test: The offerings of four Continuing Education courses in April and May 1986 produced a high response rate--78 enrolled, an average of 19.5 per course. Although TECSUP staff had aimed for an enrollment of 80 for the four courses, its laboratory facilities could best accommodate 15 trainees per course.

TECSUP Weaknesses included:

1. A short institutional history with two major weaknesses: (a) Insufficient experience providing and marketing vocational training, hence the lack of an established reputation and market position; and (b) The need for establishing new procedures and re-training staff on changes in administrative services. Fiscal planning and accounting functions need to be automated; student facilities need to be expanded; and new curricula needs to be developed for the new career fields to be offered.

2. The lack of a systematic, independent market demand study conducted by external experts in market study methodology. TECSUP decision makers thus lack reliable in-depth information on present and projected industry needs for TECSUP's services.

3. The uncertainty of future funding to meet its capital outlay requirements.

4. Inadequate facilities for the planned expansion of program offerings. As noted above, TECSUP's facilities are adequate for the number of students currently enrolled. According to Karl Kumbartel,

the German Coordinator of Instruction, TECSUP will exceed its capacity in 1987. According to DTCC experts Anthony Digenakis and Helen Howard, TECSUP will need to add classroom space if it is to proceed with current plans for the Three-Year Program (See Appendix A). Dr. Kumbartel also reported that TECSUP is already experiencing problems with the basic courses because of insufficient capacity in the mechanical and electro-technical shops.

THE EXTERNAL ENVIRONMENT AFFECTING TECSUP

THE NATIONAL ECONOMY

Peru has been undergoing an economic depression aggravated by a large external debt, and by excessive inflation which has had dramatic effect on everyone in the country. During 1985, the inflation rate exceeded 200%. In 1986, the new government has managed to decrease that rate to 36%; a significant improvement, yet still very high.

TECSUP has had to cope with this by indexing personnel salaries, and by factoring indexing into planned expenditures, since the cost of goods and services has continued to rise.

The high inflation rate and economic depression undermined the ability of potential donors to commit future donations. On the other hand, several tax law revisions benefited TECSUP greatly by giving companies highly desired tax breaks if they donated, or committed themselves to donate, to an institute such as TECSUP within a certain period of time in 1986. This resulted in much greater donations than expected; however, this source may not be depended upon for income beyond 1986.

The national foreign debt problem has also affected TECSUP. The Peruvian government had not paid on a U.S. AID loan since early 1985, resulting in mandated plans by AID to withdraw from Peru and stop all

new programs. (As of this writing the Peruvian government has moved to continue payments, thus opening the possibility of follow-up funding for additional TECSUP needs.)

Other foreign donors are not as immediately and adversely affected by the foreign debt, and might be available to fund some of those needs. The German state of Baden-Wurttemberg continues to finance the five German instructors providing training as part of the Three-Year Program. The Inter-American Development Bank has committed to provide loans to qualifying students.

Private Peruvian companies have donated money, land, and equipment. Some have donated services, or directly usable equipment, such as a truck and two Farraday microcomputers; others have donated equipment that required development work, such as the Basic IV minicomputer system; still others donated equipment that could be sold or bartered, such as a car.

CURRENT AND ANTICIPATED MARKETS AND INCOME OPPORTUNITIES

TECSUP has two distinct markets. For the Three-Year Programs, the market consists of post-secondary youth interested in pursuing careers as technicians. For their Continuing Education courses, the market consists of adults interested in continuing their technical training, or who want to develop new skills and knowledge in specialized technical areas.

Through its Continuing Education courses, TECSUP also considers private companies or organizations as a separate market. The Institute could offer training tailored to individual company requirements, offered at the TECSUP campus or at the client organization.

The market demand for its Three-Year Programs among high school

graduates has been high, enabling TECSUP to select the top 90 applicants for the three programs currently approved by the Ministry of Education: electronics, industrial electricity and plant maintenance.

In April 1986, TECSUP began offering four short courses as the first in its Continuing Education Program. Initial response to the four offerings was high; 78 individuals registered. In addition to the favorable number of registrations, several individuals responding to the ads promoting the four courses inquired about other training areas. One company asked about "ordering" a workshop to obtain a specific type of technical training for 15 of its employees.

TECSUP COMPETITORS

In any analysis of markets, current and potential competitors must be considered. When it was founded, TECSUP reportedly had no competition; virtually no other technological institute existed in Peru targeting middle level technicians.

Private Technological Institutes Since then, many store-front institutes have sprung up, advertising that they provide training in the areas which TECSUP currently serves, or has been approved to serve by the Ministry of Education. While these institutes may attract students which might otherwise apply to TECSUP, their existence has not diminished the large numbers of students seeking to enroll at TECSUP.

Government-supported Institutions In the market for Continuing Education or short courses, the government-supported SENATI (Servicio Nacional de Adestramiento Industrial) may develop into a competitor. SENATI is reportedly exploring the addition of technical courses to its offerings to Peruvian industry. It already has an established reputation as a training institution providing quality courses to industry

administrators.

Other universities currently training engineers could also diversify and begin offering Continuing Education courses in technical areas.

TECSUP administrators do not consider these as threats. They see storefronts as serving a markedly different population, less prepared and less concerned about the latest technologies; their equipment and facilities are meager and dated.

The SENATI and universities are just beginning to consider entering the technical training market. Offering such programs requires extensive start-up development and capital outlay. Even if these institutions commit themselves to the significant expenditures required, they are three years behind TECSUP and will require time to become serious competitors.

Finally and most importantly, TECSUP administrators see no threat in these potential competitors given their belief in the vast need for technical training among Peruvian industries. The responses to the Three-Year Program and to the March 1986 Continuing Education offerings, support this view. However, a scientific market demand study would provide more definitive information on the depth and breadth of actual market need and of future demand.

OTHER EXTERNAL ENVIRONMENT FACTORS IMPACTING ON TECSUP

Several other factors external to TECSUP affect its current and future functioning, its staff requirements and its expenditures. The Ministry of Education has reporting requirements which demand significant allocation of staff time in collecting, processing, maintaining and reporting information. The Ministry has also approved the expansion

of TECSUP's Three-Year Programs. TECSUP has obtained approval from the Peruvian Ministry of Education to offer training in three more fields: informatica (data processing), supervision de operaciones (chemical/metallurgical process technology or supervision), and maquinaria pesada (heavy equipment).

TECSUP plans to offer all six fields by 1990, with a total of 540 students admitted that year: 120 in electronics, 120 in data processing, 90 in plant maintenance, 90 in heavy machinery, 60 in industrial electricity and 60 in process supervision. TECSUP has a time window within which it must offer the three additional career fields or the Ministry could rescind its approval; an unlikely, but possible, development.

Customs requirements continue to affect TECSUP. It must rely on foreign technical equipment to maintain its position as the most advanced technical training institution in Peru. Customs processing results in staff time being siphoned off from other duties to ensure that shipments clear customs. Often it requires extensive waiting time, and making do with less than optimum, or no equipment, with a further loss of time and efficiency. For example, the delayed clearance of the Scantron equipment to be used in scoring the admissions tests forced Department of Instruction personnel to devote a lot of time to manually score tests and process the results.

Government price freezes have also affected TECSUP. The Institute must justify any changes in the tuition and in fees it charges students in the Three-Year Program, resulting in staff time allocated to dealing with more paperwork.

On the other hand, the present Peruvian government has voiced support of technological institutes, thus providing valuable promotion

of the need for technical training. The favorable government position opens the possibility of positive developments for TECSUP.

The governmental push for decentralizing training also fits into TECSUP plans to offer on-site training to companies. Thus, TECSUP might be able to obtain government support in providing training to outlying companies or organizations.

Other current Peruvian social, economic, and political conditions also affect TECSUP. Uncertain economic and political conditions might result in the loss of current personnel. The current state of Peruvian education ill prepares many students for their studies at TECSUP, thus forcing the Institute to add non-technical courses, such as Spanish language instruction, to its program. The general national poverty level means that the average per capital income is extremely low; the BID loan program is only available to those students whose income is extremely low; coupled with inflation-related changes in their income, that requirement disqualifies many needy and otherwise qualified students.

Current political conditions also affect TECSUP in the frequency of power outages. A power outage drastically affects a technical institute, the electronic laboratories, and the power tools in the mechanical shops fail to function, thus disrupting lesson plans and denying students the opportunity to learn.

Electrical power outages also disrupt non-teaching staff by forestalling the use of any electrical equipment. Much needed computers, typewriters, copiers and other equipment essential for operating a business are rendered useless. There are interruptions of essential tasks, such as the preparation of texts for short courses, or of reports to the BID or government. Delays and missed deadlines are thus compoun-

ded by repetition of work, missed schedules, inconvenience to students and staff, and the intensification of pressure in a developing institution, where many things are being done for the first time.

Peruvian economic and social conditions also affect TECSUP in their need for security systems. TECSUP has suffered several thefts. The latest incident involved an actual break-in and attempted theft of microcomputers from the Administration building. A TECSUP guard caught them as they were passing a micro through a window. They dropped the micro; although it was recovered, that computer is still undergoing repairs and is therefore not available for use.

That attempted robbery involved an actual assault on a TECSUP guard. Recognizing the need for greater reinforcements, TECSUP has set up a cooperative arrangement with the Phillips facility next door. An electronic system will tie the TECSUP campus with the Phillips security force, alerting them to send help immediately.

BASIC ASSUMPTIONS ABOUT RELEVANT FUTURE DEVELOPMENTS

A review of the TECSUP domain, both its internal conditions and external factors, led to several expectations concerning TECSUP's future. These expectations are based upon certain assumptions of anticipated developments which will affect TECSUP.

1. Inflation -- The rate has dropped to an estimated annual 30-40 percent. Presumably, this will ameliorate the severely negative impact on industry donors and TECSUP costs suffered last year.
2. The private sector was expected to continue its financial support.
3. TECSUP planners were proceeding on the assumption that the Peruvian government would negotiate in good faith, and would seek to pay as much of its foreign debt as possible. This, in turn, would lead to

a favorable U.S. response.

4. TECSUP planners assume, and hope, that foreign donors will continue to be supportive if TECSUP delivers on its commitments.
5. It is assumed that technological developments and requirements in Peruvian industry will continue to change, leading to an increased demand for training in these areas.
6. Industry support for TECSUP will broaden as the quality of TECSUP training becomes evident, with the graduation of students in the Three-Year Programs, and with the evaluations of Continuing Education participants. This, in turn, will increase the demand for training in areas not currently offered, which already occurred with the mere announcement of the March 1986 Continuing Education courses.
7. Public-supported technical training will expand, leading to competition and an increased need for TECSUP to increase marketing its offerings and for the maintenance of a reputation of high quality.
8. The national economy will remain depressed, thus requiring careful financial planning, control of income and expenditures, and a continued campaign for external donations.
9. Social conditions are expected to continue to remain tied to the severe economic circumstances. Students will, therefore, continue to need financial assistance.

ALTERNATIVE STRATEGIES

During the strategic planning meetings, TECSUP administrators discussed several alternative strategies and tactics. The term "strategy" is defined herein as the approach taken to attain the organization's major goals. "Tactics" are the actions taken to implement the strate-

gies.

Organizational strategies must emerge from the mission of the organization, and from the resulting major objectives. As reported above, TECSUP's mission is "To produce highly trained technicians by providing training in the latest technologies to post-secondary youth and current Peruvian technicians and other industry employees." It aims to become the supreme technical institute of Peru.

TECSUP planners stated the goal: By 1990, TECSUP training and tuition revenues will support at least 90% of all operating costs.

In pursuit of this mission and goal, TECSUP adopted the strategy of the DEVELOPMENT OF A NEW MARKET. The specific objectives related to this strategy were:

Objective 1. By December 1986, 20 Continuing Education or short courses will be offered; four by April, 1986; four more by October 1986, and 12 by December 1986.

Objective 2: By 1990, 40 Continuing Education courses will be offered annually.

Tactics, or tasks, required to implement the objectives for this strategy were:

1. The review and translation of DTCC courses.
2. The hiring of instructors.
3. The preparation and printing of text; obtaining materials and equipment.
4. The marketing/promotion of courses to potential clients.
5. The scheduling and offering of courses.
6. The monitoring and evaluation of courses as offered.

In analyzing both this strategy, and the tactics related to the

current Continuing Education or Short-Course Program, TECSUP planners considered four changes to the current program, and accepted them as feasible and likely, assuming client demand:

1. The offering of training for trainers.
2. The offering of individualized company training.
3. The development of satellite programs in the outlying provinces.
4. The expansion of training areas.

With regard to the Three-Year Program, TECSUP administrators articulated the following major objective:

Objective 3. By the 1989-90 school year, 540 students will be admitted and enrolled in the regular Three-Year Program in the following fields:

120	students in electronics
120	students in data processing
90	students in heavy machinery
90	students in plant maintenance
60	students in industrial electricity
60	students in process supervision (chemical)

The 1986-1987 Three-Year Program offerings include electronics, plant maintenance, and industrial electricity. TECSUP plans to add two new career fields to their Three-Year Program offerings in 1987: informatica (data processing) and supervision de operaciones (chemical/metallurgical supervision). They plan to add the field of heavy equipment in 1988 and offer all six fields in 1990. These planned additions would be possible only with the expansion of current facilities.

TECSUP administrators also were asked to consider several alternatives related to their current Three-Year Program. These would involve additions to, or modifications of, the current Three-Year Program:

1. The offering of pre-enrollment preparatory training for potential

applicants; and

2. The offering of co-educational training: Admit female students.

These were viewed as posing marked changes for TECSUP. The second alternative in particular conflicted with a policy of the current Board of Directors, as well as with the current organizational culture.

The above strategies emerged from the two major components of the Institute. TECSUP planners also considered three strategies which varied from the present organizational thrust. These were:

1. The development and marketing of Self Training Modules.
2. The marketing of Technical Services.
3. The marketing of Technical Consultation Services by TECSUP Faculty/Staff.

TECSUP planners considered these alternatives feasible and agreed that they should be explored for implementation, after the current strategies were implemented.

ORGANIZATIONAL RISKS AND RESOURCES

The potential risks and resources of the organization need to be analyzed to determine whether an organization has the capability to carry out its strategies to a successful conclusion. The resource limitations have been discussed above. In summary, TECSUP has the resources to carry out its current 1986 objectives and related strategies. However, additional classrooms and equipment are needed now. Their construction and acquisition will depend on the effectiveness of TECSUP's promotional activities, and on the continued generosity of their donors.

Aside from the risks related to lack of donations, TECSUP identi-

fied national political developments as potential risks. Current Peruvian government statements and actions may alienate the U.S. and the West, and precede a concomitant shift to the Eastern block. This would seriously hinder developments at TECSUP, given its current ties to Western donors as well as to Western technologies.

Even if the political shift did not entail great loss in foreign donation, the change in technologies would be wrenching. Current equipment at TECSUP is of German and U.S. manufacture, requiring adjustments and adaptations within the Peruvian setting. Adding equipment and machinery from the Eastern block countries would multiply the headaches and difficulties involved in use of the equipment, without even considering the possibilities of the unavailability of the latest equipment and technologies (for example, in computer-related technologies).

Another risk discussed above involves competition. Public-funded institutions might provide training similar to TECSUP at a lower price. However, TECSUP administrators maintained that any institution entering the market today would require two to three years to reach the stage which TECSUP has attained at this point. No serious competitors are expected to emerge in the near future.

The potential worsening of the national economy could pose potential problems. However, TECSUP might fare well regardless of the change. If the economy worsens, industries will demand more technicians to stretch out capital investments in equipment, and to maintain plant efficiency. If the economy improves, industries will need more technicians for the expansion. An increase in the rate of inflation, however, could present greater problems which might not have similar compensations.

With respect to personnel, TECSUP runs two risks. During the last

two years, the morale and loyalty of employees has been high, benefiting from the enthusiasm of a new institution. As it matures, however, TECSUP runs the risk of losing those psychological benefits of a start-up organization. It will need to consider how to maintain that enthusiasm and earn the loyalty of its personnel. A particular risk is the loss of its highly trained professors, who may be attracted to industry or other organizations or areas. This may require continuing efforts at recruiting and retaining qualified staff, to avoid deterioration in the quality of training offered and in the administration of the organization.

STRATEGIC PLANNING PROCESS - PAST, PRESENT AND FUTURE

Strategic planning is a continuous process. As the present year's plan is completed, the next year's plan is added. On-going analyses of conditions affecting TECSUP should fuel the continual review of organizational and departmental objectives, which should be modified as needed.

Control Procedures

Responsibilities for each activity have been assigned within the Operational Plan. TECSUP management must monitor performance on a continuous basis, so that any necessary corrective action can be taken as soon as possible.

Review Procedures

Review procedures should allow for assessment prior to implementation of the plan, at set points during the implementation phase, and at the end. The plan for 1987 should be developed after consideration of the prior year's experience.

T E C S U P

OPERATIONAL PLAN FOR 1986

The directors of the major departments, and the Coordinator of the Office of Continuing Education, developed the major objectives, time schedules and resource requirements for the operation of their respective units during 1986. These are presented in the following sections.

The 1986 Operational Plan is followed by part three of the Aguirre International report on the major conclusions and recommendations for TECSUP and U.S. AID.

Objectives, Resource Requirements and Timelines for:

A. Office of the Executive Director

B. Department of Administration

C. Department of Instruction

D. Office of Continuing Education (See Appendix D for Related Documents: Short Courses Program Status Chart, Short Course Implementation Chart; Short Course Flyers for April 1986 Short Courses)

E. Department of Student Credit Fund and Planning (See Appendix E for Description of Student Credit Fund)

OFFICE OF THE EXECUTIVE DIRECTOR

1986

	J	F	M	A	M	J	J	A	S	O	N	D
1. Analyze and define TECSUP organizational structure and produce an organizational chart by March 21, 1986.	XXXXXXXXX											
Resources Required Executive Director and department staff, external consultant to analyze and determine optimum organizational structure and division of functions for TECSUP.												
2. Select and assign TECSUP personnel as needed ensuring that all the positions specified in the organizational chart are filled.												
Resources Required Executive Director and department heads to monitor personnel needs, recruit, select and hire personnel.												
3. Define the goals and objectives for the TECSUP programs -- the three-year program and the short courses program by ensuring that the operational plans of each program are developed by March 21, 1986; implemented as planned and monitored through weekly meetings with the directors of the programs.	XXXXXXXXX											
Resources Required Executive Director and Department of Instruction Director, Short Courses coordinator and attendant staff.												
4. Direct the development of the 1986 TECSUP budget, revise as necessary; and ensure implementation during the budget year.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Executive Director, TECSUP Board of Directors, Department directors, and attendant staff.												
5. Analyze, update, and accomplish TECSUP commitments for the AID Grant to TECSUP.												
Resources Required The Board of Directors of TECSUP, the Executive Director, and attendant staff.												
6. Oversee the organization and direction the short courses program by meeting at least weekly with the Director of Instruction and the Short Courses Coordinator.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Executive Director and Department of Instruction Director, and Short Courses coordinator.												

	J F M A M J J A S O N D
7. Design and implement the plan for promotion of both the regular program and short courses by May 31, 1986. Resources Required The Executive Director, Director of Instruction, the coordinator of the short courses, and attendant staff.	XXXXXXXXXXXXXXXXX
8. Supervise the implementation of the newly developed administrative, financial and admissions systems ensuring the a) development the procedures and functions manuals by March 1986; b) training the staff on the new procedures; c) monitoring the implementation through weekly meetings with department directors. Resources Required The Executive Director, department directors, attendant staff, and external consultants.	XXXXXXXXX
9. Install and Maintain the New Technical Advisory Committee. By Feb. 28, 1986, the industry representatives will be invited to become members of the new advisory committee and will meet thereafter at least bimonthly with agendas and minutes detailing the content and decisions of the meetings. Resources Required Executive Director and Technical Advisory Committee members, secretary and committee assistant.	XXX
10. Coordinate TECSUP departments to inform the Ministry of Education regarding the TECSUP budget and student tuition and fees by preparing and sending a report to the Ministry semiannually and whenever tuition and fees are to be changed, and whenever requested by the Ministry of Education. Resources Required Executive Director and directors of the all TECSUP departments -- Administration, Instruction, and Student Credit Fund, and attendant staff.	XXXXX XXXX XXXX XXXX XXXX XX
11. Organize and control the adminstration of donations by developing and implementing a fund-raising plan which includes a) identification of potential donors and the amounts and types of donations needed and expected from each and b) types of contacts, disseminations, or promotional activities to be undertaken. Resources Required Executive Director, attendant staff, development funds.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
12. Supervise the Educational Credit Program by meeting at least weekly with the Department Director. Resources Required Executive Director and director of the Student Credit Fund.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Activity	J F M A M J J A S O N D
13. Facilitate the development of the 1986-1990 TECSUP Strategic Plan and submit to the Board of Directors by May 1986; modify as needed and implement as directed. Resources Required Executive Director, attendant staff and external consultants and the TECSUP Board of Directors.	XXXXXXXXXXXXXXXX
14. Develop the facilities necessary for instruction of the chemistry courses by determining the resources needed, analyzing current facilities, determining the most cost-effective means to augment current plant to ensure the availability of what is needed. Resources Required Executive Director, attendant staff and capital funds.	
15. Direct and control the installation of the security system for TECSUP to ensure a functioning system by April 1986. Resources Required Executive Director, attendant staff and capital funds.	XXXXXXXXXXXX
16. Monitor the needs of the organization for electronic text and data processing, obtain new hardware and/or design new computer systems as needed and as resources are available. Resources Required Executive Director, attendant staff and capital funds.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
17. Increase the number of applicants as a means of improving the preparation of incoming students by developing a promotional campaign using a videotape describing TECSUP and its offerings used by TECSUP faculty in visits to feeder schools in Lima than outlying districts to recruit. The videotape will be completed by August 1, 1986, and the visits will be conducted in September and October 1986. Resources Required Executive Director, attendant staff and capital funds.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

DEPARTMENT OF ADMINISTRATION

1986

	J	F	M	A	M	J	J	A	S	O	N	D
1. Implement the administrative procedures as revised by external consultants and accepted by TECSUP directors by April 1986. Train department staff on the new procedures by May 1986 and ensure the implementation by continuously monitoring staff work and procedures actually followed.	XXXXXXXXXXXXX											
Resources Required Department Director, attendant staff, and external consultants.	XXXXXXXXX											
2. Design and implement the TECSUP personnel system: develop the written document of TECSUP personnel policies by July 1986, organize the personnel files by July 1986 including human resources information.	XXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Department Director, attendant staff, and external consultants.												
3. Prepare the 1987 Budget for TECSUP by October 30, 1986.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Executive director, department directors, attendant staff, external consultants, and the TECSUP Board of Directors.												
4. Set up and implement a budget control system by March 31, 1986.	XXXXXXXX											
Resources Required Associate Director, attendant staff, and external consultants.												
5. Automate the fixed assets system for control of the physical plant -- ensure completion of the Basic IV program by June 1986, and complete entering of the data by August 1986. The system will be integrated into the current accounting Basic IV system by October 1986.	XXXXXXXX											
	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Department Director, attendant staff, and external consultants.												
6. If resources are available, automate the TECSUP cashier function by contracting the development of the requisite computer Basic IV program, obtaining a new terminal in the cashier's area, training the cashier, and switching to automated processing by October 1986.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Department Director, cashier, external consultants, and funds.												

	J F M A M J J A S O N D
7. Reorganize the secretarial pool services by conducting a systematic study by April 1986; reorganizing and implementing the reorganization by June 1986.	XXXXXXXXXXXXX
Resources Required Department Director, attendant staff, external consultant.	XXXXXXXXXXXXXXXXXXXXX
8. Reorganize the printing and duplication service -- study the current function by May 1986, determine changes needed by June 1986, and implementing and evaluating the changes by June 1986.	XXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
Resources Required Department Director, attendant staff.	
9. Implement the computerized warehouse system on the Basic IV; by March 31, 1986, accurate print-outs will be available for all warehouse data.	XXXXXXXX
Resources Required Department Director, warehouseman and external consultants.	
10. Monitor the information processing needs of the administration department, schedule and design and/or acquire the hardware and software as resources are available.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Resources Required Department Director, attendant staff and requisite funds.	

DEPARTMENT OF INSTRUCTION
1986

The Department of Instruction researches, develops or adapts, as necessary, and administers all TECSUP instructional programs. It primary clients are TECSUP trainees. As of June 1985, these trainees included 72 first-year students and 11 second-year students in the three fields of a. Plant Maintenance, b. Electronics, and c. Industrial Electricity.

OBJECTIVES

	J	F	M	A	M	J	J	A	S	O	N	D	J
1. To develop curriculum and instructional programs in four technical fields for the three-year program.													
1.1 By March 1986 the Department of Instruction will have a written document describing the TECSUP curriculum for the three-year program, detailing the courses required for each of the fields of study to be offered for 1986-1987.	XXXXXXXXX												
Resources Required Departmental staff.													
1.2 By March 1986 the classes required of first-year students will be identified and fully prepared including availability of a syllabus, listing of materials and equipment to be used and types of tests or other measures of mastery to be used.	XXXXXXXXX												
Resources Reqeired Departmental staff.													
2. To develop and implement a publicity/recruitment campaign to recruit students for the courses offered.													
2.1 By November 1985 identify the objectives and develop the publicity and recruitment activities to be implemented to promote the three-year program.	X												
Resources Required Departmental staff.													
2.2 By January 1986 implement the following activities to publicize and recruit students for the three-year program.		X											

	J	F	M	A	M	J	J	A	S	O	N	D
Departmental staff.												
3. To develop and implement the student admissions process, from the development of tests, organizing the administration, scoring and analyses of tests, notification of students, notification and coordination with the directors of Social Services and Student Credit Fund.												
3.1 By February 1986 identify student skill requirements for admissions into the three-year program by career.	XXXXXXX											
3.2 By February 1986 determine which tests are needed for admission, research the availability of acceptable tests, acquire or develop examination materials needed for the expected numbers and types of applicants expected.	XXXXXXX											
Resources Required Instructional staff responsible for individual career fields and classes to be offered during 1986-1987 and consultant services.												
4. Organize and hold the classes for the three-year instructional program as planned for the 1986-87 year: By March 1986 identify, recruit as necessary, and assign teaching staff for each of the courses offered. Offer classes as scheduled according to standards set by TECSUP and within the requirements of the Peruvian Ministry of Education.	XXXXXXXX											
Resources Required Faculty, Facilities, equipment and materials for each of the courses to be offered; syllabi and instructional materials.												
5. Throughout 1986, supervise the Office of Continuing Education meeting with the coordinator at least weekly. Coordinate the short courses and three-year programs.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Department director, continuing education coordinator, and departmental staff.												
6. On an ongoing basis, evaluate the three year program,												
6.1 Identify the methods to be used to assess student process and performance mastery criteria by the beginning of each trimester. By the first day of classes, schedule assessment dates; administer tests and other assessment procedures as scheduled.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
Resources Required Departmental staff.												

	J	F	M	A	M	J	J	A	S	O	N	D
6.2 Faculty will analyze results of student assessments and report to the Director of Instruction and Executive Director no later than three days after the end of the testing period. Resources Required Departmental staff.	X			X			X		X			X
6.3 Examine evaluation results and make recommendations for program planning and implementation. Resources Required Director of Instruction and designated staff.	X			X			X		X			X
7. Throughout 1986 maintain student files including records of academic progress to ensure availability of student and instructional program information as required of a technical institute.	X			X			X		X			X
7.1 As required by government regulation provide the Peruvian Ministry of Education with required students profile information and reports required of all technical institutes. By December 1985 identify the information and format to be provided to the Ministry, develop a schedule for provision of the information, assign and monitor staff responsible for providing the information. Resources Required Department director and staff, data management system.	X											
7.2 Provide the Department of Administration with information necessary for billing students. By January 1986, identify the information and format to be provided to the Department of Administration, develop a schedule for provision of the information, assign and monitor staff responsible for providing the information. Resources Required Department director and staff, data management system.	X											
7.3 Provide students with reports of progress after the exams at the end of each trimester and as requested by students. Resources Required Department director and staff, data management system.	X			X			X		X			X
	XXXXX											

OFFICE OF CONTINUING EDUCATION

1986

	J	F	M	A	M	J	J	A	S	O	N	D
1. To review and provide feedback on English-language instructional units developed by Delaware Technical Community College, and to adapt as needed for use as short courses to be offered.	X	X	X	X	X	X	X	X	X	X	X	X
1.1 Within 10 days after receiving the DTCC English-language materials, continuing education staff will review and provide written feedback to DTCC staff for preparation of TECSUP short courses. Resources Required Continuing education staff, instructors.	X			X			X		X			X
1.2 By March 1986, identify and schedule short courses to be offered by December 1986. Resources Required Continuing education coordinator, instructors, facilities.	X	X	X	X	X	X	X	X				
1.3 Within 45 days from the scheduled date of offering per continuing education course, begin adapting the short courses to fit Peruvian needs and requirements, that is, translate and adapt the necessary text; identify the equipment needed, if any; and adapt or develop audio-visual and instructional materials needed. The adaptation and preparation will be completed at least 15 days prior to the offering of each course. Resources Required Continuing education staff, typists, tranlators/instructors, printing services, equipment and instructional materials,	X	X	X	X	X	X	X	X	X	X	X	X
1.4 At least 30 days prior to offering a course, identify, recruit as necessary, and assign teaching staff for each of the courses offered. Resources Required Continuing Education Coordinator, recruiting funds, course syllabus and instructional materials.	X	X	X	X	X	X	X	X	X	X	X	X

	J	F	M	A	M	J	J	A	S	O	N	D
2. By December 1986, offer at least 20 short courses in the areas identified as in demand by Peruvian companies (four of the 20 courses will be repeats).	X	X	X	X	X	X	X					
2.1 By March 1986, develop and begin a publicity campaign promoting the short courses scheduled so as to result in at least 20 paying participants per course in 1986. Two months prior to offering each short course specific adverstising will be conducted.	X	X	X	X	X	X	X					
Resources Required Continuing education coordinator, secretary, advertising funds.												
2.2 Offer short courses as scheduled according to standards set by TECSUP. Articulate the standards at least 15 days prior to offering each course.		X		X		X		X		X		
Resources Required Continuing education coordinator, the courses to be offered; syllabi and instructional materials.												
3. On an ongoing basis, evaluate the courses offered. a. Identify prior to the offering of each short course the training outcomes expected/desired; b. Identify and obtain or develop assessment methods to be used; c. Schedule and collect assessment data as scheduled.	X	X	X	X	X	X	X	X	X	X	X	X
Resources Required Continuing education coordinator, instructors, external consultants.												
3.1 Design the assessment/evaluation form(s) to be used with each course at least one week prior to the offering of the course.	X		X		X		X		X		X	
Resources Required Continuing education coordinator and department of instruction director.												
3.2 Examine evaluation results and make recommendations for program planning and implementation.	X	X	X	X	X	X	X	X	X	X	X	X
Resources Required Continuing education coordinator and department of instruction director.												

(See Appendix D for Related Documents: Short Courses Program Status and Implementation Chart; April 1986 Short Courses flyers.)

DEPARTMENT OF STUDENT CREDIT FUND AND PLANNING
1986

	J	F	M	A	M	J	J	A	S	O	N	D
1. Administer the Student Credit Fund from the loan program available through the Interamerican Development Bank: analyze Bank requirements, establish and implement TECSUP procedures for qualifying student recipients of the loans, submit list of recommended recipients to the loan committee for approval; and prepare and submit financial reports as required by the Bank.	XXXXXXXXXXXXXXXXX											
Resources Required BID, Department director, social worker, loan committee.												
2. By April 15, 1986, organize and facilitate a loan committee to review and formally approve BID loans to qualified TECSUP candidates.	XXXXXXXXXXXX											
Resources Required Department director, loan committee.												
3. By March 14, 1986, analyze student applicants to identify those qualified to receive BID loans; issue at least 40 new loans to new enrollees in the TECSUP three-year program.	XXXXXXXXX											
Resources Required Department director, social worker, loan committee.												
4. By February 1985, obtain agreement from BID for use of more appropriate criteria for loan qualification, setting the annual per capita family income at 5,800 intis instead of 4,500 for the 1986 school year; update the criteria	XXXX											
Resources Required Department director.												
5. By May 1986, analyze income distribution of loan applicants and set new per capita family income requirements for loan approval; submit to BID for approval by June 1986.	XXXXXXXXXXXXXXXX											
	XXXXXXXXXXXXXXXXXXX											
Resources Required BID, Department director.												
From January-March and July-August, coordinate social worker interviews of BID loan applicants through periodic meetings and reviews of completed interview forms.	XXXXXXXXXXX						XXXXXXX					
Resources Required Department director, social worker.												

(See Appendix E for Description of Student Credit Fund)

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PART THREE: MAJOR CONCLUSIONS AND RECOMMENDATIONS

TECSUP has demonstrated outstanding effort, accomplishment and need during 1985-1986. It strengths include highly capable and dedicated personnel, who work in a facility unique for its outstanding resources. While no longer an infant, the Institute is still in its start-up phase, and needs to establish a record, an institutional history for the quality of its services and of its trainees. It deserves support and will likely get it from its clients.

TECSUP has set the objective to be able to support at least 90% of its operational costs from training revenues by 1990. Current budget analyses and projections through 1990 suggest that this 90% is a realistic and challenging target. With a few minor changes in strategies and practices, TECSUP can attain this objective. It will continue to require donations through 1990.

We thus recommend the following to TECSUP: Continue the current work toward determining and implementing effective and efficient administrative and financial systems. Continue the planning and implementation of the Three-Year Program, and the Continuing Education short courses. Monitor the needs of the market, through response to the short course offerings in 1986. While this market test will provide incontrovertible evidence of market demand, a systematic market demand study will still be necessary for critical information on the depth and breadth of market demand, thus enabling TECSUP to plan more effectively. Such a study need not be exhaustive, since some information had already been gathered prior to, and subsequent to, the inception of the Insti-

tute, and the short course offerings will also provide market test data. We recommend a focused, culturally informed and sensitive study be conducted as soon as possible, concentrating on the specific areas in TECSUP's domain.

To proceed with the six-field plan approved by the Ministry of Education, TECSUP must complete its facilities and equipment acquisition to be able to offer basic courses, particularly those in basic mechanics. We recommend that TECSUP expand its equipment and facilities accordingly.

To AID, we recommend that it continue its support of TECSUP, for at least four years of donations, with technical assistance to assure the optimum package of equipment, facilities, and services to address the needs of Peru. This support should continue with the market study mentioned above. It should include a systems and financial audit to balance the audit conducted by Deloitte Haskins and Sells, and to document the extensive progress made by TECSUP.

AID funds should include the development of a project paper using the 1986-90 Strategic Plan as a starting point to systematically determine the specific services, equipment and materials which would most benefit the Institute. This multi-year support should include periodic evaluations, with annual determination of the effectiveness of the aid and decisions on continuation of that support.

APPENDIX A

REPORT ON TECSUP FACILITIES NEEDS

by

MR. ANTHONY DIGENAKIS AND DR. HELEN HOWARD
DELAWARE TECHNICAL AND COMMUNITY COLLEGES

MARCH, 1986

CLASSROOM UTILIZATION REPORT

ANTHONY DEGENAKIS AND HELEN HOWARD

DTCC

MARCH, 1986

TECSUP is in the process of planning for its physical plant needs for the next five years. A major consideration includes the construction of a chemistry/metallurgy building.

TECSUP planners (with Aguirre International) requested an analysis of the current capacity of their facilities by DTCC technical experts to determine whether a chemistry/metallurgy building was, in fact, necessary or whether the existing buildings could meet the needs of the organization.

Currently TECSUP offers three curricula: Industrial Electronics, Plant Maintenance and Industrial Electricity. Based on information given by Mr. Miguel Rivas, TECSUP's Educational Director, and Dr. Karl-Heinz Kambartel, German Technical Assistant, the following assumptions were made:

* Each classroom is scheduled for 25 hours a week (necessary due to scheduling problems with instructors' hours).

* Seventeen hours of classroom instruction per section per semester is needed.

The results of this analysis are as follows:

a) Each curricula enrolls 30 students in each year of the three year program for a total of 90 students.

b) Each curricula will require two classrooms for instruction per semester.

c) At this time there are 8 constructed classrooms with 6 currently in operation.

d) TECSUP will use all 6 available classrooms for the current semester (April 1986).

In 1987 TECSUP plans to offer two additional programs in Computer Technology (Informatics) and Process Supervision. The Computer Technology curriculum will utilize the remaining two

classrooms.

Offering the Process Supervision curriculum will necessitate securing at least two dedicated laboratories, specialized areas such as balance rooms, storage rooms, etc., and two classrooms. Given the current conditions of TECSUP, two solutions are available:

a) Convert existing facilities to these specialized areas. This is not a recommended solution since it will result in a loss of classroom space needed for the other curricula.

b) Proceed with plans to construct a chemistry/metallurgy building based on the designs currently available. The two additional classrooms as well as all specialized areas for the Process Supervision curriculum are included in these plans. DTCC, as a sister institution, will support TECSUP with expertise in design and implementation.

The chemistry/metallurgy building, along with all the other facilities will also be used for the refresher/evening courses currently starting at TECSUP.

The heavy equipment program (#6), expected to attract an additional 90 students, will require the construction of specialized shops along with the expansion of an existing building to provide 3 additional classrooms.

When TECSUP is fully operational it will require a minimum of 12 classrooms for 540 students enrolled in 6 curricula. The specialized laboratories currently built, and those that are planned, are dedicated to hands-on instruction and cannot be utilized as classrooms.

Appendix B

MINUTES OF 2-27-86 TECHNICAL ADVISORY COMMITTEE MEETING

INSTITUTO TECNOLOGICO SUPERIOR
"TECSUP"

APARTADO POSTAL 677
LIMA 18 - PERU

TECSUP · PERU

ACTA DE REUNION DEL COMITE TECNICO

Fecha : 27 de Febrero de 1986

Asistentes : Ing. Francisco D'Angelo
Dr. Jorge Heraud P.
Ing. Ricardo Menéndez
Ing. Roberto Molina
Ing. Juan Saavedra
Ing. Antonio Tord
Ing. Juan Incháustegui

No pudo concurrir el Ing. Eduardo Rubio disculpando su ausencia debida a impostergables asuntos personales.

El Ing. Incháustegui agradeció la concurrencia de los miembros del Comité y explicó los propósitos fundamentales que lo inspiraban, de contar con un organismo de asesoría y de vinculación con las diversas actividades productivas del país, que de modo permanente y a través de destacados profesionales que actúan en ellas, represente un nexo de coordinación entre dichos sectores de producción y TECSUP como entidad de capacitación tecnológica y de profesionales para las tareas y funciones que el desarrollo de tales sectores demanda.

Se intercambió información sobre los programas que desarrolla TECSUP actualmente, que comprenden el de tres años de duración en tres especialidades destinado a la formación de técnicos de mando medio y el de cursos cortos que se iniciará en el mes de abril y para el cual se solicitaría el apoyo de los miembros del Comité, respecto de la captación del mayor número posible de asistentes.

Se comentó también sobre la infraestructura y equipos existentes y el proyecto de construir y equipar en el presente año el Pabellón de Química, para iniciar la formación en la especialidad de Supervisión de Procesos en 1986 y ampliar los cursos cortos en las áreas de Química y Metalurgia.

El Dr. Heraud se refirió a la necesidad de capacitación en especialidades que la tecnología moderna está demandando como la de Serigrafía (Silk-Screen) de uso actual en la fabricación de circuitos impresos. Mencionó también el bobinado de transformadores de audio y de nucleo toroidal como un campo no desarrollado en la capacitación disponible en el país, y de creciente necesidad en el mercado.

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CAMPUS TECNOLOGICO
AV. SEPARADORA INDUSTRIAL S/N. PARALELA CARRETERA CENTRAL KM. 5.7 (ESPALDA DE PLANTA PHILIPS PERUANA) DISTRITO DE ATE - LIMA - PERU
TELEFONOS: 371905 - 371906 - 371907 - 371908 - 371909

TECSUP · PERU

INSTITUTO TECNOLOGICO SUPERIOR
"TECSUP"

APARTADO POSTAL 677
LIMA 18 - PERU

El Ing. Juan Saavedra abordó el tema del Control de Calidad como una función de gran importancia en las actividades productivas especificando que en la industria textil podría ser de gran acogida y relativa facil implementación, capacitar por cursos cortos en la tecnología y medios aplicables.

El Ing. R. Molina concordando con el tema mencionó su ampliación posible a la fabricación de pinturas y las manufacturas de fibra de vidrio.

Se trató luego sobre la necesidad de conocer y cuantificar las necesidades por especialidad de personal técnico en las empresas, recomendándose diseñar y aplicar un análisis del mercado, cuyos resultados sirvan para orientar la labor de TECSUP hacia las especialidades requeridas. Esto permitiría no sólo satisfacer las necesidades del mercado sino asegurar la oportunidad de trabajo de los egresados de TECSUP. El Ing. Incháustegui explicó lo ya realizado en este sentido conviniendo en organizar y ampliar esta tarea con la valiosa ayuda del Comité.

Se dialogó en general sobre la mayor forma de concretar la labor de coordinación del Comité, acordándose finalmente que para su próxima sesión se propondrá un proyecto de agenda conviniendose que se trataría en particular el tema del Control de Calidad como específico, quedando siempre una parte de la sesión abierta a temas generales.

Siendo las 6:30 se levantó la sesión.

CAMPUS TECNOLOGICO
AV. SEPARADORA INDUSTRIAL S/N PARALELA CARRETERA CENTRAL KM 5 7 ESPALDA DE PLANTA PHILIPS PERUANA DISTRITO DE ATE - LIMA - PERU
TELEFONOS 371905 - 371906 - 371907 - 371908 - 371909

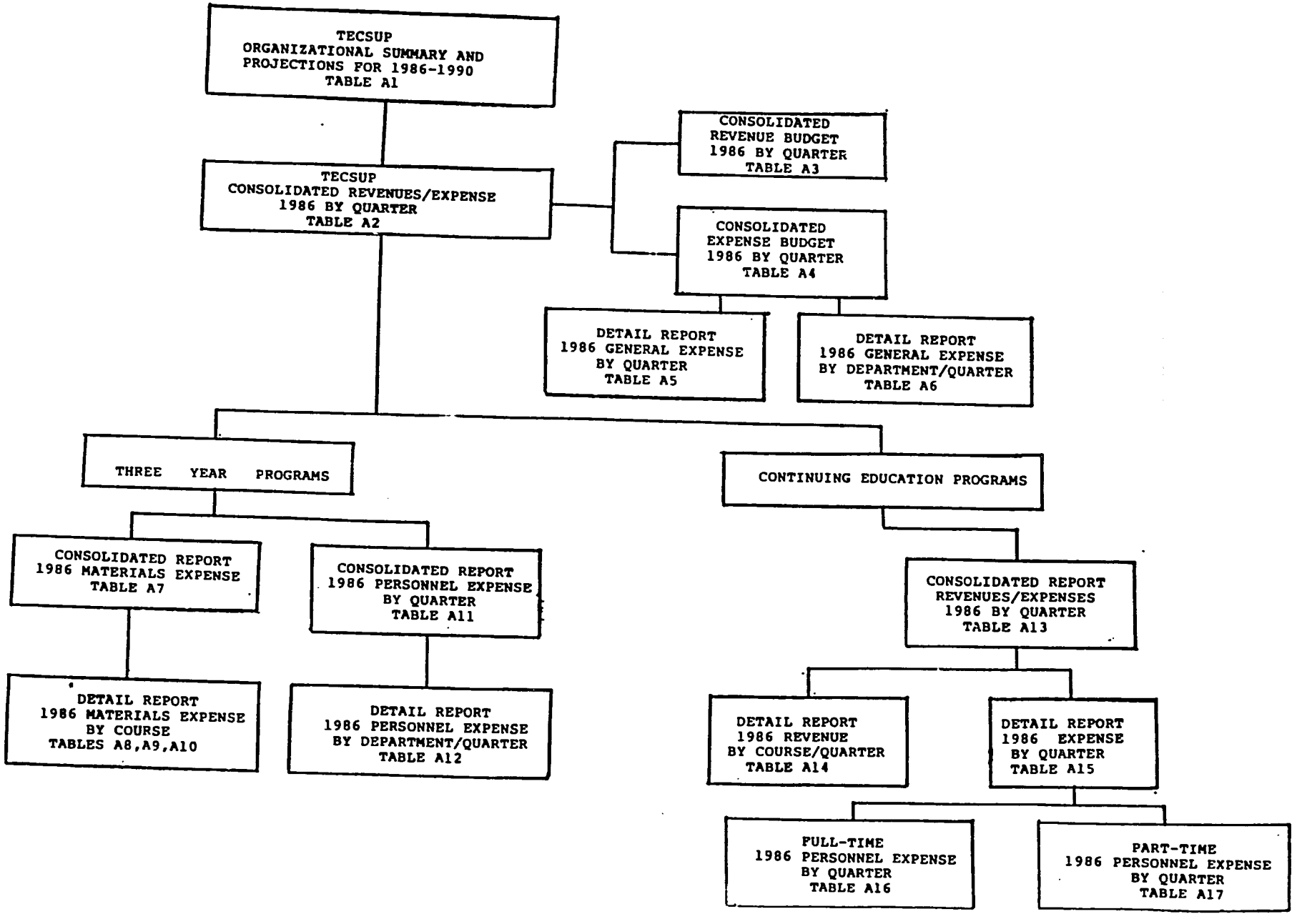
APPENDIX C

TECSUP 1986 BUDGET TABLES AND PROJECTIONS THROUGH 1990

FIGURE 3

TECSUP BUDGET DIAGRAM

AUGUST 1986 FIGURES



APPENDIX C

The tables begin with a presentation of the revenues and expenses for 1986, the projections through 1990, and proceed with tables presenting increasing levels of detail, by quarter, by department and/or by program (Three-Year versus Continuing Education Program).

The following budget tables were prepared as one unified Lotus "spreadsheet" system for monitoring TECSUP's ongoing revenues and expenditures. This unified spreadsheet system should be maintained in the Basic IV accounting system which will contain all budget details. Maintenance of that system is crucial, since that will determine the accuracy and usefulness of any financial projections during upcoming years.

Fiscal reports should be reviewed quarterly by the Executive Director and his administrative staff. This is an important monitoring function which will contribute to future TECSUP development and planning activities.

Listed below are detailed explanations of the various financial spreadsheets available through the system as outlined in Figure 1. TECSUP administrators reported that the expanded accounting system on the Basic IV will generate reports comparable to these spreadsheets. All tables are in intis.

TECSUP is dependent upon tuition, Peruvian donations and the fees charged for the Continuing Education, or short courses, as major sources of revenue. Expenditures are focused primarily in the following areas: personnel, institutional costs, capital outlay, and instructional materials.

TECSUP ORGANIZATIONAL SUMMARY AND PROJECTION: 1986-1990

Table A1 presents current and projected financial information for both revenues and expenditures. It provides an overview for the entire Institute, incorporating the budgets of individual departments into one spreadsheet.

TECSUP CONSOLIDATED REVENUES/EXPENSES: 1986 BY QUARTER

Table A2 presents TECSUP revenues and expenditures figures by quarter for fiscal year 1986.

CONSOLIDATED REVENUES: 1986 BY QUARTER

Table A3 displays the revenues generated by TECSUP to support the instructional program. Revenues are broken down by source: Three-Year Program and the Continuing Education, or short course, Program. Enrollment and revenues generated are reported for each quarter.

CONSOLIDATED EXPENSES: 1986 BY QUARTER

Table A4 displays expenses for each quarter. It summarizes expenditures for both the Three-Year Program and the Continuing Education Program.

DETAIL REPORT: 1986 GENERAL EXPENSES BY QUARTER

Table A5 presents detailed expense data. General expenses are categorized into three groups: third party services, materials and supplies, and administrative charges. These figures are reported for each quarter of 1986.

TABLE A1
TECSUP - ORGANIZATIONAL SUMMARY AND PROJECTIONS FOR 1986-1990

CONCEPT	1986	1987	1988	1989	1990
REVENUE					
Operating revenues					
- Tuition	1,992,000	5,275,200	9,948,960	16,793,280	24,894,000
- Admission examinations	150,000	375,000	630,000	882,000	1,234,800
- Fees	74,700	527,520	994,896	1,678,920	2,489,400
- Special Programs	672,000	1,097,600	1,756,160	2,458,400	3,441,760
- On Site Courses	140,000	294,000	411,600	576,240	806,736
- Interest from bonds & C.D.'s	82,917	107,792	140,130	182,169	236,819
Total Operating Revenue	3,111,617	7,677,112	13,881,746	22,571,009	33,103,515
INITIAL BALANCE					
Funds Available	6,870,414	6,870,414	7,557,455	8,313,201	9,144,521
- Peruvian	6,870,414	7,557,455	8,313,201	9,144,521	10,058,973
- AID	698,600	0	0	0	0
- Baden Wurttenberg	3,758,800	4,000,000	6,000,000	6,000,000	0
- Others	2,560,400	0	0	0	0
Total Donations	13,888,214	11,557,455	14,313,201	15,144,521	10,058,973
TOTAL REVENUES	23,870,245	26,104,981	35,752,402	46,028,731	52,307,009
EXPENSES					
Operating Expenses					
- Personnel	3,747,188	7,448,428	12,402,091	19,517,983	28,342,630
- Instructional materials	485,960	1,202,456	2,233,829	3,755,228	5,619,337
- Institutional costs	1,351,636	1,892,290	2,649,206	3,708,888	5,192,443
- On Site Courses	44,000	92,400	129,360	181,104	253,548
Total Operating Expenses	5,628,784	10,635,574	17,414,486	27,163,203	39,407,958
Capital Investment					
Equipment (Installed)	8,653,397	4,000,000	6,000,000	6,000,000	0
Total Capital Investment	8,653,397	4,000,000	6,000,000	6,000,000	0
TOTAL EXPENSES	14,282,181	14,635,574	23,414,486	33,163,203	39,407,958
ANNUAL SURPLUS (DEFICIT) (Between Operational Revenues and Operational Costs)	(2,517,167)	(2,958,462)	(3,532,740)	(4,592,194)	(6,304,443)
ANNUAL SURPLUS (DEFICIT) Funds Available - Expenses	9,588,064	11,469,408	12,337,916	12,865,528	12,899,051

TABLE A2

TECSUP - SUMMARY OF REVENUES AND EXPENDITURES 1986

CONCEPT	1st. Quarter	2nd. Quarter	3rd. Quarter	4th. Quarter	Total
REVENUES					
Operating Revenues					
- Tuition	199,200	597,600	597,600	597,600	1,992,000
- Admission examinations	150,000	0	0	0	150,000
- Fees	37,350	0	37,350	0	74,700
- Special Programs	0	369,600	302,400	0	672,000
- On Site courses	35,000	35,000	35,000	35,000	140,000
- Interest-bonds & cert.	64,167	18,750	0	0	82,917
- Initial Balance - 1986	6,870,414				6,870,414
Donations					
- Peruvian	0	0	2,061,124	4,809,290	6,870,414
- AID	0	698,600	0	0	698,600
- Baden Wurttenberg	0	2,295,376	1,463,424	0	3,758,800
- Other	0	0	0	0	2,560,400
TOTAL REVENUES	7,356,131	4,014,926	4,496,898	5,441,890	23,870,246
EXPENSES					
Operating Costs					
- Personnel	716,713	883,564	1,030,909	1,116,002	3,747,188
- Instructional materials	48,660	127,876	157,449	152,211	485,960
- Institutional costs	575,014	246,068	272,747	257,806	1,351,636
Sub-Total	1,340,387	1,257,508	1,461,105	1,526,019	5,584,783
Capital investments					
- Equipment & installations	1,795,997	3,493,976	2,413,424	950,000	8,653,397
Sub-total	1,795,997	3,493,976	2,413,424	950,000	8,653,397
TOTAL EXPENSES	3,136,384	4,751,484	3,874,529	2,476,019	14,238,180
DEFICIT	4,219,748	(736,558)	622,369	2,965,871	9,632,066
INITIAL CASH BALANCE	6,870,414				

TABLE A3
TECSUP - CONSOLIDATED REVENUES
1986 BY QUARTER

CONCEPT	UNIT	1st. Quarter			2nd. Quarter			3rd. Quarter			4th. Quarter			GRAND TOTAL
		Number	V. Unit	Total	Number	V. Unit.	Total	Number	V. Unit.	Total	Number	V. Unit.	Total	
Regular Programs														
Examination Fees	Students	500	300	150,000	0	0	0	0	0	0	0	0	0	150,000
Fees	Students	166	225	37,350	0	0	0	166	225	37,350	0	0	0	74,700
Tuition	Tuition	166	1,200	199,200	166	3,600	597,600	166	3,600	597,600	166	3,600	597,600	1,992,000
Total Income 3yr. Program				386,550			597,600			634,950			597,600	2,216,700
Special Programs														
Short Courses	Students	0	0	0	330	1,120	369,600	270	1,120	302,400	0	0	0	672,000
On Site Courses	Courses	1	35,000	35,000	1	35,000	35,000	1	35,000	35,000	1	35,000	35,000	140,000
Interest From Bonds and C.D.'s	Quarterly			64,167			18,750			0			0	82,917
GRAND TOTAL				386,550			967,200			937,350			597,600	3,111,617

TABLE A4

TECSUP - CONSOLIDATED EXPENSES - 1986 BY QUARTER

CONCEPT	1st. Quarter	2nd. Quarter	3rd. Quarter	4th. Quarter	Total
A. - THREE YEAR PROGRAM					
- Personnel	678,986	823,399	966,239	1,069,903	3,538,527
- Instructional Materials	0	84,779	154,765	151,975	391,520
- Institutional costs	399,219	289,452	313,107	297,410	1,299,187
Total Three Year Program	1,078,205	1,197,630	1,434,111	1,519,288	5,229,234
B. - Special Programs					
- Personnel	37,727	60,165	64,670	46,099	208,661
- Instructional Materials	48,660.	43,097	2,684	0	94,440
- Institutional Costs	8,150	12,498	15,522	16,278	52,448
Total Special Programs	94,537	115,760	82,876	62,377	355,549
GRAND TOTAL	1,172,742	1,313,389	1,516,987	1,581,665	5,584,783

TABLE A5

TECSUP - DETAIL REPORT: GENERAL EXPENSES
1986 BY QUARTER

CONCEPT	1st. Quarter	2nd. Quarter	3rd. Quarter	4th. Quarter	Total
a) Third Party Services					
- Trans. and Warehousing	3,000	3,300	3,630	3,990	13,920
- Mail and Communications	16,806	18,822	20,707	22,784	79,119
- Maintenance and Repairs	11,000	12,100	13,310	4,640	41,050
- Electricity, Water and Gas	22,000	24,200	26,620	29,282	102,102
- Security	26,695	26,695	30,700	30,700	114,791
- Heating, and Cleaning	2,000	2,200	2,420	2,662	9,282
- Other	40,000	44,000	48,400	53,230	185,630
Total	121,501	131,317	145,787	147,288	545,894
b) Materials and Supplies					
- Spare Parts	0	0	0	0	0
- Tools	0	0	0	0	0
- Office Supplies	18,540	20,374	22,410	24,640	85,964
- Supplies	11,400	12,540	13,790	15,170	52,900
- Other	600	660	725	800	2,785
Total	30,540	33,574	36,925	40,610	141,649
c) Administrative Charges					
- Insurance	55,882	55,882	55,882	55,882	223,526
- Subscriptions	410	434	460	490	1,794
- Trip Allowances	0	28,000	28,000	0	56,000
- Per Diem Expenses	5,300	5,830	6,413	7,050	24,593
- Personnel	5,000	5,500	6,050	6,650	23,200
- Training Expenses	3,000	3,300	3,630	4,000	13,930
- Printing and Duplication	11,486	13,615	14,960	16,440	56,501
- Seminars	0	0	0	0	0
- Diplomas and Certificates	0	0	0	0	0
- Others	166,100	12,000	15,000	19,000	212,100
TOTAL	247,178	124,560	130,395	109,512	611,644
GRAND TOTAL	399,219	289,452	313,107	297,410	1,299,187

DETAIL REPORT: 1986 GENERAL EXPENSES BY QUARTER FOR EACH DEPARTMENT

Table A6 presents expense data by department for each quarter of the fiscal year. General expenses are again categorized into three groups: third party services, materials and supplies, and administrative charges.

Program Financial Reports

The fiscal management system provides detailed financial information for the Three-Year and Continuing Education Programs, in addition to those produced for the total Institute.

TECSUP - DETAIL REPORT: GENERAL EXPENSES
1986 BY DEPARTMENT FOR EACH QUARTER

TABLE A6

1st. Quarter

CONCEPT	Gen.Director	Promotion	Instruction	Admin.	Gen.Expenses	TOTAL
a) Third Party Services						
- Transportation and Warehousing	0	0	0	0	3,000	3,000
- Mail and Communications	8,700	0	306	0	7,800	16,806
- Maintenance and Repairs	0	0	0	0	11,000	11,000
- Electricity, Water and Gas	660	0	16,500	3,300	1,540	22,000
- Security	0	0	0	26,695	0	26,695
- Other	15,000	0	15,000	10,000	0	40,000
Sub-Total	24,360	0	31,806	39,995	23,340	119,501
b) Materials and Supplies						
- Spare Parts	0	0	0	0	0	0
- Tools	0	0	0	0	0	0
- Office Supplies	3,240	540	7,920	6,840	0	18,540
- Supplies	0	0	0	0	11,400	11,400
- Other	0	0	0	0	600	600
Sub-Total	3,240	540	7,920	6,840	12,000	30,540
c) Managerial Charges						
- Insurance	0	0	0	0	55,882	55,882
- Subscriptions	0	0	0	0	410	410
- Trip Allowances	0	0	0	0	0	0
- Per Diem Expenses	4,240	0	1,060	0	0	5,300
- Personnel	0	0	0	5,000	0	5,000
- Training Expenses	0	0	0	3,000	0	3,000
- Printing and Duplication	920	0	7,925	2,641	0	11,486
- Seminars	0	0	0	0	0	0
- Diplomas & Certificates	0	0	0	0	0	0
- Other	0	0	156,100	0	10,000	166,100
Sub-Total	5,160	0	165,085	10,641	66,292	247,178
TOTAL	32,760	540	204,811	57,476	101,632	397,219

TECSUP - DETAIL REPORT GENERAL EXPENSES
1986 BY DEPARTMENT FOR EACH QUARTER

TABLE A6
(Continued)

2nd. Quarter

CONCEPT	Gen.Director	Promotion	Instruction	Admin.	Gen.Expenses	TOTAL
a) Third Party Services						
- Transportation and Warehousing	0	0	0	0	3,300	3,300
- Mail and Communications	9,570	336	336	0	8,580	18,822
- Maintenance and Repairs	0	0	0	0	12,100	12,100
- Electricity, Water and Gas	726	0	18,150	3,530	1,694	24,200
- Security	0	0	0	26,695	0	26,695
- Heating and Cleaning	0	0	0	0	2,200	2,200
- Other	16,500	0	16,500	11,000	0	44,000
Sub-Total	26,796	336	34,986	41,325	27,874	131,317
b) Materials and Supplies						
- Spare Parts	0	0	0	0	0	0
- Tools	0	0	0	0	0	0
- Office Supplies	3,564	590	8,700	7,520	0	20,374
- Supplies	0	0	0	0	12,540	12,540
- Other	0	0	0	0	660	660
Sub-Total	3,564	590	8,700	7,520	13,200	33,574
c) Managerial Charges						
- Insurance	0	0	0	0	55,882	55,882
- Subscriptions	0	0	0	0	434	434
- Trip Allowances	28,000	0	0	0	0	28,000
- Per Diem Expenses	2,915	1,750	1,165	0	0	5,830
- Personnel	0	0	0	5,500	0	5,500
- Training Expenses	0	0	0	3,300	0	3,300
- Printing and Duplication	1,010	1,000	8,700	2,905	0	13,615
- Seminars	0	0	0	0	0	0
- Diplomas & Certificates	0	0	0	0	0	0
- Other	0	0	0	0	12,000	12,000
Sub-Total	31,925	2,750	9,865	11,705	68,315	124,560
TOTAL	62,285	3,676	53,551	60,550	109,389	289,452

TECSUP - DETAIL REPORT GENERAL EXPENSES
1986 BY DEPARTMENT FOR EACH QUARTER

TABLE A6
(Continued)

3rd. Quarter

CONCEPT	Gen.Director	Promotion	Instruction	Admin.	Gen.Expenses.	TOTAL
a) Third Party Services						
- Transportation and Warehousing	0	0	0	0	3,630	3,630
- Mail and Communications	10,527	370	370	0	9,440	20,707
- Maintenance and Repairs	0	0	0	0	13,310	13,310
- Electricity, Water and Gas	799	0	19,965	3,993	1,863	26,620
- Security	0	0	0	30,700	0	30,700
- Heating and Cleaning	0	0	0	0	2,420	2,420
- Other	18,150	0	18,150	12,100	0	48,400
Sub-Total	29,476	370	38,485	46,793	30,663	145,787
b) Materials and Supplies						
- Spare Parts	0	0	0	0	0	0
- Tools	0	0	0	0	0	0
- Office Supplies	3,920	650	9,570	8,270	0	22,410
- Supplies	0	0	0	0	13,790	13,790
- Other	0	0	0	0	725	725
Sub-Total	3,920	650	9,570	8,270	14,515	36,925
c) Managerial Charges						
- Insurance	0	0	0	0	55,882	55,882
- Subscriptions	0	0	0	0	460	460
- Trip Allowances	0	0	28,000	0	0	28,000
- Per Diem Expenses	3,210	1,925	1,278	0	0	6,413
- Personnel	0	0	0	6,050	0	6,050
- Training Expenses	0	0	0	3,630	0	3,630
- Printing and Duplication	1,100	1,090	9,570	3,200	0	14,960
- Seminars	0	0	0	0	0	0
- Diplomas & Certificates	0	0	0	0	0	0
- Other	0	0	0	0	15,000	15,000
Sub-Total	4,310	3,015	38,848	12,880	71,342	130,395
TOTAL	37,706	4,035	86,903	67,943	116,520	313,107

TECSUP - DETAIL REPORT GENERAL EXPENSES
1986 BY DEPARTMENT FOR EACH QUARTER

TABLE A6
(Continued)
4TH. Quarter

CONCEPT	Gen.Director	Promotion	Instruction	Admin.	Gen.Expenses.	TOTAL
a) Third Party Services						
- Transportation and Warehousing	0	0	0	0	3,990	3,990
- Mail and Communications	11,580	410	410	0	10,384	22,784
- Maintenance and Repairs	0	0	0	0	4,640	4,640
- Electricity, Water and Gas	878	0	21,961	4,392	2,051	29,282
- Security	0	0	0	30,700	0	30,700
- Heating and Cleaning	0	0	0	0	2,662	2,662
- Other	19,960	0	19,960	13,310	0	53,230
Sub-Total	32,418	410	42,331	48,402	23,727	147,288
b) Materials and Supplies						
- Spare Parts	0	0	0	0	0	0
- Tools	0	0	0	0	0	0
- Office Supplies	4,310	715	10,525	9,090	0	24,640
- Supplies	0	0	0	0	15,170	15,170
- Other	0	0	0	0	800	800
Sub-Total	4,310	715	10,525	9,090	15,970	40,610
c) Managerial Charges						
- Insurance	0	0	0	0	55,882	55,882
- Subscriptions	0	0	0	0	490	490
- Trip Allowances	0	0	0	0	0	0
- Per Diem Expenses	3,530	2,115	1,405	0	0	7,050
- Personnel	0	0	0	6,650	0	6,650
- Training Expenses	0	0	0	4,000	0	4,000
- Printing and Duplication	1,210	1,180	10,530	3,520	0	16,440
- Seminars	0	0	0	0	0	0
- Diplomas & Certificates	0	0	0	0	0	0
- Other	0	0	0	0	19,000	19,000
Sub-Total	4,740	3,295	11,935	14,170	75,372	109,512
TOTAL	41,468	4,420	64,791	71,662	115,069	297,410
GRAND TOTAL	174,219	12,671	410,056	257,632	442,609	1,297,187

THREE-YEAR PROGRAM BUDGET TABLES

CONSOLIDATED REPORT: 1986 MATERIALS EXPENSES

Table A7 contains information about the expenditures related to materials for the Three-Year Program. Information is reported for each quarter, and is broken down for each class of students entering during the years 1984, 1985, and 1986.

DETAIL REPORT: 1986 MATERIALS EXPENSES BY COURSE

The information displayed in Tables A8, A9 and A10 presents the total amount expended quarterly for materials per course, for those students enrolled in 1984, 1985 and 1986, respectively.

CONSOLIDATED REPORT: 1986 PERSONNEL COSTS BY QUARTER

The personnel expenditures for each of the four departments of TECSUP are summarized in Table A11. The figures are reported by department for each quarter of 1986.

DETAIL REPORT:1986 PERSONNEL COSTS BY QUARTER FOR EACH DEPARTMENT

Table A12 contains detailed information about expenditures for personnel in each department of TECSUP. Salary information is reported for each employee of the four departments of TECSUP.

TABLE A7

TECSUP - CONSOLIDATED REPORT - MATERIALS EXPENSES
1986

CONCEPT	1st. Quarter	2nd. Quarter	3rd. Quarter	4th. Quarter	Total
1986 Students					
- Instruction - Laboratories and shops	0	38,311	78,289	82,949	199,549
- Teaching Materials	0	6,000	9,200	7,800	23,000
1985 Students					
- Instruction - Laboratories and shops	0	21,128	41,067	42,169	104,364
- Teaching Materials	0	5,868	9,162	7,901	22,931
1984 Students					
- Instruction - Laboratories and shops	0	10,781	13,556	8,970	33,307
- Teaching Materials	0	2,691	3,491	2,422	8,604
TOTAL	0	84,779	154,765	152,211	391,756

TABLE A8

TECSUP - CONSOLIDATED REPORT MATERIALS EXPENSES
1986 BY QUARTER FOR STUDENTS ENROLLED IN 1984

COURSE	1st. Quarter Instruction Lab & Shop	1st. Quarter Teaching Materials	1st. Quarter Total	2nd. Quarter Instruction Lab & Shop	2nd. Quarter Teaching Materials	2nd. Quarter Total
Students enrolled in 1984						
1.- Soldadura III	0	0	0	5,081	207	5,288
2.- Sistemas de mando y seg I	0	0	0	900	207	1,107
3.- Mantenimiento de maquinas mec. I	0	0	0	1,800	207	2,007
4.- Pract. de taller mec.avanzado I	0	0	0	3,000	207	3,207
5.- Educacion civica	0	0	0	0	207	207
6.- Direccion de personal	0	0	0	0	207	207
7.- Contabilidad de costos	0	0	0	0	207	207
8.- Administracion tecnica	0	0	0	0	207	207
9.- Matematicas y calculos tecnicos V	0	0	0	0	207	207
10.- Comunicacion tecnica	0	0	0	0	207	207
11.- Mecanica tecnica III	0	0	0	0	207	207
12.- Elementos de maquinas II	0	0	0	0	207	207
13.- Termodinamica aplicada	0	0	0	0	207	207
14.- Sist. de mando y seguridad II	0	0	0	0	0	0
15.- Motores de combustion interna	0	0	0	0	0	0
16.- Mant. de maq. mecanicas II	0	0	0	0	0	0
17.- Formacion pre-militar	0	0	0	0	0	0
18.- Geo-economia Peruana	0	0	0	0	0	0
19.- Direccion de personal II	0	0	0	0	0	0
20.- Seguridad Industrial	0	0	0	0	0	0
21.- Administracion tecnica II	0	0	0	0	0	0
22.- Practica Industrial II	0	0	0	0	0	0
TOTAL	0	0	0	10,781	2,691	13,472

TABLE A8
(Continued)

3rd. Quarter Instruction Lab & Shop	3rd. Quarter Teaching Materials	3rd. Quarter Total	4th. Quarter Instruction Lab & Shop	4th. Quarter Teaching Materials	4th. Quarter Total
3,896	159	4,054	0	0	0
690	159	849	0	0	0
1,380	159	1,539	0	0	0
2,300	159	2,459	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
0	159	159	0	0	0
920	159	1,079	1,560	269	1,829
1,610	159	1,769	2,730	269	2,999
2,760	159	2,919	4,680	269	4,949
0	159	159	0	269	269
0	159	159	0	269	269
0	159	159	0	269	269
0	159	159	0	269	269
0	159	159	0	269	269
0	159	159	0	269	269
13,556	3,491	17,047	8,970	2,422	11,392

TABLE A9

TECSUP - CONSOLIDATED REPORT MATERIALS EXPENSES
1986 BY QUARTER FOR STUDENTS ENROLLED IN 1985

COURSE	1st. Quarter Instruction	1st. Quarter Teaching	1st. Quarter Total	2nd. Quarter Instruction	2nd. Quarter Teaching	2nd. Quarter Total
Students enrolled in 1985						
1.- Electronica basica	0	0	0	3,000	486	3,486
2.- Fund. Instalacion maq. elect. I	0	0	0	9,000	330	9,330
3.- Soldadura I	0	0	0	9,128	330	9,458
4.- Ingles tecnico I	0	0	0	0	486	486
5.- zeduc. fisica y deportes III	0	0	0	0	0	0
6.- Lenguaje y redaccion de inf. II	0	0	0	0	486	486
7.- La empresa y el tecnico	0	0	0	0	486	486
8.- Mat. y calculos tecnicos III	0	0	0	0	486	486
9.- Introduccion a la computacion	0	0	0	0	486	486
10.- Dibujo tecnico III	0	0	0	0	330	330
11.- Mecanica tecnica I	0	0	0	0	330	330
12.- Elementos de maquinas I	0	0	0	0	330	330
13.- Int. a la estadiatica	0	0	0	0	486	486
14.- Practica industrial I	0	0	0	0	486	486
15.- Comunicacion tecnica	0	0	0	0	330	330
16.- Tegnologia de materiales III	0	0	0	0	0	0
17.- Procesamiento de materiales III	0	0	0	0	0	0
18.- Mantenimiento preventivo	0	0	0	0	0	0
19.- Soldadura II	0	0	0	0	0	0
20.- Fund. de instalacion y maq elect.	0	0	0	0	0	0
21.- Maquinas electricas	0	0	0	0	0	0
22.- Mediciones electricas	0	0	0	0	0	0
23.- Electronica avanzada I	0	0	0	0	0	0
24.- Telecomunicaciones I	0	0	0	0	0	0
25.- Mantenimiento preventivo	0	0	0	0	0	0
26.- Tecnicas de mando y seguridad	0	0	0	0	0	0
27.- Ingles tecnico II	0	0	0	0	0	0
28.- Educ. fisica y deportes IV	0	0	0	0	0	0
29.- Mat. y calculos tecnicos IV	0	0	0	0	0	0
30.- Mecanica tecnica II	0	0	0	0	0	0
31.- Elementos de maquinas II	0	0	0	0	0	0
32.- Diseno mecanico	0	0	0	0	0	0
33.- Pract. taller mec. avanzado	0	0	0	0	0	0
TOTAL	0	0	0	21,128	5,868	26,996

TABLE A9
(Continued)

3rd. Quarter Instruction	3rd. Quarter Teaching	3rd. Quarter Total	4th. Quarter Instruction	4th. Quarter Teaching	4th. Quarter Total	GRAND TOTAL
2,300	373	2,673	0	0	0	6,159
6,900	253	7,153	0	0	0	16,483
6,998	253	7,251	0	0	0	16,709
0	373	373	0	0	0	859
0	0	0	0	0	0	0
0	373	373	0	0	0	859
0	373	373	0	0	0	859
0	373	373	0	0	0	859
0	373	373	0	0	0	859
0	253	253	0	0	0	583
0	253	253	0	0	0	583
0	253	253	0	0	0	583
0	373	373	0	0	0	859
0	373	373	0	0	0	859
0	253	253	0	0	0	583
422	253	675	716	429	1,145	1,820
1,150	253	1,403	1,950	429	2,379	3,782
1,610	253	1,863	2,730	429	3,159	5,022
6,967	253	7,220	11,813	429	12,242	19,462
2,300	253	2,553	3,900	429	4,329	6,882
4,600	253	4,853	7,800	429	8,229	13,082
920	253	1,173	1,560	429	1,989	3,162
1,380	253	1,633	2,340	429	2,769	4,402
3,680	253	3,933	6,240	429	6,669	10,602
690	253	943	1,170	429	1,599	2,542
1,150	253	1,403	1,950	429	2,379	3,782
0	373	373	0	632	632	1,004
0	0	0	0	0	0	0
0	373	373	0	632	632	1,004
0	253	253	0	429	429	682
0	253	253	0	429	429	682
0	253	253	0	429	429	682
0	373	373	0	632	632	1,004
41,067	9,162	50,229	42,169	7,901	50,071	127,295

TECSUP - CONSOLIDATED REPORT MATERIALS EXPENSES
1986 BY QUARTER FOR STUDENTS ENROLLED IN 1986

TABLE A10

COURSE	1st. Quarter Instruction Lab & Shop	1st. Quarter Teaching Materials	1st. Quarter Total	2nd. Quarter Instruction Lab & Shop	2nd. Quarter Teaching Materials	2nd. Quarter Total
Students enrolled in 1986						
1.- Procesamiento de materiales I	0	0	0	490	600	1,090
2.- Taller de mecanica basica I	0	0	0	1,663	600	2,263
3.- Taller electrico basico I	0	0	0	33,158	600	33,758
5.- Ingles I	0	0	0	0	600	600
6.- Educacion Fisica y deportes	0	0	0	0	0	0
7.- Transferencia de tecnologia I	0	0	0	0	600	600
8.- Matemat. y calculos tecnicos I	0	0	0	0	600	600
9.- Fisica I	0	0	0	0	600	600
10.- Tecnologia de Materiales	0	0	0	0	600	600
11.- Dibujo Tecnico I	0	0	0	0	600	600
12.- Procesamiento de materiales II	0	0	0	0	0	0
13.- Taller mecanica basica II	0	0	0	0	0	0
14.- Taller electrico basico II	0	0	0	0	0	0
15.- Electrotecnia II	0	0	0	0	0	0
16.- Ingles II	0	0	0	0	0	0
17.- Educacion fisica y deportes II	0	0	0	0	0	0
18.- Lenguaje y red.informes I	0	0	0	0	0	0
19.- Mat. y calculos tecnicos II	0	0	0	0	0	0
20.- Fisica II	0	0	0	0	0	0
21.- Tecnologia de materiales II	0	0	0	0	0	0
22.- Dibujo tecnico II	0	0	0	0	0	0
TOTAL	0	0	0	35,311	5,400	40,711

TABLE A10
(Continued)

3rd. Quarter Instruction Lab & Shop	3rd. Quarter Teaching Materials	3rd. Quarter Total	4th. Quarter Instruction Lab & Shop	4th. Quarter Teaching Materials	4th. Quarter Total	GRAND TOTAL
375	460	835	0	0	0	1,925
1,275	460	1,735	0	0	0	3,998
25,420	460	25,880	0	0	0	59,638
0	460	460	0	0	0	1,060
0	460	460	0	0	0	460
0	0	0	0	0	0	600
0	460	460	0	0	0	1,060
0	460	460	0	0	0	1,060
0	460	460	0	0	0	1,060
0	460	460	0	0	0	1,060
965	460	1,425	1,636	780	2,416	3,841
18,054	460	18,514	30,613	780	31,393	49,907
27,600	460	28,060	46,800	780	47,580	75,640
2,300	460	2,760	3,900	780	4,680	7,440
0	460	460	0	780	780	1,240
0	0	0	0	0	0	0
0	460	460	0	780	780	1,240
0	460	460	0	780	780	1,240
0	460	460	0	780	780	1,240
0	460	460	0	780	780	1,240
0	460	460	0	780	780	1,240
75,989	8,740	84,729	82,949	7,800	90,749	216,189

TECSUP - CONSOLIDATED REPORT: PERSONNEL COSTS
1986 BY QUARTER

TABLE A11

POSITION	1st. Quarter	2nd. Quarter	3rd. Quarter	4th. Quarter	Total
1. - GENERAL DIRECTOR	109,092	115,144	137,298	148,374	509,908
2. - ADMINISTRATOR	277,177	300,628	353,347	382,392	1,313,544
3. - PUBLIC RELATIONS	5,200	11,729	20,721	22,305	59,955
4. - INSTRUCTION	287,517	395,898	454,874	516,832	1,655,121
TOTAL	678,986	823,399	966,239	1,069,903	3,538,527

PERSONNEL COSTS BY DEPARTMENT 1986

TABLE A12

COST CENTER	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
911 GENERAL DIRECTOR					
91101 GENERAL DIRECTOR					
-J. Inchaustegui	45000.00	45000.00	54000.00	58500.00	202500.00
-L. Carbo	9720.00	10530.00	12636.00	13689.00	46575.00
-Secretarial Assistance	2000.00				2000.00
91102 EDUC. CREDIT FUND DIR.					
-F. Guzman	23040.00	24660.00	29592.00	32058.00	109350.00
91103 DATA PROCESSING					
-R. Salcedo	6738.75	7290.00	8748.00	9477.00	32253.75
-Computer system consultant	8000.00	12000.00	14400.00	15600.00	50000.00
91104 SOCIAL WORKER					
-A. Morales	6290.00	6805.00	8262.00	8950.50	30307.50
SUB-TOTAL	100788.75	106365.00	127638.00	138274.50	473066.25
EMPLOYER TAXES					
Social Security	7017.61	6292.60	8173.52	9613.00	34897.71
Fonavi	486.00	486.00	486.00	486.00	1944.00
SUB-TOTAL	8303.61	8778.60	9659.52	10099.00	36841.71
TOTAL GENERAL DIRECTOR	109092.36	115143.60	137297.52	148374.48	509907.96

PERSONNEL COSTS 1986
Cost by Department

TABLE A12
(Continued)

COST CENTER	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
912 ADMINISTRATION					
91201 ADMINISTRATION					
- P.Cabiesses	24,060.00	25,740.00	30,888.00	33,462.00	114,150.00
- R.Mesia	22,700.00	24,300.00	29,160.00	31,590.00	107,750.00
- R. Luy	7,842.00	8,560.00	10,281.60	11,138.40	37,820.00
- M. Ramos	6,850.00	7,500.00	9,000.00	9,750.00	33,100.00
- I. Pacheco	7,842.00	8,560.00	10,281.60	11,138.40	37,830.00
- C. Milla	9,100.00	9,900.00	11,880.00	12,870.00	43,750.00
- J. Nino de Guzman	6,290.00	6,885.00	8,262.00	8,950.50	30,387.50
- Apoyo secretarial	1,000.00	00.00	00.00	0.00	1,000.00
91202 ACCOUNTING AND CASHIER					
- P. Badrutt	22,020.00	23,500.00	28,296.00	30,654.00	104,550.00
- M.Velarde	10,928.36	11,700.00	14,040.00	15,210.00	51,878.36
- A. Valderrama	6,731.66	7,290.00	8,748.00	9,477.00	32,246.66
- Anita Valderrama	2,540.62	2,750.00	00.00	00.00	5,290.62
- M. Quispe	3,465.00	7,500.00	9,000.00	9,750.00	29,715.00
- V. Mujica	7,842.00	8,560.00	10,281.60	11,138.40	37,830.00
91203 PURCHASING AND WAREHOUSE					
- G. Corzo	8,200.00	9,200.00	11,160.00	12,090.00	40,750.00
- V. Chuquiruna	8,770.00	9,255.00	11,106.00	12,031.50	41,162.50
- T. Svojsik	22,020.00	23,500.00	28,296.00	30,654.00	104,550.00
- J. Cobian	13,060.00	14,940.00	17,928.00	19,422.00	66,350.00
91204 GENERAL SERVICES					
- R. Criado	13,060.00	14,940.00	17,928.00	19,422.00	66,350.00
- A. Cerapio	5,920.00	6,480.00	7,776.00	8,424.00	28,600.00
- Antonio Valderrama	5,920.00	6,480.00	7,776.00	8,424.00	28,600.00
- Marino Gomez	2,000.00	3,200.00	3,960.00	4,290.00	14,450.00
- Valentin Gomez	3,620.00	3,960.00	4,752.00	5,148.00	17,480.00
- J. Ortega	3,760.00	4,050.00	4,860.00	5,265.00	17,935.00
- D. Nunez	3,954.05	4,239.00	5,086.80	5,510.76	18,790.55
- L. Yauri	4,000.00	4,380.00	5,256.00	5,694.00	19,330.00
- C. Vitalio	3,956.00	4,239.00	5,086.00	5,510.70	18,791.50
- N. Yepez	7,490.00	7,935.00	9,522.00	10,315.50	35,262.50
SUB-TOTAL	249,441.70	$270,927.00	320,612.40	347,330.10	1,188,311.20
EMPLOYER TAXES					
Social Security	25,655.96	27,593.00	30,620.66	32,955.01	116,835.51
Fonavi	2,079.00	2,108.00	2,108.00	2,106.00	8,397.00
SUB-TOTAL	27,734.96	$29,701.00	$32,734.66	35,061.01	125,232.51
TOTAL ADMINISTRATION	277,176.66	$300,628.00	$353,347.06	382,391.91	1,313,543.71
914 PUBLIC RELATIONS					
91410 PUBLIC RELATIONS					
- T. Rivero	2,700.00	0.00	0.00	00.00	2,700.00
- Coord. Plantas Ind.	0.00	10,400.00	10,720.00	$20,280.00	49,400.00
- Varios-admision	2,500.00	0.00	0.00	00.00	2,500.00
SUB-TOTAL	5,200.00	$10,400.00	10,720.00	$20,280.00	54,600.00
EMPLOYER TAXES					
Social Security	0.00	$1,240.00	1,920.00	$1,944.00	5,112.00
Fonavi	0.00	$81.00	81.00	$81.00	243.00
SUB-TOTAL	0.00	1,329.00	2,001.00	$2,025.00	5,355.00
TOTAL - PUBLIC RELATIONS	5,200.00	11,729.00	36,721.00	22,305.00	59,955.00

PERSONNEL COSTS 1986
BY QUARTER FOR EACH DEPARTMENT

TABLE A12
(Continued)

COST CENTER	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
916 INSTRUCTION					
91601 DEPARTMENT HEAD					
- M. Rivas	32,160	35,640	42,768	46,332	156,900
- D. de Torres	8,420	9,180	11,016	11,934	40,550
- C. Corzo	19,980	21,420	25,704	27,846	94,950
91602 INSTRUCTION					
a) Full time personnel					0
- C. Denegri					0
- C. Macher	20,280	22,620	27,144	29,406	99,450
- M. Rivera	20,280	22,620	27,144	29,406	99,450
- R. Aguero	20,280	22,620	27,144	29,406	99,450
- S. Samalloa	20,280	22,620	27,144	29,406	99,450
- C. Cordova	20,080	22,620	27,144	29,406	99,250
- J. Collantes	15,600	17,400	20,880	22,620	76,500
- J. Rolffo	2,600	15,600	18,720	20,280	57,200
- H. Delgado	10,140	11,310	13,572	14,703	49,725
- H. Mendoza	10,140	11,310	13,572	14,703	49,725
- J. Rios	10,140	11,310	13,572	14,703	49,725
- NN(1)	2,220	2,430	2,916	3,159	10,725
- NN(2)	3,120	18,720	22,464	24,336	68,640
- NN(3)	3,120	18,720	22,464	24,336	68,640
	1,690	10,140	12,168	13,182	37,180
Subtotal	220,530	296,280	355,536	385,164	1,257,510
EMPLOYER TAXES					
Social Security	21,646	27,994	29,402	30,070	109,112
Fonavi	1,323	1,377	1,377	1,377	5,454
Subtotal	22,969	29,371	30,779	31,447	114,566
b) Part time personnel					
- R. Alvarado	960	8,112	5,408	10,452	24,932
- J. Collantes	1,260	0	0	0	1,260
- M. La Riva	960	5,148	3,432	7,800	17,340
- J. Oviedo	640	1,248	832	4,824	7,544
- M. Ortiz	360	2,340	1,560	3,000	7,260
- NN(4)	0	2,436	1,664	1,668	5,768
- NN(5)	0	468	312	804	1,584
- NN(6)	0	1,404	936	1,800	4,140
- NN(7)	0	1,248	832	2,412	4,492
- NN(8)	0	1,872	1,248	2,412	5,532
- NN(9)	0	3,744	2,496	3,600	9,840
- NN(10)	0	0	0	6,000	6,000
EMPLOYER TAXES					
Social Security	988	3,369	2,410	5,365	12,133
Fonavi	135	891	594	891	2,511
Subtotal	1,123	4,260	3,004	6,256	14,644
91603 GERMAN TECHNICAL ASSISTANCE					
- K.H. Kambartel	7,893	8,622	10,346	11,209	38,070
- W. Schuf	4,577	5,010	6,009	6,509	22,105
- K.H. Abt	3,704	4,854	4,865	5,270	17,893
- W. Meising	3,704	4,854	4,865	5,270	17,893
- A. Goetz	4,233	4,633	5,560	6,023	20,449
- H.P. Neuhaus	2,598	2,835	3,402	3,686	12,513
Subtotal	26,700	29,208	35,047	37,967	128,922
LIBRARY					
- P. Balareso	7,030	7,695	9,234	10,004	33,963
Subtotal	7,030	7,695	9,234	10,004	33,963
EMPLOYER TAXES					
Social Security	844	923	1,108	1,200	4,076
Fonavi	81	81	81	81	81
Subtotal	925	1,004	1,189	1,281	4,157
TOTAL- INSTRUCTION	287,517	395,898	454,874	516,832	1,654,078

CONTINUING EDUCATION BUDGET INFORMATION

CONSOLIDATED REPORT: 1986 REVENUES/EXPENSES BY QUARTER

Table A13 summarizes the total revenues and expenses generated by the Continuing Education Program. The information is reported for each quarter. Additionally, the projected ending balance for the Continuing Education Program is also displayed.

DETAIL REPORT: 1986 REVENUE BY QUARTER FOR EACH COURSE

Table A14 itemizes the revenues generated by each special course offered by TECSUP as part of its Continuing Education Program. For each course offering it presents, for each quarter, the number of times the course is offered, the number of students enrolled in each course, and the tuition generated by each special course.

DETAIL REPORT: 1986 EXPENSES BY QUARTER

Table A15 presents expense figures for the Continuing Education Program for each quarter. Expenses are categorized into two major areas of expenditures: institutional expenses and teaching materials. Each large category is broken down, in turn, into more discrete sub-parts.

FULL-TIME PERSONNEL EXPENSES: 1986 BY QUARTER

Table A16 contains detailed salary information for full-time personnel employed by the Continuing Education Program. The breakdown of salaries is displayed by quarter.

insert table 11

REVENUES AND EXPENSES FOR CONTINUING EDUCATION-1986

TABLE A13

Concept	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTAL
Revenues					
-Course Development	0.00	369,600.00	302,400.00	0.00	672,000.00
Total Revenues	0.00	369,600.00	302,400.00	0.00	672,000.00
Expenses					
-Part Time Personnel	37,727.00	33,320.00	29,169.00	31,431.00	131,647.00
-Part Time Professors	0.00	26,845.00	35,500.60	14,668.00	77,013.60
-Institutional Expenses	8,150.32	12,498.14	15,522.03	16,277.97	52,448.46
-Teaching Materials	48,659.60	43,096.80	$2,683.80	$0.00	94,440.20
Total Expenses	94,536.92	115,759.94	82,875.43	62,376.97	355,549.26
Surplus (Deficit)	(94,536.92)	253,840.06	219,524.57	(62,376.97)	316,450.74

REVENUES BY COURSE 1986
(CONTINUING EDUCATION)

TABLE A14

SHORT COURSES	First Quarter				Second Quarter				Third Quarter				Fourth Quarter				TOTAL
	TIMES OFFERED	NUMBER STUDENTS	TUITION	TOTAL	TIMES OFFERED	NUMBER STUDENTS	TUITION	TOTAL	TIMES OFFERED	NUMBER STUDENTS	TUITION	TOTAL	TIMES OFFERED	NUMBER STUDENTS	TUITION	TOTAL	
1. MATHEMATICS FOR TECHNICIANS				0.00				0.00	1	30	1,120.00	$33,600.00				0.00	$33,600.00
2. BLUEPRINT READING MECHANICS/PIPING				0.00				0.00				0.00				0.00	0.00
3. DIAGRAM READING ELECTRICAL/ELECTRONIC				0.00				0.00				0.00				0.00	0.00
4. MECHANICAL MEASURING DEVICES				0.00	1	30	1,120.00	33,600.00				0.00				0.00	33,600.00
5. MATERIALS TESTING				0.00	1	30	1,120.00	33,600.00				0.00				0.00	33,600.00
6. BASIC TECHNICAL ENGLISH				0.00				0.00	1	30	1,120.00	33,600.00				0.00	33,600.00
7. ADVANCED TECHNICAL ENGLISH				0.00				0.00	1	30	1,120.00	33,600.00				0.00	33,600.00
8. BASIC ELECTRONICS				0.00	1	30	1,120.00	33,600.00	1	30	1,120.00	33,600.00				0.00	33,600.00
9. ADVANCED ELECTRONICS				0.00	1	30	1,120.00	33,600.00				0.00				0.00	67,200.00
10. MACHINE COMPONENTS				0.00	1	30	1,120.00	33,600.00				0.00				0.00	33,600.00
11. ELECTRONIC TROUBLE SHOOTING				0.00	1	30	1,120.00	33,600.00				0.00				0.00	33,600.00
12. SURVEYING				0.00				0.00	1	30	1,120.00	33,600.00				0.00	33,600.00
13. DIGITAL ELECTRONICS				0.00	1	30	1,120.00	33,600.00	1	30	1,120.00	33,600.00				0.00	67,200.00
14. MICROPROCESSOR FUNDAMENTALS AND APPLICATIONS				0.00	2	30	1,120.00	67,200.00				0.00				0.00	67,200.00
15. NON-DESTRUCTIVE TESTING				0.00				0.00	1	30	$1,120.00	33,600.00				0.00	33,600.00
16. FUNDAMENTALS OF MANUFACTURING PROCESSES				0.00				0.00	1	30	$1,120.00	33,600.00				0.00	33,600.00
17. PLANT MAINTENANCE SCHEDULING				0.00	1	30	1,120.00	33,600.00				0.00				0.00	33,600.00
18. CHEMICAL STANDARDS SOLUTIONS AND MEASUREMENTS				0.00		0		0.00	1	30	$1,120.00	$33,600.00				0.00	33,600.00
19. GAS CHROMATIC ATOMIC ABSORPTION SPECTROSC FUNDAMENTALS & AP.				0.00	1	30	1,120.00	$33,600.00				0.00				0.00	33,600.00
20. MODERN MANUFACTURING MATERIALS				0.00		0		0.00				0.00				0.00	0.00
21. WELDING FOR METAL PART RESTORATION				0.00		0		0.00				0.00				0.00	0.00
****** T O T A L ******				0.00				369,600.00				303,400.00				0.00	672,000.00

GENERAL EXPENSES (CONTINUING EDUCATION) TABLE A15
1986

Concept	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTAL
Institutional Expenses					
-Promotion	2,000.00	1,000.00	1,000.00	1,000.00	5,000.00
-Publicity	4,500.00	5,500.00	7,450.00	7,450.00	24,900.00
-Services provided by third parties, and other charges	1,650.32	5,998.14	7,072.03	7,827.97	22,548.46
Sub-Total	8,150.32	12,498.14	15,522.03	16,277.97	52,448.46
Teaching Materials					
-Paper and Pens	0.00	3,234.00	2,646.00	0.00	5,880.00
-Chalk and Other	0.00	50.40	37.80	0.00	88.20
-Textbook Printing	48,659.60	39,812.40	0.00	0.00	88,472.00
Sub-Total	48,659.60	43,096.80	2,683.80	0.00	94,440.20
TOTAL	56,809.92	55,594.94	18,205.83	16,277.97	146,888.66

FULL TIME PERSONNEL EXPENSES

TABLE A16

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTAL
PERSONNEL					
-Miguel Angel Martino	15,080.00	22,620.00	27,144.00	29,406.00	94,250.00
-Victor Reinafarje	19,500.00	8,000.00			27,500.00
Sub-Total	34,580.00	30,620.00	27,144.00	29,406.00	121,750.00
TAXES					
-Social Security	3,012.00	2,592.00	1,944.00	1,944.00	9,492.00
-Fonavi	135.00	108.00	81.00	$81.00	405.00
Sub-Total	3,147.00	2,700.00	2,025.00	2,025.00	9,897.00
Total Full Time Personnel	37,727.00	33,320.00	29,169.00	31,431.00	131,647.00

GENERAL EXPENSES (CONTINUING EDUCATION)

PART-TIME PERSONNEL EXPENSES: 1986 BY QUARTER

Table A17 contains detailed salary information for the part-time personnel employed by the Continuing Education Program. The data are organized by course offering, and displays the number of hours employed, the hourly rate, and the total salary expenditure for each course, as well as for the total Continuing Education Program.

These budget figures, and the above-mentioned computerized spreadsheets collaboratively produced by TECSUP and AI, will enable TECSUP to monitor its budget and current financial health, and to project its future financial circumstances.

Given the current fiscal condition, as well as the actual and projected revenue and expenditure assumptions, TECSUP is in a strong position to be fiscally independent by 1990. Their current position makes this a viable goal.

PART TIME PERSONNEL EXPENSES
1986 BY QUARTER

TABLE A17

SHORT COURSES	First Quarter NUMBER HOURS	First Quarter TUITION	First Quarter TOTAL	Second Quarter NUMBER HOURS	Second Quarter TUITION	Second Quarter TOTAL	Third Quarter NUMBER HOURS	Third Quarter TUITION	Third Quarter TOTAL	Fourth Quarter NUMBER HOURS	Fourth Quarter TUITION	Fourth Quarter TOTAL	TOTAL
1. MATHEMATICS FOR TECHNICIANS			0.00			0.00	60	50.00	3,000.00			0.00	3,000.00
2. BLUEPRINT READING MECHANICS/PIPING			0.00			0.00			0.00			0.00	0.00
3. DIAGRAM READING ELECTRICAL/ELECTRONICS			0.00			0.00			0.00			0.00	0.00
4. MECHANICAL MEASURING DEVICES			0.00	40	70.00	2,800.00			0.00			0.00	2,800.00
5. MATERIALS TESTING			0.00	40	70.00	2,800.00			0.00			0.00	2,800.00
6. BASIC TECHNICAL ENGLISH			0.00			0.00	60	50.00	3,000.00			0.00	3,000.00
7. ADVANCED TECHNICAL ENGLISH			0.00			0.00			0.00	60	50.00	3,000.00	3,000.00
8. BASIC ELECTRONICS			0.00	60	70.00	4,200.00	60	70.00	4,200.00			0.00	8,400.00
9. ADVANCED ELECTRONICS			0.00			0.00	60	70.00	4,200.00			0.00	4,200.00
10. MACHINE COMPONENTS			0.00			0.00	44	70.00	3,080.00			0.00	3,080.00
11. ELECTRONIC TROUBLE SHOOTING			0.00	40	70.00	2,800.00			0.00			0.00	2,800.00
12. SURVEYING			0.00			0.00			0.00	60	50.00	3,000.00	3,000.00
13. DIGITAL ELECTRONICS			0.00	60	70.00	4,200.00	60	70.00	4,200.00			0.00	8,400.00
14. MICROPROCESSOR FUNDAMENTALS AND APPLICATIONS			0.00	60	70.00	4,200.00	60	70.00	4,200.00			0.00	8,400.00
15. NON-DESTRUCTIVE TESTING			0.00			0.00	40	70.00	2,800.00			0.00	2,800.00
16. FUNDAMENTALS OF MANUFACTURING PROCESSES			0.00			0.00			0.00	60	70.00	4,200.00	4,200.00
17. PLANT MAINTENANCE SCHEDULING			0.00	40	70.00	2,800.00			0.00			0.00	2,800.00
18. CHEMICAL STANDARDS SOLUTIONS AND MEASUREMENTS			0.00			0.00	40	70.00	2,800.00			0.00	2,800.00
19. GAS CHROMATIC ATOMIC ABSORBTIO SPECPROSE FUNDAMENTALS & AP			0.00			0.00			0.00	40	70.00	2,800.00	2,800.00
20. MODERN MANUFACTURING MATERIALS			0.00			0.00			0.00			0.00	0.00
21. WELDING FOR METAL PART RESTORATION			0.00			0.00			0.00			0.00	0.00
Sub-Total			0.00			23,800.00			31,480.00			13,000.00	68,280.00
TRIBUTOS PATRONALES													
-Social Security						2,856.00			3,777.60			1,560.00	8,193.60
-Fonavi						189.00			243.00			108.00	540.00
Sub-Total						3,045.00			4,020.60			1,668.00	8,733.60
Total Part-Time Staff			0.00			26,845.00			35,500.00			14,668.00	77,013.60

Appendix D

Related Office of Continuing Education Documents

1. Short Courses Program Status Chart,
2. Short Course Implementation Chart,
3. Short Course Flyers for April 1986 Short Courses.

SHORT COURSES PROGRAM AS OF DEC. 19. 1985

Nº	Name	Received Date	Translation Start	Translation Finish	Revision Finish		Wordproc. Start	Wordproc. Finish	Printing Start	Printing Finish	Marketing Finish	Deliver. Start
1	Math for technicians	08.23.85	09.17.85	80%	(01.13.86)	*	(01.13.86)	01.17.86)	01.20	01.20	02.28.86	03.03.86
2	Blue-print reading piping	08.09.85	09.17.85	50%	(02.17.86)	*	(02.17.86	02.22.86	02.24	02.24	ditto	04.21.86
3	Diagram reading electrical	12 20.85	(01.06.86)	(02.07.86)	02.10.86		(02.17.86	02.22.86)	02.25	02.25	ditto	05.26.86
4	Mechanical meass. devices	09.09.85	09.20.85	70%	01.13.86		(02.10.86	02.15.86)	02.17	02.17	ditto	04.21.86
5	Materials testing	12.04.85	(01.06.86)	(02.08.86)	(02.10.86)	*	(03.10.86	03.17.86)	03.18	03.18	ditto	04.21.86
6	Basic technical english	08.23.85	09.26.85	100%	11.12.85		(01.18.86	01.25.86)	01.27	01.27	ditto	03.03.86
7	Advanced technical english	08.23.85	(01.06.86)	(01.25.86)	(01.13.86)	*	(01.14.86	01.24.86)	01.22	01.22	ditto	06.02.86
8	Basic electronics	08.26.85	11.11.85	100%	11.12.85		(01.27.86	02.01.86)	02.03	02.03	ditto	05.03.86
9	Advanced electronics	09.26.85	11.15.85	40%	(01.06.86)		(01.27.86	02.03.86)	02.04	02.04	ditto	05.26.86
10	Machine Components	12.20.85	01.06.86	(02.14.86)	(02.18.86)		(02.24.86	03.03.86)	03.04	03.04	ditto	06.09.86
11	Electronic Troubleshooting	01.09.86	01.20.86	(03.07.86)	(03.12.86)		(03.13.86	03.20.86)	03.21	03.21	ditto	06.02.86
12	Surveying	01.23.86	02.03.86	(03.28.86)	(04.03.86)		(04.04.86	04.14.86)	04.15	04.15	ditto	08.04.86
13	Digital Electronics	09.09.85	09.24.85	50%	12.22.85		(02.03.86	02.08.86)	02.10	02.10	ditto	05.26.86
14	Microprocessor Fund. & Appl.	09.09.85	09.20.85	60%	12.20.85		(02.03.86	02.10.86)	02.11	02.11	ditto	05.26.86
15	Non-Destructive Testing	10.02.85	09.20.85	01.27.86	01.31.86		(02.10.86	02.17.86)	02.18	02.18	ditto	04.21.86
16	Fund. of Manuf. Process	(12.20.85)	(01.06.86)	(02.21.86)	(02.26.86)		(02.27.86	03.03.86)	03.05	03.05	ditto	10.06.86
17	Plant Maintenance	(JAN.86)	(02.03.86)	(04.07.86)	(04.11.86)		(04.14.86	04.21.86)	04.22	04.22	ditto	08.04.86
18	Chem. Stand. Solu. & Meas.	11.15.85	01.06.86	(02.14.86)	(02.19.86)		(03.03.86	03.10.86)	03.11	03.11	ditto	06.02.86
19	Instrum. Analysis	(12.20.85)	(01.13.86)	(02.21.86)	(02.26.86)		(03.03.86	03.10.86)	03.12	03.12	ditto	08.04.86
20	Modern Manufac. Matls.	(01.27.86)	(02.03.86)	(03.24.86)	(03.28.86)		(03.31.86	04.07.86)	04.08	04.08	ditto	10.06.86
21	Reconstr. of parts	(JAN.86)	(02.20.86)	(03.28.86)	(04.04.86)		(04.08.86	04.15.86)	04.16	04.16	ditto	08.04.86

( ) = ESTIMATE

* = COMPLETION AWAITING DELTECH [illegible]

CURSO		MESES								
Nombre	Código	Abril	Mayo	Junio	Julio	Agosto	Setiemb.	Octubre	Noviemb.	Diciemb.
Electrónica Básica	CA-08									
Electrónica Digital	CA-13									
Fundamentos y Aplicaciones de los Microprocesadores	CA-14									
Prueba de Materiales	CA-05									
Lectura de Planos Mecánicos y de Tuberías	CA-02									
Instrumentos de Medición Mecánica	CA -04									
Electrónica Avanzada	CA-11									
Instrumentación Electrónica	CA-11									
Elementos de Máquinas	CA -10									
Programación Computarizada del Mantenimiento de Plantas Industriales.	CA-17									

(cont.)

CURSO		MESES								
Nombre	Código	Abril	Mayo	Junio	Julio	Agosto	Setiemb.	Octubre	Noviemb.	Diciemb.
Ensayos no Destructivos	CA-15									
Mediciones Químicas	CA-18									
Matemáticas para Técnicos	CA-01									
Inglés Técnico Básico	CA-06									
Lectura de Diagramas Eléctricos y Electrónicos	CA-03									
Análisis Instrumental	CA-19									
Fundamentos de Procesos de Manufactura	CA-16									
Topografía	CA-12									
Inglés Técnico Avanzado	CA-07									
Materiales Modernos	CA-20									
Reconstrucción de Partes	CA-21									

- La entrega de un Texto en castellano, conteniendo los temas a desarrollarse en el curso y los procedimientos a seguirse en las prácticas (300 páginas).
- Un certificado de asistencia, al finalizar el curso, a aquellos alumnos que cumplan con asistir, como mínimo, al ochenta por ciento de las exposiciones.

INFORMES E INSCRIPCION:

Oficina de Coordinación del Programa de Actualización. Campus del TECSUP.
Km. 5.7 Carretera Central - Espalda de la Planta Philips.
Teléfonos: 37-1905 /06/07/08/09
Anexo: 205

Atención: De lunes a viernes
Hora: 8:30 a.m. a 12 a.m.
2:00 p.m. a 4 p.m.

OTROS CURSOS A DICTARSE:

1. FUNDAMENTOS Y APLICACIONES DE LOS MICROPROCESADORES.
   Del 02 de abril al 16 de mayo.
2. ELECTRONICA DIGITAL.
   Del 02 de abril al 16 de mayo.
3. PRUEBA DE MATERIALES.
   Del 02 de abril al 30 de abril.
4. ELECTRONICA AVANZADA.
   Del 02 de junio al 16 de julio.
5. INSTRUMENTACION ELECTRONICA.
   Del 02 de junio al 04 de julio.
6. PROGRAMACION COMPUTARIZADA DEL MANTENIMIENTO DE PLANTAS INDUSTRIALES.
   Del 02 de junio al 16 de julio.
7. MEDICIONES QUIMICAS.
   Del 02 de junio al 04 de julio.
8. INSTRUMENTOS DE MEDICION MECANICA.
   Del 02 de junio al 04 de julio.
9. ELEMENTOS DE MAQUINAS.
   Del 02 de junio al 04 de julio.
10. LECTURA DE PLANOS MECANICOS Y DE TUBERIAS.
    Del 02 de junio al 16 julio.

1986

TECSUP

PROGRAMA DE ACTUALIZACION

CURSO CORTO

ELECTRONICA BASICA

EXPOSITOR INVITADO

ING. ARTURO CABRERA XAMUN

Del 02 de Abril al

16 de Mayo de 1986

Lima - Perú

CURSO: "ELECTRONICA BASICA".

PRESENTACION Y OBJETIVOS:

Es evidente que la Electrónica,como ciencia y tecnología, está presente e influye sobre gran cantidad de campos y aspectos de la actividad humana. El extraordinario poder y versatilidad de los dispositivos electrónicos y, en consecuencia,su extensa aplicación,así como el hecho de ser la tecnología que evoluciona con mayor rapidez, obliga a los profesionales relacionados con equipos electrónicos, a familiarizarse con esta tecnología.

El conocer y comprender el funcionamiento de los dispositivos y circuitos expuestos en el presente curso, permitirá al estudiante poder enfocar el análisis de otros circuitos complejos y mejorar la comprensión de su funcionamiento, así como seguir estudios más avanzados sobre el tema.

La metodología a seguir servirá para que el estudiante adquiera un buen conocimiento práctico del manejo de instrumentos de prueba y medición electrónicos, así como el empleo práctico de dispositivos y componentes electrónicos.

En consecuencia, los profesionales que sigan este curso,perfeccionarán su conocimiento lo que redundará en beneficios para la empresa en que laboren, lo que se traducirá en mejoras de la eficiencia y en menores costos de producción,al mejorar el servicio de mantenimiento, ya que se reducirán los tiempos de reparación y se ahorrarán costosas reparaciones. Por otro lado un mejor conocimiento del funcionamiento del equipo garantiza una mayor vida útil, evitando costos de reparación debido a manejo defectuoso.

TEMARIO:

1. Diodos rectificadores y Zéners. Funcionamiento y pruebas.
2. Circuitos limitadores, enclavadores y rectificadores.
3. Fuentes de alimentación DC. Filtros. Diagnóstico de fallas.
4. Transistores bipolares. Funcionamiento y pruebas.
5. Polarización y diagnóstico de fallas de un amplificador de voltaje.
6. Amplificadores de potencia de audiofrecuencia: clase A, simetría complementaria y "push-pull". Funcionamiento y diagnóstico de fallas.
7. Transistores de efecto de campo JFET y MOSFET. Funcionamiento y pruebas.

DIRIGIDO A:

Técnicos, ingenieros,químicos, físicos y otros profesionales que deseen refrescar, en unos casos, o adquirir, en otros, los conceptos y conocimientos fundamentales de los dispositivos y circuitos electrónicos básicos, de modo que les permita desenvolverse en labores relacionadas con equipo e instrumental electrónico.

LOCAL:

El curso se desarrollará en un aula adecuada para emplear ayudas audiovisuales, así como en el Laboratorio de Electrónica, ambos ubicados en el Campus del TECSUP.

FECHA Y DURACION:

Del 02 de abril al 16 de mayo de 1986.
Días: Lunes, miércoles y viernes.
Hora: 5:30 p.m. a 8:30 p.m.
Duración: 60 Horas.

DEL EXPOSITOR:

El ingeniero Arturo Cabrera Xamin nació en Piura. Realizó sus estudios superiores en la Universidad Nacional de Ingeniería, de donde egresó como Ingeniero Electrónico.

Realizó estudios de perfeccionamiento en el National Radio Institute, y trabajó en la Cía. Mercury T.V., ambos de Estados Unidos, en actividades de servicio directo a las fábricas de equipos de electrónica de consumo.

Ha dictado cursos sobre instrumentación electrónica, técnicas de servicio para talleres de electrónica, y sobre televisión a color.

Actualmente dirige la empresa Mercury T.V., por él fundada.

MONTO DE LA INVERSION Y BENEFICIOS:

Cuota por participante: I/.1,200.00
Beneficios: El monto de la inversión da derecho a:
- La inscripción en el curso.
- Recibir las exposiciones teóricas (22 horas).
- El uso de equipo especial para las prácticas de laboratorio (38 horas), consistente en instrumental electrónico (Osciloscopio, Multímetro, Generador de Señales, Fuente de Alimentación DC), y kit con componentes electrónicos. Todo lo anterior, a razón de uno por cada tres alumnos.

MONTO DE LA INVERSION Y BENEFICIOS:

Cuota por participante: I/.1,300.00
Beneficios: El monto de la inversión da derecho a:

- La inscripción en el curso.
- Recibir las exposiciones teóricas del curso (25 horas). En las exposiciones se emplearán ayudas audiovisuales (150 transparencias).
- El uso de equipo especial para las prácticas (35 horas), consistente en el "Entrenador de Electrónica Digital" Heathkit - ETW 3200 (uno por cada dos participantes), así como los componentes e instrumental correspondientes.
- La entrega de un Texto en castellano, conteniendo los Temas a desarrollarse en el curso (300 páginas).
- La entrega de un ejemplar de la "Guía de los Experimentos", en castellano, conteniendo el procedimiento a seguirse en las prácticas (100 páginas).
- Un certificado de asistencia, al finalizar el curso, a aquellos alumnos que cumplan con asistir, como mínimo, al ochenta por ciento de las exposiciones.

INFORMES E INSCRIPCION:

Oficina de Coordinación del Programa de Actualización. Campus del TECSUP.
Km. 5.7 Carretera Central - Espalda de la Planta Philips.
Teléfonos: 37-1905 /06/07/08/09
Anexo: 205

Atención: De lunes a viernes
Hora: 8:30 a.m. a 12 a.m.
2:00 p.m. a 4 p.m.

OTROS CURSOS A DICTARSE:

1. FUNDAMENTOS Y APLICACIONES DE LOS MICROPROCESADORES.
   Del 02 de abril al 16 de mayo.
2. PRUEBA DE MATERIALES.
   Del 02 de abril al 30 de abril.
3. ELECTRONICA BASICA.
   Del 02 de abril al 16 de mayo.
4. ELECTRONICA AVANZADA.
   Del 02 de junio al 16 de julio.
5. INSTRUMENTACION ELECTRONICA.
   Del 02 de junio al 04 de julio.
6. PROGRAMACION COMPUTARIZADA DEL MANTENIMIENTO DE PLANTAS INDUSTRIALES.
   Del 02 de junio al 16 de julio.
7. MEDICIONES QUIMICAS.
   Del 02 de junio al 04 de julio.
8. INSTRUMENTOS DE MEDICION MECANICA.
   Del 02 de junio al 04 de julio.
9. ELEMENTOS DE MAQUINAS.
   Del 02 de junio al 04 de julio.
10. LECTURA DE PLANOS MECANICOS Y DE TUBERIAS.
    Del 02 de junio al 16 julio.

1986

TECSUP

PROGRAMA DE ACTUALIZACION

CURSO CORTO

ELECTRONICA DIGITAL

EXPOSITOR INVITADO

ING. ALEX Mc. KENZIE GONZALES

Del 02 de Abril al

16 de Mayo de 1986

Lima - Perú

CURSO: "ELECTRONICA DIGITAL".

PRESENTACION:

La electrónica digital es, posiblemente, la tecnología de mayor impacto en el mundo moderno. Su asombrosa simplicidad y gran aplicación, la han convertido en la base para el diseño y desarrollo de diversos sistemas electrónicos.

El advenimiento de la microelectrónica, que proporciona componentes a muy bajo costo, ha permitido la sorprendente expansión de las técnicas digitales. En el mundo de hoy, es virtualmente imposible no estar en contacto diario con algún producto que use la tecnología digital. Desde los relojes de pulsera, calculadoras portátiles, hornos de microondas, radio receptores, juegos de video e instrumentos de laboratorio hasta los nuevos sistemas robóticos industriales, usan al menos en parte, circuitos integrados digitales. En efecto, sin los grandes avances hechos en este área en los últimos años, no hubiera sido una realidad el computador personal y aún este trifolio no hubiera podido ser escrito con un procesador de textos.

El conocimiento de los bloques y componentes de un sistema digital no requiere de amplia experiencia en electrónica, y permite a corto plazo un sólido entendimiento de los mencionados sistemas. Así, el recién iniciado puede, por ejemplo, realizar mantenimiento de instrumentos, sistemas industriales de mando, control y regulación, artefactos electrónicos domésticos, etc. De ahí, a realizar sus propios diseños y proyectos, hay sólo un paso.

OBJETIVOS:

Este curso ha sido preparado para:

a. Dar a conocer los aspectos fundamentales del principio de funcionamiento de los subsistemas digitales principales.
b. Dar a conocer las características funcionales y el manejo de los circuitos integrados digitales más comunes (tanto TTL como CMOS).
c. Enfatizar sobre las aplicaciones prácticas de los subsistemas digitales tratados.

El logro de estos objetivos permitirá proporcionar la base necesaria, así como reforzar los conocimientos, según sea el caso, sobre las técnicas de la electrónica digital, de modo que se puedan utilizar tanto para el mantenimiento como para el diseño de equipos y sistemas electrónicos digitales. De esta manera se pretende reducir los altos costos de mantenimiento en que se incurre usualmente por una deficiencia en los conocimientos.

TEMARIO:

1. Puertas lógicas y tablas de verdad.
2. Memorias de registro y flip-flops.
3. Multiplexores y demultiplexores.
4. Multivibradores.
5. Registros de corrimiento y contadores.
6. Visualizadores o "displays" digitales.
7. Interfases.
8. Memorias de circuito integrado.
9. Dipositivos especiales, conversores análogo-digitales.

DIRIGIDO A:

Personal de empresas que realice actividades relacionadas con equipo electrónico en general y equipo computarizado en especial. Así, sería útil para ingenieros, técnicos y profesionales, que hagan diseño, uso y aplicación, servicio, reparación y diagnóstico de fallas de equipo electrónico digital.

LOCAL:

El curso se desarrollará en un aula adecuada para emplear ayudas audiovisuales, así como en el Laboratorio de Electrónica, ambos ubicados en el Campus del TECSUP.

FECHA Y DURACION:

Del 02 de abril al 16 de mayo de 1986.
Días: Lunes, miércoles y viernes.
Hora: 5:30 p.m. a 8:30 p.m.
Duración: 60 Horas.

DEL EXPOSITOR:

El ingeniero Alex McKenzie Gonzáles, nació en Lima. Realizó sus estudios superiores en la Universidad Nacional de Ingeniería, de donde egresó como Ingeniero Electrónico.

Ha seguido cursos de perfeccionamiento de "Hardware" y "Software" en Perú y Brasil.

Trabajó durante dos años en el Centro de Cómputo de la Universidad de Ingeniería.

Actualmente se desempeña como Ingeniero en la IBM DEL PERU S.A.

DEL EXPOSITOR:

El ingeniero Miguel Angel Martino Samohod nació en Lima. Realizó sus estudios superiores en la Universidad Nacional de Ingeniería, de donde egresó en 1973 como Ingeniero Electrónico.

Desde el año 1974 a 1985 se desempeñó como docente a tiempo completo de la Universidad Nacional de Ingeniería, en la especialidad de Ingeniería Eléctrica y Electrónica.

Ha sido profesor de cursos de sistemas basados en microprocesadores, comunicación de datos entre sistemas computarizados, y circuitos electrónicos. Fue expositor en la Asociación Electrotécnica Peruana, y en otras similares, de cursos cortos y seminarios profesionales sobre aplicaciones industriales de los circuitos integrados y de los microprocesadores.

Tuvo a su cargo la jefatura del Laboratorio de Telecomunicaciones de la UNI.

Entre sus actividades de investigación aplicada y desarrollo tecnológico de los últimos años, ha participado en proyectos de diseño de módulos para la enseñanza experimental de la comunicación de datos y de la modulación analógica y digital; diseño de un analizador de espectro de baja frecuencia, con almacenamiento digital; diseño de un disyuntor electrónico para la limitación de corrientes. Ha asesorado numerosas tesis de grado y entre las últimas, diseño de un terminal de entrada de datos basado en uP; diseño de un sintetizador de sonidos musicales interactivo gráficamente, basado en uP.

Actualmente trabaja en TECSUP en el Programa de Actualización.

MONTO DE LA INVERSION Y BENEFICIOS:

Cuota por participante: I/.1,400.00
Beneficios: El monto de la inversión da derecho a:

- La inscripción en el curso.
- Recibir las exposiciones teóricas del curso (31 horas). En las exposiciones se emplearán ayudas audiovisuales.
- El uso de equipo especial para las prácticas (29 horas), consistente en el microcomputador para enseñanza Heathkit-ETW 3400 (uno por cada dos participantes), así como los componentes e instrumental correspondiente.
- La entrega de un texto en castellano, conteniendo los temas a desarrollarse en el curso (400 páginas).
- La entrega de un ejemplar del "Libro de Trabajo del Estudiante", en castellano, conteniendo el procedimiento a seguirse en las prácticas (300 páginas).

Las publicaciones anteriores están encuadernadas y editadas en formato A-4.

- Un certificado de asistencia, al finalizar el curso, a aquellos alumnos que cumplan con asistir, como mínimo, al ochenta por ciento de las exposiciones.

INFORMES E INSCRIPCION:

Oficina de Coordinación del Programa de Actualización. Campus del TECSUP.
Km. 5.7 Carretera Central - Espalda de la Planta Philips.
Teléfonos: 37-1905 /06/07/08/09
Anexo: 205
Atención: De lunes a viernes
Hora: 8:30 a.m. a 12 a.m.
2:00 p.m. a 4 p.m.

TECSUP

PROGRAMA DE ACTUALIZACION

CURSO CORTO

FUNDAMENTOS Y APLICACIONES DE LOS MICROPROCESADORES

EXPOSITOR INVITADO

ING. MIGUEL ANGEL MARTINO SAMOHOD

Del 02 de Abril al

16 de Mayo de 1986

Lima - Perú

CURSO: "FUNDAMENTOS Y APLICACIONES DE LOS MICROPROCESADORES".

PRESENTACION:

Un computador digital es un sistema electrónico,hecho con circuitos lógicos, que procesa información(datos), toma decisiones, opera automáticamente y puede realizar funciones de monitoreo y control de procesos. Si dos de sus partes principales (la unidad de control y la unidad operativa), se encuentran integradas, generalmente en un "chip",se constituye en un sistema computarizado miniatura,llamado microcomputador,denominándose a dichas partes integradas como microprocesador.

Hoy en día,virtualmente cada aplicación electrónica es una candidata para ser implementada con microprocesador. Así, están siendo ampliamente usados para reemplazar circuitos digitales lógicos convencionales y aún otros tipos de circuitería electrónica. Los microcomputadores de propósito general están reemplazando a los minicomputadores tradicionales en muchos casos. Así mismo están haciendo posible nuevas aplicaciones y oportunidades. Su bajo costo y facilidad de aplicación está expandiendo grandemente su uso en, virtualmente, todos los campos técnicos y de negocios.

Por todo lo anterior, el microprocesador está cambiando la forma de diseñar y aplicar el equipo electrónico. Ha originado una revolución en la electrónica como en su tiempo lo hizo el desarrollo del circuito integrado o el reemplazo de tubos con transistores.

OBJETIVOS:

El presente curso ha sido preparado para:

a. Dar a conocer los aspectos fundamentales de la circuitería,"hardware", de un sistema microcomputador (uC) implementado a base de microprocesador.
b. Dar a conocer los aspectos fundamentales y de aplicación de la programación,"Software", de los microprocesadores, empleando el lenguaje de máquina(con los códigos mnemónicos de las instrucciones).
c. Enfatizar sobre los dispositivos y operaciones de entrada-salida(I/O), de un sistema a base de microprocesador para comprender las formas de relacionar el uC con los dispositivos periféricos (interfases),y las aplicaciones prácticas del mismo.

El logro de estos objetivos permitirá mejorar el rendimiento, utilización y servicio del equipo a base de microprocesador que se tenga que emplear en la labor profesional.

TEMARIO:

1. Principios básicos: Terminología y definiciones básicas. Descripción de un microprocesador elemental. Algunas instrucciones básicas. Ejecución de un programa simple. Descripción de modos de direccionamiento.
2. Aritmética del Microcomputador: Uso del sistema binario para realizar operaciones aritméticas y uso del álgebra de Boole para realizar operaciones lógicas.
3. Introducción a la Programación de los Microcomputadores: Empleo de las ramificaciones. Empleo de algoritmos usuales.
4. El Microprocesador 6808: Arquitectura. Conjunto de instrucciones. Modos de direccionamiento. Operaciones con el "Stack". Subrutinas. Interrupciones. Operaciones de entrada y salida.
5. Interfases: Con memorias semiconductoras. Con visualizadores. Con interruptores y teclados. Con PIA. Uso y aplicaciones del PIA.

DIRIGIDO A:

Personal de empresas que realice actividades relacionadas con equipos que tengan microprocesador (uP) o que tengan proyectos de ampliación o adquisición de nuevo equipo electrónico. Así,sería útil para ingenieros, técnicos y profesionales en general, que realicen diseño, uso y aplicación,evaluación, especificación, servicio, reparación y diagnóstico de fallas de equipo microcomputarizado a base de microprocesador.

LOCAL:

El curso se desarrollará en un aula con capacidad máxima para treinta estudiantes y adecuado para emplear ayudas audiovisuales, así como en el Laboratorio de Microprocesadores, ambos ubicados en el Campus del TECSUP.

FECHA Y DURACION:

Del 02 de abril al 16 de mayo de 1986.
Días: Lunes, miércoles y viernes.
Hora: 5:30 p.m. a 8:30 p.m.
Duración: 60 Horas.

MONTO DE LA INVERSION Y BENEFICIOS:

Cuota por participante: I/.1,000.00
Beneficios: El monto de la inversión da derecho a:

- La inscripción en el curso.
- Recibir las exposiciones teóricas del curso (17 horas). En las exposiciones se emplearán ayudas visuales.
- El uso de equipo y componentes especiales para las prácticas (23 horas),consistente en el Probador Universal Dillon (para pruebas de tracción, compresión y corte); Probador Karl Frank (pruebas de dureza); Probador Rams Rockwell (pruebas de dureza superficial); microscopio a baja amplificación; equipo pulidor Metaserv; extensómetro ajustable Trinius Olsen y probetas de distintos metales y formas.
- La entrega de un texto en castellano, conteniendo los temas a desarrollarse en el curso (350 páginas).

Esta publicación está encuadernada y editada en formato A-4.

- Un certificado de asistencia, al finalizar el curso, a aquellos alumnos que cumplan con asistir, como mínimo, al ochenta por ciento de las exposiciones.

INFORMES E INSCRIPCION:

Oficina de Coordinación del Programa de Actualización. Campus del TECSUP. Km. 5.7 Carretera Central - Espalda de la Planta Phillps.
Teléfonos: 37-1905 /06/07/08/09
Anexo: 205
Atención: De lunes a viernes
Hora: 8:30 a.m. a 12 a.m.
2:00 p.m. a 4 p.m.

OTROS CURSOS A DICTARSE:

1. FUNDAMENTOS Y APLICACIONES DE LOS MICROPROCESADORES.
   Del 02 de abril al 16 de mayo.
2. ELECTRONICA DIGITAL.
   Del 02 de abril al 16 de mayo.
3. ELECTRONICA BASICA.
   Del 02 de abril al 16 de mayo.
4. ELECTRONICA AVANZADA.
   Del 02 de junio al 16 de julio.
5. INSTRUMENTACION ELECTRONICA.
   Del 02 de junio al 04 de julio.
6. PROGRAMACION COMPUTARIZADA DEL MANTENIMIENTO DE PLANTAS INDUSTRIALES.
   Del 02 de junio al 16 de julio.
7. MEDICIONES QUIMICAS.
   Del 02 de junio al 04 de julio.
8. INSTRUMENTOS DE MEDICION MECANICA.
   Del 02 de junio al 04 de julio.
9. ELEMENTOS DE MAQUINAS.
   Del 02 de junio al 04 de julio.
10. LECTURA DE PLANOS MECANICOS Y DE TUBERIAS.
    Del 02 de junio al 16 julio.

1986

TECSUP

PROGRAMA DE ACTUALIZACION

CURSO CORTO

PRUEBA DE MATERIALES

EXPOSITOR INVITADO
ING. GUSTAVO VELA PRADO

Del 02 de Abril al
30 de Abril de 1986

Lima-Perú

CURSO: "PRUEBA DE MATERIALES".

PRESENTACION:

En una Planta Industrial Metal Mecánica, antes de que los insumos metálicos de aceros, bronces, latones, aluminios, etc., entren en proceso de transformación y fabricación, debe verificarse si la composición química, propiedades mecánicas y componentes estructurales cumplen con los requisitos mínimos que se exigen a dichos materiales para ser empleados en la fabricación de una pieza o parte. Una vez terminado el proceso de fabricación y antes de comenzar a ensamblar las partes o el equipo, también deben verificarse las condiciones finales de resistencia, ductilidad, dureza y estructura metalográfica del producto terminado. Este procedimiento, aparentemente simple, en el control y verificación de los materiales y piezas es el único que existe para asegurar un producto de calidad, confiabilidad y larga vida en operación.

El presente curso proporciona al estudiante los conocimientos y técnicas necesarias para obtener la información requerida acerca de algún material antes, durante y después del proceso de fabricación. El entrenamiento proporcionará el conocimiento teórico-práctico de la estructura de los materiales ferrosos y no ferrosos; preparación de especímenes y observación al microscopio de materiales metálicos; conocimiento teórico-práctico de las propiedades mecánicas de los materiales metálicos; preparación de probetas metálicas; conocimiento teórico práctico de las pruebas de tracción, compresión, dureza e impacto.

OBJETIVOS:

Este curso permitirá que el estudiante pueda hacer:

a. La selección y evaluación de los materiales metálicos existentes.
b. El rechazo o aceptación de los materiales que ingresan a la planta.
c. El rechazo o aceptación de las piezas fabricadas en la planta.
d. La elaboración de informes técnicos relacionados con la estructura y propiedades mecánicas de un material metálico.

TEMARIO:

1. Propiedades físicas de los materiales.
2. Estructura de los materiales.
3. Examen metalográfico con microscopio.
4. Pruebas de tracción.
5. Pruebas de compresión.
6. Pruebas de corte.

DIRIGIDO A:

Profesionales relacionados con el control de calidad en una planta metal mecánica, en las etapas de recepción de material, proceso de fabricación y acabado de piezas.

LOCAL:

El curso se desarrollará en un aula adecuada para emplear ayudas audiovisuales, así como en el Laboratorio de Ensayo de Materiales, ambos ubicados en el Campus del TECSUP.

FECHA Y DURACION:

Del 02 de abril al 30 de abril de 1986
Días: Lunes, miércoles y viernes.
Hora: 5:30 p.m. a 8:30 p.m.
Duración: 40 Horas.

DEL EXPOSITOR:

El ingeniero Gustavo Vela Prado nació en Iquitos. Realizó sus estudios superiores en la Universidad Nacional Mayor de San Marcos, de donde egresó en 1953 como ingeniero químico.

Entre sus actividades profesionales ha tenido a su cargo la jefatura del Laboratorio de Química y Metalurgia del SIMAC, de 1965 a 1970, así como la jefatura del Departamento de Metalurgia del SIMAC, de 1970 a 1935.

Ha presentado trabajos en congresos y conferencias en los temas de corrosión y protección de estructuras metálicas; aspecto metalúrgico en las soldaduras de aceros resistentes al desgaste; consideraciones en la soldadura de acero de mediano porcentaje de carbono; comportamiento del acero al carbono cuando se somete a prueba de impacto a temperaturas hasta 30°C.

Actualmente se desempeña como profesor a tiempo completo en la especialidad de ingeniería metalúrgica de la Universidad de San Marcos en los cursos de Ciencia de los Materiales y Tratamientos Térmicos.

Appendix F

Description of Student Credit Fund

INSTITUTO TECNOLOGICO SUPERIOR
"TECSUP"

APARTADO POSTAL 5141
LIMA 18 — PERU

TECSUP · PERU

¿QUE ES EL FONDO DE CREDITO EDUCATIVO?

El Fondo de Crédito Educativo nace en virtud de un acuerdo de cooperación técnica entre el Banco Interamericano de Desarrollo y la Asociación Promotora de Institutos Tecnológicos Superiores TECSUP Nº 1.

Los objetivos que persigue el presente convenio son:

1. Brindar la oportunidad de seguir estudios de capacitación técnica de nivel post-secundario a estudiantes que hayan aprobado el examen de ingreso y que no dispongan de recursos económicos para sufragar los gastos de pensión y matrícula y,

2. Contribuir a la formación de un mayor número de técnicos en especialidades de los sectores industrial y minero que permita satisfacer la demanda del mercado laboral del Perú.

¿Quiénes pueden solicitar ayuda financiera?

Podrán solicitar ayuda financiera con cargo al Fondo de Crédito Educativo los estudiantes que demuestren:

a) Haber aprobado el examen de ingreso satisfactoriamente.
b) Encontrarse dentro de las categorías socio-económicas elegibles de acuerdo a la clasificación establecida por la Asociación.
c) Contar con la garantía solidaria de dos avalistas.

Las características socio-económicas a que hace referencia el párrafo anterior y los montos porcentuales de financiamiento del costo de estudios son las que a continuación se detalla.

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Categoría Socio-Econ.	Nivel de Ingresos Familiares Igual A	%Mín. de la Pen. Pagado por el Al.	%Máx. de la Pen. Pres. por el FCE
Primera	No mayor al ingreso familiar per cápita exigible	0	100
Segunda	Hasta un 25% superior al ingreso familiar per cápita exigible.	25	75
Tercera	Hasta un 50% superior al ingreso familiar per cápita	50	50
Cuarta	Mayor al 50% del ingreso familiar per cápita exigible	100	0

¿Qué se entiende por ingreso familiar per cápita?

Es el resultado de dividir el ingreso neto anual de la familia entre el número de personas dependiente que la conforman.

A la fecha el ingreso per cápita autorizado por el BID para financiar el 100% del costo de estudios en TECSUP ha sido establecido en I/.5,882.00. El per cápita en referencia es susceptible de ajustes periódicos de acuerdo a la evolución económica del país.

De los Formularios de Solicitud

1. Los estudiantes que reúnan los requisitos de elegibilidad, procederán a re-

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cabar de la Dirección del Fondo de Crédito Educativo los formularios de solicitud que el Instituto les proporcionará. Estos deberán estar acompañados de:

a) Documentación comprobatoria de su situación económica.
b) Documentación sobre sus avalistas, incluyendo sus nombres y antecedentes, así como su consentimiento para servir de garantes del posible préstamo.

2. La Dirección del F.C.E., con opinión favorable de la oficina de Asistencia Social, establecerá la elegibilidad definitiva del estudiante y elevará el expediente al Comité de Préstamos Educativos para su análisis, aprobación o desaprobación definitiva.

De los Prestatarios

1. Aprobada la solicitud por el Comité de Préstamos, el estudiante procederá a la firma de los documentos legales y administrativos conjuntamente con sus avalistas.

2. El prestatario se compromete a devolver el monto total del préstamo al valor de reposición de la enseñanza. A tal fin, la dirección del F.C.E. procederá a ajustar semestralmente y hasta la fecha en que el prestatario egrese del Instituto, sus saldos deudores al valor actualizado del costo de pensión y matrícula.

3. El prestatario deberá mantener un promedio mínimo de 11 sobre 20 y una conducta excelente.

De los Avalistas

1. Los avalistas del prestatario deberán cumplir con los siguientes requisitos y obligaciones:

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a) Ser dos personas naturales o jurídicas de solvencia económica y moral verificada, residentes en el Perú.

b) Percibir ingresos anuales equivalentes a ocho veces el costo semestral de enseñanza o poseer un patrimonio no inferior a doce veces dicho costo a la firma del contrato.

c) Facilitar a TECSUP la información económica-financiera que la institución le solicite.

d) Aceptar las cláusulas del contrato.

De los Plazos y la Forma de Pago

1. Los plazos y la forma de pago de los préstamos se establecerán caso por caso, teniendo en cuenta el monto del préstamo y la capacidad de pago del beneficiario.

2. El prestatario iniciará la devolución del préstamo a los seis meses de haber egresado del Instituto y se completará en un plazo de seis años a partir de la fecha de la primera reposición.

3. El prestatario conciente del esfuerzo que realiza la Asociación y que la misma oportunidad de ayuda educativa debe ser brindada a otros estudiantes, de volverá el valor del préstamo al costo de reposición de la enseñanza. La cuota mensual de amortización no excederá del 17% del ingreso familiar promedio anual.

Del Incumplimiento de Pago y Sanciones

1. Tanto el prestatario como sus avalistas deberán responder del correcto cumplimiento de los pagos pactados, en las fechas establecidas. En el caso que no cumplieran en el pago de dichas obligaciones, se aplicarán las cláusulas respectivas del Contrato de Préstamo, a fin de lograr la recuperación de los fondos.

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2. El prestatario y/o sus avalistas deberán devolver íntegramente el préstamo otorgado cumpliendo con las cláusulas del Contrato de Préstamo en las siguientes circunstancias:

a) Cuando se retire antes de culminar sus estudios por causas fortuitas
b) Cuando se ausente del país durante el período de estudios o al término del mismo.

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TECSUP No. 1

FERNANDO GUZMAN CAVERO
Director - Fondo de Crédito
Educativo

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