

Institut Pertanian Bogor * University of Wisconsin

GRADUATE EDUCATION PROJECT



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REPORT NO. 3

BEAVER & CAMMACK

REPORT ON MANAGEMENT OF UNIVERSITY RECORDS
INSTITUT PERTANIAN BOGOR / UNIVERSITY OF WISCONSIN PROJECT

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MANAGEMENT OF UNIVERSITY RECORDS

Task Expectation

The plan of work for the short term advisors in University Planning and Administration identified the tasks which were expected to be completed by the short term advisors. The specialists were to assist in the development of:

1. procedures to electronically collect, process and store data for use in educational planning - including written procedures for collecting, processing, and storing data and for using these data in educational planning.
2. plans for short-term training of IPB staff in this area and for future collaboration of the advisor - a schedule for training and consultation for 1981-82, including a detailed description of these activities.

The plan of work also stated an expectation of assistance in the monitoring and evaluation of University programs. Specifically the specialists were to assist with the development of:

1. procedures for monitoring, evaluating and reporting on the performance of IPB staff and students - written procedures for monitoring, evaluating and reporting staff and student performance.
2. plans for further training of IPB staff in this area for future collaboration of the specialists in this area - A schedule for short-term training and consultation in 1981-82.

Overview of Activities of Short Term Advisors

The first two weeks of the visit by the short term advisors were spent in orientation and briefing by IPB counterparts, academic staff, non-academic support staff and administrators. During this time meetings were scheduled with the Rector, the vice Rectors, Deans of the Faculties, the Planning Board, staff from the department of agronomy, the department chairs, and others. The purpose of these meetings was to acquaint the advisors with the problems faced by the administration, the faculties, and the departments and to discuss the information needed for planning, management, and evaluation at IPB.

Following the period of intensive briefing, a two and a half day workshop at a remote location was held with IPB personnel responsible for planning, management and the collection and processing of planning and management information. The workshop was used to identify the student, personnel, and curricular data needed and the functions these data would support. Problems associated with the data collection were also discussed.

Objectives and Concepts of Information System Development

The objective of the information system development project is to develop an information system which will serve the planning and management needs of IPB. If a comprehensive information system is to be developed, a systematic approach to defining the functions the information system will support must be followed as well as a detailed definition of the discrete data elements which are to be collected and stored for electronic data processing. In order to assure a comprehensive review of the information requirements and data needs the following procedures should be used.

- A. Review the activities or functions for which the information is to be used in the management decisions and planning processes. The management decisions and planning processes to be reviewed include, but are not limited to, the following:
 1. academic planning
 2. student record keeping
 3. facilities planning
 4. personnel planning and administration
 5. internal budget development and monitoring
 6. fiscal requests
 7. external reporting
 8. alumni/employment follow-up
- B. Determine for each of the above functions and activities the types of reports and information which are required. For example, there is a need to produce student transcripts, to conduct unit cost analyses, to develop physical facilities utilization studies, to profile staff work load in instruction, research, and public service, and to develop statistics on student enrollments.
- C. Determine for each activity or function the specific discrete data element which are needed. Examples of discrete data elements are a

personal identification number, birth date, sex, religion, field of study, and the date a degree is awarded.

- D. Determine the methods of collecting and auditing the discrete data elements. That is, determine how data elements such as birth date and date a degree is awarded are collected and verified. Birth date may be collected at the time of registration while the date a degree is awarded will need to be collected and stored at the time of student graduation.
- E. Conduct detailed systems analysis to assure a coordinated and comprehensive approach to the information system development. It is critical that IPB conduct analysis of the ways in which different types of information are inter-related and how these inter-relations can be utilized to maximum efficiency.

A classification of the program structure of the university is a prerequisite to developing an informational system which will be useful in the management and planning process. The program structure must also be related to the institutional organizational structure. Each must be developed in an hierarchial structure if efficient electronic data processing is to be accomplished.

Specific Implementation Steps

Consistent with the conceptual frame work described above, specific steps toward the development of an information system were undertaken. A summary of the steps to be taken are:

1. develop an information needs and data requirements matrix.
2. develop a data element dictionary for each data element of the data element matrix.
3. define and develop the systems to be used in collecting the data elements.
4. define the detailed file structure for inputing data to the computing system.
5. develop the data entry systems.
6. define and design the output reports and analyses which will be produced from the computerized data bases.

Five data bases are generally used to define the functions of a University. These are a student data base, a personnel data base, a curricular data

base, a facilities data base, and a financial data base. A draft information needs and data requirements matrix was developed for the student data base. The draft of the matrix is shown as appendix 1. A preliminary listing of the personnel elements to be included in the personnel data base is shown as appendix 2. Curricular data elements which are to be included in the curricular data base are shown as appendix 3.

The information needs and data requirements matrix for the student data base needs to be refined and finalized. The data elements tentatively identified for the personnel and curricular data bases need to be tested against the management and planning functions of IPB. Initial work has begun on the development of the information needs and data requirement matrices. Priority should be given to completing step one for the student, personnel and curricular data bases. More study is needed before work can proceed on the development of the financial data base. More will be said later on some general concepts for review of the budgets system.

Step 2, the development of the data element dictionaries can proceed once the data requirements have been established. A sample format included as appendix 4 can be modified to meet the special needs of the system to be developed by IPB. A staff team consisting of Benny Lubis, Noorleila Meitini N.Q. and Larry Murdock has been appointed by Dr. Edi Guhardja and Ikin Mansjoer to proceed with steps one and two of the information system development. Once the data needs have been defined, work can proceed with the next steps of the information system development.

IPB will need to develop a small core of systems analysts and programmer analysts before a comprehensive information system can be implemented. Most of the data are available but will need to be structured before efficient and effective computerized systems can be put in place.

Very preliminary discussions were held on the need to develop a program classification structure for IPB. If fiscal and staff resources are to be analyzed by program, it will require a structured approach to program classification. The National Center for Higher Education Management Systems in Boulder, Colorado has developed a program classification structure which has been adopted widely by U.S. universities. Appendix 5 shows the concept of a program classification structure for IPB. For example, techniques can be developed for assigning staff time to the different functions of the university

at any desired level of disaggregation. Budgets can be similarly assigned. Further work will need to be done on this critical building block of a useful information system.

Provision for Staff Training

The plan of work calls for a schedule of training activities for IPB staff in specific areas related to the development of the information system. IPB staff have collected a lot of data on students, personnel, space assignment, and from the operational areas of budget planning and control and physical facilities planning. All of the data system currently used are manual systems. There is a need to train staff in the technology of automated information systems. The purpose of the proposed training is to develop staff with the skills necessary to design and coordinate the development of a computerized information system. First priority will be given to the development of information systems which support the planning and management needs of the university. Implementation of automated operational systems such as registration and accounting are not scheduled at the present time.

Several specific training needs have been identified. These include training in the overall design of information systems, training in the structure of budgeting systems and documentation, training in systems analysis, and expertise in student and personnel data systems. Following are the areas of training and a tentative recommendation of staff for 1981-82. The staff assignments will need to be finalized by the administration if IPB with advice from Dr. John Murdock.

1. Overall design of information systems. It is proposed that a senior IPB staff member assume this responsibility. We propose that he spend 3 to 4 weeks at the University of Wisconsin studying the procedures and strategies for the design and implementation of a planning and management information system. Approximately one-half of his time should be spent with Associate Vice President Elwin Cammack in the Office of Analytical Studies and Information Systems and the other half of his time at a university in Wisconsin comparable in size and complexity to IPB. This training should occur as soon as possible.
2. Structure of budgeting Systems. We recommend that Oetomo Djajanegara spend 2 to 3 weeks at the University of Wisconsin reviewing the budget planning and control systems used by UW. One half of his

time should be spent in the Office of Budget Planning in the UW System which is headed by Associate Vice President Gene Arnn. The remainder of the time should be spent with Glenn Watts, Director of Budget Planning for the University of Wisconsin-Madison. One week may be scheduled with Assistant Chancellor Charles Bauer at the University of Wisconsin-Eau Claire.

It would be useful if these two visits can occur at the same time and prior to the beginning of training for the technical staff.

3. Training in Systems Analysis. It is recommended that an appropriately trained staff member spend 6 months at the University of Wisconsin studying systems analysis. The majority of the time should be spent working under the supervision of Elwin Cammack and his staff in the office of Analytical Services and information systems. Training should begin July 1, 1981. This will make it possible to sit in on a course in systems analysis during the fall semester 1981-82.
4. Training in student and personnel data systems. It is recommended that an IPB staff member spend six to eight weeks in Wisconsin studying the various approaches which are used to develop student and personnel data systems. Three to four weeks would be spent at the University of Wisconsin-Oshkosh under Assistant Vice Chancellor James Goets and three to four weeks with Assistant Chancellor Charles Bauer at UW-Eau Claire. His visit should take place beginning July 1, 1981. A second IPB staff member should plan to spend three to four weeks at UW-Oshkosh and UW-Eau Claire to review registration systems used at these universities and to help orient the IPB administration to those systems which will be most applicable to IPB.

Recommendations and Future Agenda

IPB must set reasonable goals in the development of its planning and management information systems. Experience has demonstrated that comprehensive information systems require a commitment of resources and the administrative leadership. The availability of information can profoundly influence administration styles and policy decisions. In addition to the specific steps on information system development discussed earlier, several other issues and tasks must be addressed in the future. A summary of these are:

1. It is recommended that IPB study the feasibility of developing a non-academic support staff. This will be especially critical in the area of information system development if the necessary highly trained technical staff are to be available.
2. It is recommended that one person be assigned administrative responsibility of overseeing the development of a comprehensive information system and the resultant analytical studies.
3. It is recommended that a detailed review of the budget system be undertaken after Oetomo Djajanegara returns from the US. Special emphasis should be given to modifications of the budget system which will facilitate unit cost studies and other strategies for profiling and documenting the fiscal resource needs of IPB in the future. A sample outline of the possible budget structure is included as appendix 6.
4. It is recommended that work proceed on the development of a program classification structure similar to that discussed earlier. Such a structure will provide the framework for academic and budget documentation and planning.
5. It is recommended that the administrative organizational structure be reviewed within the constraints of PBI and that a systematic coding of the organization structure be developed.
6. It is recommended that the Planning Board, vice Rectors, and Deans work with technical staff to identify and design analytical reports and studies which will be needed in program and budget planning and monitoring.

Only limited study was made by the short term specialists of the program evaluation and review procedures used by IPB. These systems will need to be reviewed in the future and analytical studies and reports developed which will facilitate the program evaluation function. In the interim, the information system should be developed to include those elements necessary for the program evaluation process.

Data Requirements

Student Data Element	Transcripts	Student Profiles	Academic Planning	Tuition Determination	Budget Requests	Student Housing	Projections	Placement	Facilities Planning	Facilities Scheduling	Contacting Parent/Spouse	Directory
Identification number	x	x	x	x	x	x	x	x	x	x	x	x
Name	x	x						x			x	
Birth date	x	x	x				x	x			x	x
Sex		x	x			x	x		x			x
Citizenship		x			x	x	x		x			x
Marital Status		x				x	x					
Name of Spouse				x		x					x	
Home address		x									x	
Home telephone											x	
Local address											x	
Local telephone												x
Parent's name											x	
Parent's occupation	x		x		x		x		x			
Parent's income				x		x						
High School	x	x	x				x					
High School Grade							x					
Religion	x		x			x						
Sponsor					x							
Sponsor amount					x							
Field of study	x		x		x				x	x		
Stratum	x			x	x	x	x		x			
Faculty			x		x				x			
Level	x				x							
Date enrolled												
Faculty advisor	x		x		x				x	x		
Faculty committee			x		x							
Course enrolled	x		x	x		x	x		x	x		
Withdrawal date	x								x			
Course grade			x		x				x			
Degree	x		x		x							
Degree date			x									
Job placement	x		x									
Alumni address			x					x				
Last institution GPA								x				

Personnel Data Elements

1. Identification number
2. Name
3. Birthday
4. Birthplace
5. Sex
6. Marital status
7. Number of Children
8. Address
9. Highest degrees
10. Degree-where granted
11. Degree field
12. Rank
13. Civil Service Classification
14. Position
15. Spouses
16. Salary-gross
17. Percent time appointment
18. Fringe benefits
19. Religion/belief
20. Date of appointment (civil service)
21. Date of appointment (Rank)
22. Date of appointment (Position)
23. Unit organization
24. Activity assignment

Curricular Data Elements

1. Faculty
2. Department
3. Discipline
4. Course number
5. Course credits
6. Section number
7. Optimum section size
8. Instructional type
9. Staff identification
10. Staff percent effort to section
11. Staff weekly contact hours
12. Section begin time
13. Section end time
14. Days of week
15. Course section room assignment
16. Course level

BASE DATA

element

NAME _____

DEFINITION

Narrative

DATA BASE

Coding Requirements

Length _____

Decimal Position _____

Example

APPLICABILITY

Unit(s): _____

Population: _____

Date of Record: _____

Submission Date: _____

Recurrence Condition: _____

Unit(s): _____

Population: _____

Date of Record: _____

Submission Date: _____

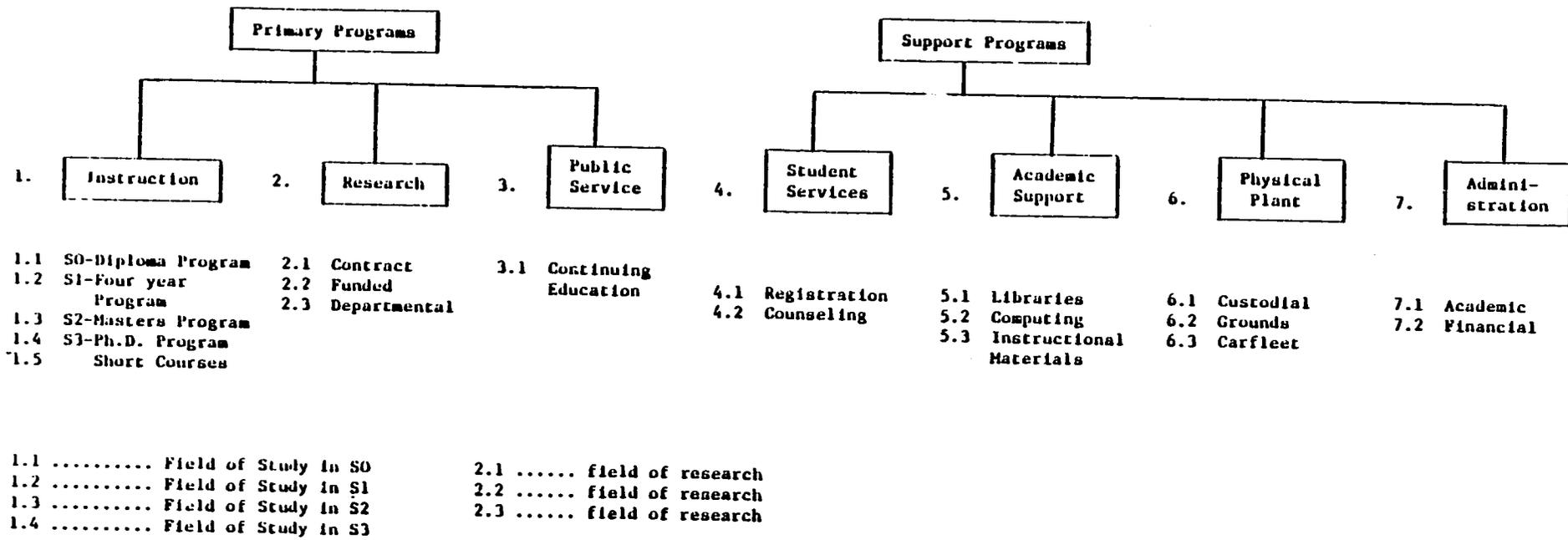
Recurrence Condition: _____

DATE ISSUED

ELEMENT NUMBER

Program Classification Structure

Appendix 5



Note: These are examples only: Actual program Classification for IPB needs to be developed.

Outline of Budget System Structure

- A. Organizational units
 - 1. Administration units/divisions
 - 2. Faculties
 - 3. Departments - academic and non-academic
- B. Program structure
 - 1. Instruction
 - 2. Research
 - 3. Public service
 - 4. Academic support
 - 5. Student service
 - 6. Physical Plant
 - 7. Administration
- C. Source of Funds
 - 1. Routine budget
 - 2. Development budget
 - 3. Grants and contracts
 - 4. Tuition
 - 5. Fee generating activities
- D. Major Class
 - 1. Salaries - academic
 - 2. Salaries - non-academic
 - 3. Supplies
 - 4. Travel
 - 5. Capital equipment

Academic Program Evaluation
and Long Range Academic Planning

Assignment

The Plan of Work for the Short Term Advisors in University Planning and Administration provided an outline of the assignment given the consultants. The consultants were expected to provide specific assistance in the development of the following:

1. Procedures for collecting information and conducting evaluations of academic programs--the results of these analyses are expected to be incorporated in the long range academic planning process. Drafting of an IPB institutional academic planning document was to be initiated.
2. Plans for the further training of members of the Planning Board and for continued contact with the advisors--a schedule of consulting and training activities for 1981-82 was to be developed.

In addition, the Plan of Work indicated the need for assistance in developing a means for monitoring and evaluating university programs and activities. The request was that a team approach be used in developing the following:

1. Procedures for monitoring, evaluating and reporting on the performance of IPB staff and students.
2. Plans for the further training of IPB staff and for future collaboration of the specialists and counterparts in this area including a schedule of activities planned for 1981-82.

Overview of Activities of Short Term Advisors

During the first two weeks the advisors were involved in daily consultation with IPB counterparts regarding the nature and characteristics of the institution and its challenges. External and internal forces and constraints on the

university's development and future were examined in some detail by interviewing IPB counterparts. Specific appointments were made with the Rector, Vice Rector, Graduate School administrators and faculty, Budget and Finance officers, Dean of Continuing Education, department chairmen of the Faculty of Agriculture, staff of the Department of Agronomy, department chairmen of the Faculty of Veterinary Science, several department chairmen from other faculties of the university and the IPB Planning Board. During these sessions, perceived information needs for varying purposes were identified such as, student enrollment projections, staff workload determinations, evaluation of clientele demands and societal needs. In addition, means for assessing programmatic needs for staff, supplies and equipment, support services and physical facilities were explored.

Following the orientation and briefing period, a two day seminar/workshop retreat was conducted by the consultants and their IPB counterparts. This session was attended by the potential staff trainees and IPB Planning Board members.

During the Workshop, information needs for the planning and management of the several functions of IPB were discussed in some detail. The draft outline of the institutional academic plan and the plan for collecting the required academic program information was reviewed. This workshop also provided the opportunity for the consultants to initiate the training of IPB staff relative to information collection and its recording in a systematic manner. Particular emphasis was placed on the procedures for developing the student, staff and curricular data element files. An example matrix of student data elements and information needs was also developed with the IPB staff.

Following the workshop, assignments were given to academic support staff permitting continued assistance of the advisors with their counterparts in developing a curricular and staff matrix during this initial visit.

Academic Program Planning

The Institut Pertanian Bogor is a rapidly growing university which is expected to assume a leadership role in Indonesian Higher Education and make important contributions to Indonesian society. To make efficient and effective use of its limited resources, as it addresses its mission, IPB has identified the need to develop its capacity for academic planning permitting it to document its plans, priorities and various requirements.

The Advisors have emphasized the need to consider planning as a continuing process rather than a periodic function. When done on a periodic basis, the documents which evolve, often prepared as the result of an intense planning effort within a short period of time, are often called "master plans." A problem often confronting institutions after the development of a "master plan" is the development of an attitude that once a document is prepared there is no need for additional planning. The reality, however, is that a university environment is dynamic and thus it is necessary to continue to accommodate any changes that occur which may require revising the institutional plan. Thus, it is recommended that IPB institutionalize a planning process which can provide a framework within which academic planning documents can be prepared and updated on a regular basis.

Planning Cycle

Planning should be developed to provide long range direction and as a guide to short-term program and resource allocation decisions. The long-range plan should be developed through the year 2000. More specific and detailed plans should be developed for a five year period and updated (rolled forward) annually to provide a continuing plan for the insuing five year period. A five year planning cycle is consistent with the national planning cycle and with the planning cycle used by the Ministry of Education.

Academic Plan Format

Institutional academic plans often differ in format and level of detail but in general they document the following common elements:

Introduction and overview

Statement of Philosophy, Mission and Goals

Context for planning--expectations and environment

Societal assumptions

Constraints and opportunities

Institutional assumptions

Institutional Functions, i.e., instruction, research, etc.

Description of Function

Objectives

Clientele or users

Societal Need

External Influences

Resources

Staff

Supplies and equipment

Physical facilities

Internal strengths

Opportunities for improvement

Recommendations

Institutional Summary

Priorities and Time table for implementation

Physical Development Plan

Staff at IPB have initiated the development of an "Academic Master Plan" and presented a draft outline of an academic plan for review and comment by the Consultants, Appendix A.

The outline is detailed, provides a useful format and it is recommended that it be used as an instrument in developing an institutional academic planning document. The following comments are presented for consideration by the IPB staff:

1. The introductory statement should emphasize the dynamic nature of universities and call attention to the concept that academic planning documents need to be updated periodically as part of a continuous planning process. This idea might be enforced by using a loose leaf note book rather than a bound document.
2. The activities or institutional functions for which plans are developed might be categorized as:
 - a. Instruction
 - b. Research
 - c. Public Service or continuing education and extension
 - d. Academic Support Services
 - e. Student Services
 - f. Physical Facilities
 - g. Administration
 - h. External commitments
3. It is suggested that the academic plan clearly address the establishment of an academic planning and management information system. A description of its purpose, needs for personnel and staff training, equipment and supplies, and space resources, and the time table for its development should be provided.

Collection of Information for Academic Planning

The information base necessary for academic planning commonly originates from several sources. To give focus to the planning effort, responsibility for the collection of specific types of information should be assigned to

those units which can most effectively gather the information. Those records which are held centrally should be compiled and submitted to the various program administrative units for verification and updating, e.g., centrally compiled data on student enrollments by field of study should be verified by the Departmental chairman. This avoids the tendency to make recurring requests of departments for information they have previously submitted.

To assist in the gathering and analysis of information to be used in academic planning, a set of guidelines for planning program development has been prepared by IPB staff.

This format is attached as Appendix B.

Academic Program Evaluation Protocol

Traditionally, faculties have been assigned responsibility for periodic comprehensive evaluation of existing academic programs including curricula, degree requirements, fields of study and the related academic supporting programs. Under new government directives, the IPB Vice Rector for Administration is given the responsibility for monitoring and evaluating the university programs. It is necessary to institutionalize a process for reviewing and monitoring the information on existing academic programs to facilitate academic program evaluation. These evaluations can serve as an inventory of the academic programs for use in academic planning as necessary and for management decisions which make the most effective and efficient use of available resources. To meet this responsibility it will be necessary to depend on a well designed information system which can provide easily accessible and sound information. Elements that should go into a management information system are reported in the accompanying report.

Academic program evaluation processes should be developed to fit the character and operating style of the institution and to structure the protocol so it is efficient, open to the several constituencies and responsive

to the changes needed to make it work. Although IPB staff will need to identify a way to effectively structure its academic planning and program review process, the following protocol may provide some assistance:

- Step 1 Vice Rector identifies programs to be reviewed with the advice of Academic Planning Committee. All institutional programs may be scheduled within a 3 to 5 year review cycle.
- Step 2 Program review committee appointed by the Vice Rector in conjunction with the Academic Planning Committee. The Committee consists of the program unit chairman or designee and two or three faculty from outside the unit.
- Step 3 A self-study document is prepared by the staff of the program unit in conjunction with the program review committee. Program review committee makes recommendations.
- Step 4 Academic Planning Committee reviews the recommendations of the program review committee and the supporting documents, and makes recommendations to the Vice Rector.
- Step 5 Vice Rector reviews recommendations and proposes actions to the appropriate governance body (Faculty Senate) or administrative unit.
- Step 6 Rector receives recommendations and proposed actions and provides administrative directions for implementation.

Criteria for Monitoring and Reviewing Academic Programs

It is necessary to use qualitative as well as quantitative information in evaluating academic programs in academic planning. To assist the Vice Rector office in its monitoring function, several criteria are suggested which have been useful in other institutions:

- Number of students enrolled in field of study
- Number of students by level or year in the program
- Number of graduates each year

Number of students enrolled in courses

Ratio of FTE faculty to FTE students in courses

Ratio of ad hoc or part time faculty to permanent faculty

Cost per student credit hour

Costs of direct instruction

Cost of instructional overhead

Student Placement

Student Satisfaction (sought through alumni--perhaps at the graduate level)

In addition to the above criteria, others which are often used in academic program reviews include:

Mission appropriateness--objectives of the program

Societal need--constancy of demand for the program

Characteristics of students in the program

Requirements and projected needs for staffing, quality of faculty

Structure and effectiveness of program administration

Adequacy of facilities, instructional and research resources

Anticipated changes in program

Special strength and weaknesses of the program.

Provisions for Staff Training

The plan of work requests the establishment of a schedule for additional training of IPB personnel involved in academic program evaluation and academic planning. Within the University of Wisconsin System there exists several opportunities to provide IPB staff exposure to different approaches to academic program evaluation and academic planning. The advisors recommend that IPB representatives be provided the opportunity to secure additional training through on-site exposure to procedures used by institutions within the University of Wisconsin System.

Several areas of training have been identified which should be provided to IPB Administrative Staff and Academic Support personnel. The following are areas of training and tentative recommendations of IPB staff who might participate in the training during 1981-82. The staff assignments will need to be made by the Administration of IPB with the advice of Dr. John Murdock.

Training in academic program evaluation and academic planning.

It is suggested that Vice Rector, Edi Guhardja spend a three week period within the University of Wisconsin System. One week would be spent in the UW System Academic Affairs and Analysis Services and Information System Offices for orientation and briefing on System and institutional academic planning policies and procedures. A second week would be spent with Associate Vice President Dallas Peterson and Senior Academic Planner Albert Beaver participating in the annual review of institutional academic program evaluation protocols and procedures at several of the System institutions. The final week would involve work with a Vice Chancellor of Academic Affairs, Dean of a Graduate School, Administrator of Academic Support Services and Academic Planners in reviewing means of using information in the analysis of academic programs.

Following the study by the Vice Rector, it is suggested that an IPB staff member be given a four to six week period of training in the use of academic program information and the analysis of academic programs. Two weeks of the session would be spent within the System Office of Academic Affairs and the remaining period with Graduate School Deans at two or more of the System institutions. This would provide an opportunity to learn administrative procedures used in Graduate Schools.

OUTLINE FOR ACADEMIC PLAN

- A. IPB's Institutional Values and Objectives
 - 1. Philosophy - What it wants to be - image.
 - 2. Goals - Objectives - What it wants to do - ambition.
- B. IPB's Role in the National System of HAE.
 - 1. To provide advanced educational opportunities for agricultural educators, researchers, extensionists and training for the agricultural community at large.
 - 2. Assist newer universities in the development of staff, curriculum and material.
 - 3. Provide leadership in developing models for teaching, research and extension programs.
 - 4. Contribute to local, regional and national planning for agricultural development.
 - 5. Assist in the execution of national development programs.
- C. The Nature of IPB.
 - 1. A public university/institute which represents a unique and important national resource.
 - 2. An organization with creative and executive capacity to design and implement a diversity of multidisciplinary and multi-functional (Tri Dharma) programs.
- D. IPB Strategy for Further Development of its Activities.
 - 1. Statement on the diversity yet interdependence of IPB's activities.

2. Identification of IPB activities, each of which respond to a particular mix of internal and external conditions. List these activities.
3. Strategic analysis of each activity.
 - a. Activity X - (Outline for Strategic analysis of each activity.
 - 1) Introduction
 - a) Background - description of activity - its nature and importance.
 - b) Mission statement - aspirations.
 - 2) Who it will serve (clientele).
 - a) Direct service, students.
 - b) Indirect service, national development, agencies hiring graduates, etc.
 - 3) Public trust - Social aim - what will it accomplish (Support with documentation and/or data).
 - a) Direct contribution - students, etc.
 - b) Indirect - increase in human resources in critical areas, food, fiber, energy, production, distribution of use.
 - c) Effective use of public resources.
 - d) National development
 - 4) External factors influencing activity. (Support with documentation and/or data).
 - a) National directives - Budgetary control.
 - b) Demands of clientele
 - c) National expectations (IPB leadership role).

- 5) IPB's internal strengths and weaknesses in this activity. (Support with documentation and/or data).
 - a) Basic philosophy and attitudes toward the activity.
 - b) Management of activity - organizational structure - administration.
 - c) Established programs - what is working - experience, etc.
 - d) Personnel, quantity and quality described in specific terms.
 - e) Facilities, quantity and quality described in specific terms.
 - f) Productivity, output, efficiency, etc.
 - g) Source of financing - levels, potential for continuation, increases, decreases, etc.
- 6) IPB's position in this area (relative to other universities).
 - a) How well does this activity serve its clientele
 - b) What is relationship between mission, quality, resources.
 - c) Strategic position of activity in relation to similar activities of other institutions, dominant, strong, favorable, tenable, nonviable.
 - d) Maturity of national system of services - new, growing, mature, declining.
 - e) Determine range of strategies to use, natural development, selective development, retrenchment, abandonment.

- 7) Develop strategic plan.
 - a) Select course of action and describe specific changes to be made - growth, contraction, hesitation, adjustment, etc.
 - b) Make projections of increased or modified output for time period desired.
 - c) Determine requirements for implementation of new activity - Phased plan - quantity.
 - (1) Management - organizational requirements.
 - (2) Resources - quantity and quality.
 - (3) Finances - quantity projections.
4. Combined projection of IPB program output (10 Yr).
 - a. Production.
 - b. Productivity.
5. Combined projection of IPB resource needs (10 Yr).
 - a. Staff.
 - b. Facilities.
 - c. Equipment.
 - d. Budget.
6. Phased plan for resource allocation.

PLANNING FOR PROGRAM DEVELOPMENT

Planning STEP 1 - Setting Basic Program Strategy.

- A. Identify activities or groups of activities which respond to a particular mix of internal and external conditions. These activities or groups of activities become program areas for further analysis.
- B. Collect information on factors influencing decision on the selected program areas. These include:
 - 1. Program mission - aspirations--expectations.
 - a. Statement of goals and objectives
 - b. Discussion of social aim - what the program will accomplish.
 - c. Evaluation of the degree of concurrence of staff and clientele with mission.
 - 2. Potential clientele of the Program.
 - a. Long-term projections of students wanting to enter the university.
 - 1) Full-time Students
 - 2) Part-time students
 - 3) Extension courses
 - 4) Continuing education
 - b. Long-term projections of needs for program product.
 - 1) Graduates or trainees of program
 - 2) Educational information and materials
 - 3) Research information
 - 4) Extension information
 - 5) Service

3. External factors influencing program area.
 - a. Capability and willingness of clientele to employ or pay for program product.
 - 1) National development policies and projections.
 - 2) Budgetary projections when available.
 - 3) Expert evaluation of the national economic capacity to support clientele needs.
 - 4) Evidences of clientele demands for program products.
 - b. National expectations of IPB's role in program area.
 - 1) Will it be expected to expand rapidly in the program area?
 - 2) Will it be expected to provide outputs other than program product i.e., develop new models, systems, prepare materials, train staff for other institutions, etc?
 - 3) Will it be national or regional in scope?
 - c. Special considerations of the environment for the program area in Bogor--Darmaga.
 - 1) Relationship to local institutions or organizations which support the program area.
 - 2) Other advantages or disadvantages of the geographic location.
4. Internal factors which influence the program.
 - a. Relative priority given to the program area within the university.

- b. Adequacy of administrative structure and resources to manage changes in the program area.
 - c. What is the level of quantity and quality of personnel?
 - d. What is the level of quantity and quality of facilities?
 - e. What is the potential for financing within IPB budget?
5. Strategic position of IPB for developing program area.
- a. What is IPB's relative position of strength in the program area?
 - b. What is the relationship between mission, quantity, quality and resources in the program area?
 - c. What is the position of national growth in the program area on a normal growth curve?
- C. Based on the information collected above make the following decisions about the program area.
- 1. Will a new program be developed?
 - 2. Will the existing program be maintained as is?
 - 3. Will the program be adjusted to:
 - a. Increase quantity through program size and/or productivity.
 - b. Improve quality and/or modify type of output.
 - c. Decrease quantity of output.
 - 4. Will program be discontinued?

Planning STEP 2 - Planning for the Implementation of Program Strategy.

- A. From step 1 identify the specific strategies to be followed in the program area.
- B. Collect information on factors influencing decisions on the courses of action required to implement these strategies.
 1. Information related to the need for growth (amount, balance, rate) in the program.
 - a. Projections of output required during the planning period broken down to the smallest division differentiated within the program (example, S_i graduates by specialization or or discipline). Based on agency estimates.
 - b. Estimates of output required based on needs for carrying out national development plans.
 - c. Estimates of output required based on population and industry growth.
 2. Information related to the improvement in quality and/or adjustments to changing needs.
 - a. The effectiveness and/or deficiencies of present program outputs (alumni, employees, etc.).
 - b. Possible changes in directions of needs in the program area.
 - c. National development plan projections for changing needs.
 - d. Comparative standards of quality for the program area.

3. Information related to improvement in efficiency or productivity of the program.
 - a. Comparison of program productivity to national and international standards.
 - b. National development plan objectives for improved productivity.
 - c. Data on factors which limit productivity now and in the future.
- C. Based on the information collected above, make the following decisions about the program area.
 1. How much, in what areas and at what rate will the program increase?
 2. What specific program changes are needed to respond to expected changes in requirements for program outputs?
 3. What steps will be taken to increase program efficiency, productivity.

Planning STEP 3 - Planning Resource Requirements for Implementing Program Strategy.

- A. From Step 2 determine specific changes which are to be taken in the program.
- B. Collect information on resources required to affect planned modifications in the program.
 1. Staff requirements to implement planned changes.
 - a. For educational programs

- 1) Present and projected student numbers by
 - a) Type of program - Special Student, S_0 , S_1 , etc.
 - b) Level of Study
 - c) Field of Study
 - 2) Present and projected staff student ratios by type of program, level of study and field of study.
 - 3) Student contact hours required by the present and projected curriculum.
 - 4) Total staff hours required to teach 1 credit of course work in lecture and laboratory.
 - 5) Number of students which can be taught effectively in a lecture and laboratory.
 - 6) Number of support staff required for various size classes i.e., secretarial, teaching assistants, technicians, maintenance.
 - 7) Present staff FTE's in program area.
- b. For Research and Public Service Programs
- 1) Present and projected size of program.
 - a) Size of program by budget.
 - b) Number of projects by type.
 - c) Number of centers or other units.
 - 2) Estimates of staff required to manage X projects having a budget of X Rupiah in each admin. unit.
 - 3) Support staff required for each unit, secretaries, research assistants, technicians, etc.

2. Facility requirements to facilitate planned program.
 - a. For educational programs.
 - 1) Total number of students by sex, level, and division in the program.
 - 2) Total number of staff by training, rank, position.
 - 3) Inventory of existing space by division.
 - 4) Student station hours determined for:
 - a) each division in the program
 - b) classroom
 - c) laboratories
 - 5) Projections on size of class units for lecture and laboratories.
 - 6) Standards for classroom and laboratory space requirements by student station hour for each level and division in the program.
 - 7) Standards for housing of students, percentage to be housed on campus and space requirements.
 - 8) Standards for staff office space and administrative space for each division.
 - 9) Standards for staff housing if possible.
 - b. For other programs
 - 1) Total number of "program units" for each division in the program.
 - 2) Total number of staff by training, rank, position.
 - 3) Inventory of existing space by division.

- 4) Standards for laboratory, workshop, conference room, and/or experimental field space required for each "program unit."
 - 5) Standards for office space for different staff levels and for administration of the unit.
 - 6) Standards for staff housing if possible.
3. Equipment requirements to implement program.
 - a. Number, size and type of laboratories and other facilities to be furnished for each division.
 - b. Inventory of existing equipment in each division.
 - c. Standards or estimates of equipment needs by laboratory or program unit (for long-range projections use categories of equipment rather than specific items).
 4. Supplies and maintenance requirements to implement program.
 - a. Number of "production units" in each division of the program.
 - b. Estimates of annual cost for supplies and maintenance per "production unit" in each division.
- C. Based on the information collected above make the following decisions about resource requirements.
1. How many new staff members will be required by level of training?
 2. How much new space and what kind of space will be required?
 3. How much new equipment must be purchased?

4. What will be the additional cost of providing supplies and maintaining facilities?

Planning STEP 4 - Estimating Program Costs.

- A. Summarize the resource requirements estimated in planning Step 3.
- b. Estimate budgetary requirements for the program based on cost standards or best estimates of current cost for unit cost of the resource x number of units x inflationary factor.
 1. Staff resources
 - a. Annual cost of salaries for staff members by level of appointment.
 - b. Estimated annual cost of staff development if required.
 2. Facilities.
 - a. Total cost of facilities based on building cost per unit of space (for classrooms, labs, etc.).
 - b. Estimate distribution of cost based on phasing of construction during projected time frame.
 3. Equipment.
 - a. Estimates of cost of various categories of additional equipment required.
 - b. Estimate distribution of cost based on phasing of program development during the projected time frame.
 4. Supplies and maintenance.
 - a. Cost estimates from C, 4, b above.
 - b. Estimate distribution of cost based on phasing plan of project.