

Framework for Curriculum Design in Higher Education*

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1. BACKGROUND

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- restructuring process of the Addis Ababa University;
- circulation of the approved program review document;
- university-organized conference in 1-2 July 1999 with stakeholders;
- formation of a task-force for preparing a curriculum.

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* Developed for training of Curriculum Designers at Addis Ababa University

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The Guide has two major parts: a framework for curriculum design and a framework for course design. The latter was added because the authors felt that it is the course that mainly implements the curriculum. Course development strategies demand more challenges than content selection as is the practice in many higher institutions of learning in Africa. The Guide attempts to address some of the instructor-challenges in the preparation of a course plan.

The curriculum framework issues are discussed according to the following logic: any department exists because there is a need for it. This department will then have goals to achieve. These goals are translated into a program or programs. Each program will then have its own respective curriculum. Courses are assumed to be the most important, but not the only, component of any curriculum. The extended treatment of course development in this Guide is, therefore, justified by this logic.

2. INTRODUCTION

Educators have found it useful to understand education and educational programs as a system. Systems have a set of inputs, which are subject to a process designed to attain certain outputs which are intended to satisfy the systems objectives. Systems can be simple or complex, defective or functioning harmoniously. A distinctive feature of systems is that, under normal circumstances, the different components in it function harmoniously to form the whole. Understanding the relationship between the parts will help understand and improve the systems performance and diagnose its defects.

A properly designed and implemented educational program is an example of such a system. Its inputs are students, with their current knowledge, skills and attitudes (their entering patterns of behavior). Its outputs are also students with higher levels of knowledge, skills, and attitudes (Graduate profiles). The process by which the input is converted into the output is

the educational program. Learner aspirations for achievement (for example, strong desire to succeed in one's education and have a good job) provide the energy for the process. In this material, we have attempted to address one component of an educational program the curriculum.

Different experts in the field of curriculum studies have given various, definitions of the term "curriculum" based on their educational value system and orientation. That is, the divergence in definition is partly due to of differences in understanding education, which itself is a value-laden term. However, all agree in Higher Education that curriculum has to do with planning the activities of the learners. The scope of the term varies from a curriculum for a single subject (e.g. the senior secondary school English curriculum) to a multi year sequence that includes several academic subjects (e.g. the elementary school curriculum).

Box 1: Components of Curriculum Design Process.

Department Goals and objectives

Profile of graduates

Program of the department

The definition adopted here is that "curriculum is an organized set of formal educational and /or training intentions." Some features of this definition are:

- a curriculum consists of intentions or plans which are in written form
- these intentions are about what learning students are to develop, the means of evaluation to assess learning, the

admission criteria, the materials and equipment to be used, and several others.

- as an organized set of intentions a curriculum articulates the relationships among its different elements (objectives, content, evaluation, etc.), integrating them into a unified and coherent whole.

3. DEPARTMENT GOALS AND OBJECTIVES

3.1 Goals

The guide is intended to help produce or revise the curriculum for the programs available in a department. Our attempt is to provide a skeletal framework for revising the curriculum of the program(s) of study in a department. It is a result of several hours of discussions, consultations and comments from colleagues. This framework allows for flexibility and is not meant to be water-tight. However, it is essential to consider each point carefully. The framework has four components as shown in Box 1: department goals, profile of graduates, program of the department, and (4) Course development.

All educational and training institutions should be guided by clearly stated goals. These goals define in relatively general terms what the department intends to achieve as an outcome of its educational and training programs. Similarly, departments in Addis Ababa University are expected to state their own departmental goals. These goals are derived from the mission statement of the University, which in turn, is based on the National Aims of Education. In stating department goals, one has to be clear with the nature of goals:

- Department goals must reflect the mission of the University regarding teaching, training, and research and community service;
- Goals are general in their nature and they are written in very short and precise language;

- Goals should indicate the overall end-product of the department;
- Goals should indicate the essential function of the department;
- Goals should depict what the department stands for.

The following are examples of goals of different departments:

- To train high school teachers with pedagogical and research skills;
- To advance biological knowledge through research;
- To produce qualified graduates in biology who are adaptable and with problem-solving capacity;
- To train basic medical doctors who are capable of providing integrated health services;
- To produce qualified manpower who can manage libraries and information centers;
- To produce qualified manpower who can organize information sources (manual and computerized) for easy access to users;
- To conduct research activities in the area of physical education and sports at regional and national level;
- To participate in consultation services and to take active part in solving general problems related to physical education and sports;
- To produce qualified engineers for the construction industry;
- To conduct research and development activities in various fields of civil engineering with the aim of enhancing capacity building.

The departmental goals can be made more specific by converting them to more specific statements. These statements are the department objectives.

3.2 Department Objectives

Department objectives are all intentions the Department wants to achieve. These intentions need to be clearly spelt out and expressed in observable forms. Department objectives develop from the Department goal and can be stated in general or specific forms. Department objectives give rise to the development of appropriate programs with each again having its own objectives. A program is a package of activities involving input systems and products (outputs).

Example of Department Objectives

- Provide Training in the field of Teacher Education
- Conduct research on curriculum design and implementation
- To train legal persons who can serve as judges

Any training objective must give rise to assessment of needs of the society and the learner. On the basis of this assessment one needs to developed the set of competencies the graduate demonstrates after completion of an educational or training program. These competencies and behaviors are called *Graduate Profile*.

4. GRADUATE PROFILE

A department graduate profile is a series of itemized descriptions explaining the capabilities of an individual graduate. These capabilities are the outcomes of the training program of the department. A department training program is expected to bring about clearly defined changes in the trainees after completion of the program. These changes of behavior should be observable in the overall behavior of the graduates in his or her workplace. Specifically speaking, these behavioral changes should be demonstrable in terms of the individuals:

- skills in applying knowledge in the solution of problems in different circumstances;
- socially acceptable behaviors; beliefs, attitudes and value systems;
- execution of tasks, duties, activities, responsibilities, etc., in his/her field with skill, efficiency and effectiveness.

When a department plans to describe the profile of a graduate, it might be useful to ask the following type of questions as indicators: What can our graduates accomplish in their area of specialization in their workplace? What kind of discipline, sense of responsibility and social behavior are they expected to show? What level and quality of intellectual capabilities can they display? In order to find the answers for these questions the following are some of the sources of information which the department will have to explore, examine, consult and assess before drawing the expected profile. These are:

- the required specific skills and skilled manpower needs of the society in the area of specialization;
- the available market for the skilled manpower in the specific field;
- the views of previous graduates about their training for that field;
- the possibilities and opportunities available for creating new jobs in the field;
- the views of the employers (stakeholders) and their vision of such a person in the job market;
- employers' expectation of level of quality in terms of: personality qualities, knowledge, behavior, skills and standards of performance, attitudes etc.

Cases of Graduate Profiles:

Cases of graduate profiles from different programs could be sketched below in sections, A, B, C and D:

Case A. Graduate Profile of a Pre-service Teacher Training Department

The Graduate

- plans a secondary school lesson;
- has abilities in evaluating a learning activity;
- conducts a lesson;
- demonstrates a model of good behavior.

Case B. Graduate Profile a Medical Undergraduate Program

The Graduate:

- is able to diagnose common illnesses;
- identifies local health problems;
- uses basic, obstetric, surgical and emergency techniques;
- appreciates the value of holistic health services;
- observes and practices medical ethics;
- is willing to learn and appreciate relevant health imputes from the community;
- is keen to maintain and expand his/her knowledge through self-directed learning and CME;
- possesses effective communication skills.

Case C. Undergraduate Library Science Program

The Graduate:

- has good personal confidence in his profession;
- is able to plan, establish, develop and manage libraries and information centers;
- has a good knowledge of modern information and communication technologies;
- is able to generate and produce tangible and usable secondary information resources;

- is able to create and manage different projects related to information systems;
- is able to generate and present different work reports in written as well as oral communication;
- is able to set-up computerized information systems;
- is able to use all the Internet technologies.

Case D. Graduate Profile Bachelor of Science Program in Biology

The Graduate:

- identifies biological materials;
- systematically collects and catalogues biological materials;
- cultures, prepares media and identifies microbial organisms;
- operates basic equipment used in biological research;
- designs and executes biological experiments;
- assists and participates in biological research;
- writes scientific reports;
- handles environmental conservation problems;
- provides professional service and leadership in the discipline;
- possesses capability to positively influence the community and serve as an agent of change in matters pertaining to his field;
- possesses the necessary background knowledge to pursue further advanced study in biology.

Source: These examples were presented to the workshop by participants from the **Faculty of Education, Faculty of Medicine, School of Information Science for Africa and Faculty of Science.**

6. PROGRAM(S)

Departmental programs are the means by which the stated goals are achieved. It is through a carefully worked out program that we can produce the kind of individuals who embody the envisaged profile. A department may have one or

more programs depending on its goals: post graduate programs, undergraduate programs, diploma level programs, etc. Such programs may vary in terms of duration, emphasis, type, mode of delivery, entry requirement, graduation requirements, etc. A separate curriculum has to be developed for each of the programs, however.

As mentioned in the introduction, there are many ways of defining curriculum. It has been used by many in ways that range from the most particular--*curriculum is content*--to the most general--*curriculum is everything planned by the educational institution*. A curriculum development process, therefore, requires selection of a model from the set: objective model, process model, situational analysis model and hybrid model. The eclectic model uses selected elements from other models. The model used in this guide is a hybrid consisting of six elements: rationale, objectives, selection and sequencing of courses, selection of teaching materials and methods, resource requirements, timing and quality assurance system. Box 2 depicts the components and the major issues of the Eclectic Model. A discussion of the basic issues in each component is then given.

Box 2: Components of the Eclectic Model of Curriculum Development

- | | |
|---|--|
| Rationale: | What reasons necessitate the design of new or the revision of an existing curriculum ? |
| Objectives: | What are the desired outcomes to be achieved through the implementation of the program? |
| Selection and sequencing of courses: | How should courses to be included in a program be selected and sequenced so as to achieve maximum courses effect? |
| Selection of teaching materials and methods: | What methods and materials should be used so as to maximize achievement of desired objectives? |
| Resource requirements | What human , material and administrative resources are required for the effective delivery of the program? |
| Timing and quality assurance system | What mechanisms can we build-in in the program so as to ensure maintenance of quality? |

6.1 Rationale

Curriculum revision and improvement is an activity which should be done by educational institutions of all levels at regular intervals. This is more so in higher education institutions; where there is not only transmission of knowledge to students, but where such knowledge is produced as well. There are several reasons, which necessitate the design of new, or revision of existing higher education curricula. These reasons usually fall into three areas.

The first crucial reason for regular revision of curriculum materials is the ***change in the concerned field of knowledge itself***. In several fields of study, the accretion of new knowledge is tremendous, increasing at geometric progression. Because of this, there has always been a gap between what is up-to-date in a field of knowledge and what is provided in a curriculum or field of study. Knowledge not only grows but also develops. That is, there is not only accumulation of new facts; but also the basic principles, laws and theories, which govern a discipline also change with time. Therefore, curricula must give room for new knowledge and new ways of thinking which emerge from time to time in a field of study. A good principle in this regard is to include the most fundamental knowledge from the old and a careful selection from the new.

A second reason which necessitates curriculum revision is ***the change in the institutions of society***—its cultural, political, economic and scientific/ technological realities do not remain static. One of the purposes of education is to produce individuals who will be active agents of change in society. The educational system must also be responsive to those changes, which it helped bring about. Departments should see to it that their graduates are equipped with whatever is required to enable them perform adequately in these changing conditions. The recent joint meeting between AAU departments and representatives of stakeholders was conducted to elicit this.

What has, for example, changed in the tourism industry in the last decade in this country? What new ways of preparation would trainees need in this area? How has the banking system changed in the last decade in this country? What new ways of preparation can and should be introduced in the training program for such professionals? A training program modeled upon those of the industrialized nations usually does not fit well in contexts like ours. They should be responsive to local needs and priorities.

A third reason concerns the *learners* themselves. In designing new or reviewing departmental programs, the needs of the learners, in their own right, should be considered. What student would like to soak up knowledge, which does neither interest, nor satisfy him/her?

There is also a need for students to be aware of broad issues like global interdependence, economic and industrial understanding, population and environment, civic and human rights. It is in the interest of students to make them conscious of these issues as a college graduate is in a sense an internationalist who should be able to grasp the moving forces behind international phenomena. Educators and concerned individuals often express the view that human-relation-skills are essential for building a healthy society. A high degree of social competence is required in diplomacy, foreign trade, labor-management relations, intercultural relations, the conservation and effective use of natural and human resources, the reduction of crime and delinquency, and the administration of public enterprises, etc. Department graduates are expected to contribute to the solution of complex national and international problems. Program designers should, therefore, look for opportunities for the social education of their students as well.

It is thus believed that these are some of the major reasons that warrant careful look at the academic programs of the departments in Addis Ababa University. Departments are

expected, where appropriate, to provide justification in the designing process of their curriculums.

Example - An example of a program rationale is given below. This example was presented at the workshop by the group from the Department of Physical Education and Sports. It comes from a planned degree program in Physical Education and Sports.

"The evidence obtained from the Ministry of Education and Federal Sports Commission confirms that there is a shortage of skilled manpower in the field of physical education and sports. The department needs to tackle this problem by training learners to a degree level, by planning in-service programs, by organizing short-term training or refresher programs such as seminars and workshops. The need for upgrading the program for physical education to a degree level in the Addis Ababa University arose from this fact and the following ones:-

- It would be reasonable for the Addis Ababa University, as a University, to train teachers in the field of physical education and sports;
- The presence of the Department of Physical Education and Sports will give an opportunity for interested learners an opportunity to qualify in the field as well as to get educated manpower in schools of different regions of the country;
- Since there is no research center in the country in this field, the department will promote research activity in physical education and sports;
- The opening of the program will provide the necessary impetus to sport development and equip the national administrative structures with the necessary skilled manpower".

6.2 Objectives

Objectives are the **glasses** through which we see where we want to go or what the end product would look like. Program objectives should specify, in relatively broad terms, the **end-in-view** or what is desired to be achieved through the implementation of the program. These desired outcomes are commonly divided into three areas; *the knowledge and understandings to be gained*; *the skills and competencies to be developed*; and *the attitudes and values to be acquired*. Box 3 illustrates the three types of objectives in outcome terms.

Box 3: Types of Learning Outcomes

Knowledge and understanding to be gained include

- ***facts***- items of verifiable information
- ***concepts*** - mental constructs epitomizing facts about particular referents
- ***generalizations*** - (including laws, principles, rules) statements of relationship among two or more concepts.

Skills and Competencies to be developed include

- methods of operating on knowledge intellectually
- methods of manipulating the body and material things effectively with respect to purposes.

Attitudes and values to be acquired include

- societal prescriptions and preferences regarding belief and conduct.
- individual preferential dispositions (attitudes, interests, appreciation) professional prescriptions and preferences

The objectives formulated are the basis for evaluation. It is, therefore, essential that they can be clear and precise so that one is able to tell whether or not they have been achieved at the end of the program. They should also be valid and feasible or achievable within the limits and constraints in which the program operates. Other points to pay attention to during formulation of program objectives are given in Box 4.

Box 4: Additional Considerations for the Formulation of Program Objectives

- set realistic objectives by taking in to account available means
- ensure adequate balance among the three areas of objectives (knowledge, skills and attitude). Objectives are indicators of what the graduates are going to look like in terms of the three areas of behavior mentioned above.
- write objectives in behavioral terms; for instance; "the learner writes a complete research proposal in Biology"
- relate objectives to the goals of the department.
- program objectives are the yardstick by which courses are selected and sequenced.

Two examples of program objectives are given below. The first one was presented at the workshop by representatives of the School of Information Systems for Africa. We have reproduced them as presented at the workshop. The second example contains program objectives used in many medical undergraduate programs.

Example 1 - Objectives of the Undergraduate Degree Program in Library and Information Science.**A. Knowledge and Understanding**

The program aims to equip students with knowledge of:

- Various types of libraries, information systems and services
- Theories, principles, processes and techniques of traditional and modern ways of information processing and management
- Information systems analysis and design
- Research techniques and methods, in problem solving
- Communication technologies
- Basic computer science

B. Skills and competencies

The program aims to develop student's practical skills of ...

- Classifying and cataloguing information sources.
- Analysing and designing information systems.
- Using modern technologies.
- Writing computer programs for specific use of their respective organizations.

C. Attitudes

The program aims to inspire students--

- to have a positive attitude towards their profession.
- to have the sense of cooperation , honesty , loyalty . etc.

Example 2. The following are examples of objectives used in many medical undergraduate programs

- Diagnose all the common or otherwise important diseases found in an area;
- Perform a defined number of medical and surgical procedures that will contribute to the proper management of his patients;
- Organize and carryout simple scientific investigations into local clinical and community health problems;
- Follow a philosophy which integrates prevention with cure and rehabilitation;
- Exhibit duty-consciousness and adaptability to the unscheduled events of illness such as those that demand his services outside official duty ours.

6.3 Selection and Sequencing of Courses

Courses make the most important component of any curriculum. The curriculum designer ought to make the right

selection and arrangement of courses depending on the expected profile of graduates.

Selection

The goals of the department, the program objectives and graduate profile as stated earlier, will show which courses or subject areas of study to include in the program. Selected courses are not ends in themselves but the means for the achievement of objectives. This entails that the courses we select should be related to the overall goals of the department and the objectives of each program. The mix of courses in the program should allow for the achievement of the three domains of objectives namely: knowledge, skills and attitudes/values. In this regard, attention should be given to courses, which will enhance students understanding of professional ethics in their field of specialization. Professionalization and developing the values of social responsibility demand some dosage on professional Ethics, at least a three credit course in each curriculum.

Relevant courses should also bear their share of the effort to produce professionally responsible citizens. In addition to the courses related to the specific area of specialization, it is advantageous to incorporate general courses that broaden spatial and temporal understanding. Courses that enable learners to have a sufficient understanding of their country is necessary if not mandatory. Courses that enhance communication and numeric skills of learners ought to be compulsory in any curriculum as these are basic tools of learning.

In addition to course-selection on a program basis, courses can be selected on individual basis by structuring the program in such away that you have core and optional courses: the advantage is multifaceted. First, learners are given chance in choosing their courses. Secondly, the unity-in-diversity principle of a graduate profile is promoted and thirdly, students

will learn better if they choose some of the courses in a program. This system requires more resources but the academic advantages are even more rewarding.

Sequencing

By sequencing we mean *the arrangement of selected courses in time*. Points to consider in course sequencing are:

- Continuity of learning is an important consideration. Progression should be made from simple to complex, concrete to abstract, etc.;
- It is also essential to ensure the relationship between the courses. Are there courses which reinforce or complement each other? If so, how are they related;
- A good way of ensuring this is to consider the **vertical** and **horizontal** relationship between the courses. For our purpose, horizontal relationship can be considered as *the relatedness of courses offered in a particular semester for a particular group of students*. The designer must seek answers to such questions as: Can the learning in one course reinforce the learning of another? If so, in what ways? Vertical relationship is *the relatedness of courses across years of study*. How do we decide the sequence of courses to be offered in the various semesters? This can vary with fields of study. In history and literature, for example, a chronological way of arrangement of courses can be followed. Ideas and facts are arranged in order of time. In subjects like physics, grammar and geometry, the criteria of prerequisite learning may be used. Understanding of a new concept depends on the understanding of previous concepts. The designer must ensure that lower level courses serve as information to management-of-higher-level courses.

6.4 Teaching and Learning Methods and Materials

Learning is the most important outcome of a curriculum or instructional program. All the activities that are used to implement a program make up the instructional strategies. Curriculum designers ought to consider a variety of instructional strategies in their planning. The use of a variety of teaching strategies accommodates various students learning styles and provides opportunities that will help different students construct their understanding of the concepts involved. Educational researchers assert that there is some correlation between the method of teaching and the type of learning. For instance, a lecture on cookery doesn't make one a good cook nor does a lecture on driving make one a good driver. They all need to learn the skill by the method of learning-by-doing.

It is also suggested that teaching be inquiry-oriented, developing in student's greater independence as individual thinkers and investigators. Whatever teaching and learning strategies one uses, emphasis should be on students understanding of concepts and principles. This is so because in any learning process the learner learns two things--the content to be learnt and the method of learning.

Although learning and thinking independently are important student attributes, working cooperatively in groups is also important. Small-group activities can provide a dynamic learning experience not possible for individual students.

This section has always been neglected in many cases of curriculum design and development. Now, the authors believe that a program designer should spell out all instructional strategies that correspond to the kind of learning stipulated in the curriculum objectives.

6.5 Resources Requirements

The curriculum designer should involve in his/her planning all the essential means--**human, material and administrative**--for the delivery of instruction.

Human

The human resource requirement deals with staffing (*quantity* and *quality*), roles of full and part time staff in delivering the program. The first requirement is to determine the optimum number of instructors required for running the Program. Selection and course assignment of instructors should, however, take into account the training and experience of the instructors. Assigning more motivated and experienced teachers pays off than less motivated and experienced teachers.

It is also important to combine full time and part time instructors especially when it is economical and practical to do so. Care must, however, be made not to encourage part timing, an activity practiced both by full timers and part timers. In part timing, instructors work in a number of institutions and lack time and space to stay after class. They often confuse their full responsibility with presence in class. After class, they might not be available for student consultations.

It is also important that departments have policies for assigning instructors in the different levels. Assigning more experienced and highly qualified instructors in the foundation levels has many advantages as the first college experience of students has a great impact in motivation, academic preparation and decision of students.

Delivering a certain academic program demands a **support staff**, such as secretaries, technical assistants, administrative staff, etc. The size of the support staff must depend on consideration of cost-effectiveness and quality maintenance.

With the advantages of modern communication technologies, a large size support-staff might be more cost effective.

It is also helpful that a staff development scheme is designed as an integral part of staff upgrading and motivation for retention, attraction & development.

Material Resources

Curriculum materials can be viewed in two ways, those that are part of the curriculum itself and those facilities that provide the context for curriculum implementation. They can also be viewed in terms of capital items (such as classroom, laboratories, audiovisual units, etc.), or library and other learning resources, computer facilities, student accesses to resources and resource replacement provision. The curriculum planner should be able to identify all required material resources for creating effective and efficient delivery system.

Identification of on-line and CD-ROM information providers for specialized fields (such as ERIC for Education) is of great advantage in creating student and instructor access to the latest information sources.

A student handbook (department brochure) should also be taken as one of the critical material resource of any program.

This handbook has immense advantages in informing and orienting students. Its contents can be:

- welcome statement
- outline of program structure and content
- staff profile and advising opportunities
- assessment plan and assessment regulation
- research priority areas--current & planned
- procedure for academic appeals
- book, equipment and software lists
- any special information relating to the course.

Administrative Resources

A program can be effected efficiently if appropriate administrative structures are created with clearly defined roles, responsibilities and accountability. These administrative units must be structured in such a way that they allow maximum staff participation. They could be entrusted with the responsibility of assisting the decision-maker. The use of various standing and ad-hoc committees and general assemblies, as was the tradition of the University, is a case in point.

Timing

Time is a precious resource the disposition of which calls for skill and creativity. In logistical planning, the main concern is with the amount of time needed for all learners to achieve the objectives of a curriculum. This consideration governs scheduling decisions.

The question of general concern to curriculum planners is whether intensive learning is necessarily more efficient than extensive learning. The findings are inconclusive. It is, however, advisable that the designer use common sense and convention as a basis of his/her decision.

Another issue of time is whether or not the average or expected time is realistic to all students. Some designers allow a margin of 10 percent for those students who lag behind. Some designers consider a time range for completion, for instance, 3-4, 4-5. etc., to accommodate unanticipated effects.

6. 6 Quality Assurance System

Curriculum designing should also involve planning of an in-built mechanism for monitoring and evaluation of the program. This ensures maintenance of quality. With effective management system, developing mechanism of quality control and an

Evaluation Guide facilitates the process of quality assurance. Guides for the same purpose are given in boxes 5 and 6.

Both **formative** and **summative** evaluations should be used for the purpose of quality management and improvement. Formative evaluation is done *while the program is still in progress*. Summative evaluation is undertaken at the completion of the program and its purpose is to judge the overall effectiveness of the program. An in-built evaluation system must be planned for quality assurance. Programs can be tested in terms of their outputs and processes.

Output factors include *effectiveness, acceptability and efficiency* whereas process factors involve *needs, objectives, evaluation of student learning, student entry characteristics, the teaching-learning process, logistics, etc.*

Box 5 : Program Management and Quality Control

- clear definition of key roles, e.g., program leader, program team, program committee
- composition of program committee
- plans for regular team meetings for planning and monitoring the program
- methods by which staff development needs are identified and supported
- outline of recent staff development activities
- description of system of quality control
- plans for monitoring and reviewing the learning program
- involvement of external advisers as appropriate
- system for referring action points to senior management
- recent annual program reports
- selective commentary on external verifier/moderator reports.
- record of student achievement (ROA)
- assessment strategy, methods and academic appeals procedure
- assessment regulations, clearly specified role of external verifiers/moderators and the composition of the assessment board

It is a tradition of many universities that theses, senior essays and comprehensive examinations are used for the purpose of summative evaluations on the output. These activities should be encouraged in our situation. It is also recommended that undergraduate programs encourage comprehensive examinations on certain core courses of a given program as a strategy of summative evaluation.

Box: 6: Evaluation Methods for Quality Control

- Analysis of program test results
- Interview with graduates, dropout, employers, managers, supervisors,
- Interview with teachers in the program
- Standardized test results
- Goal-free evaluations
- Analysis of course evaluation questionnaire
- Attendance data
- Academic choice of students
- Analysis of public discussion and comment on the program
- In-class observation
- Analysis of time
- Review of needs of assessment data
- Analysis of learning materials and tests
- Test analysis, feedback from parents
- Analysis of formative and summative test results
- Complaints by teachers, administrators, students , etc
- Examination of materials

7. FRAMEWORK FOR COURSE DESIGN

Course development is the stage where the various theoretical considerations in curriculum design are applied. Decisions, which incorporate the principles of a good curriculum, are made at this stage. One can, for example, find out which particular ideas or facts in Science can be usefully related to ideas in Social Sciences.

The process of developing a course or revising an existing one may be done in various ways. One way consists of the phases demonstrated in Box 7.

Box 7: Major Components of Course Development

- **Statement of course objectives**
- **Prerequisite requirements**
- **Content selection and sequencing**
- **Teaching and learning methods**
- **Required resources in designing a course**
- **Course evaluation**

7.1 Course Objectives

Course objectives are derived from program objectives, which are, in turn, based on goals of the department. They include the knowledge, skills and attitudes to be gained at the completion of a course. That is, course objectives express what the designer of the course intends the students to accomplish as a result of their exposure to it.

The functions of course objectives include (a) to identify the expected outcomes of a learning experience, (b) to specify the behavior the learner is expected to exhibit, (c) to provide a systematic means for devising ways to evaluate student performance, and, (d) to provide a basis for the selection of appropriate subject content, materials and experiences for effective learning. Objectives are stated in behavioral terms - in the terms of the learner and not in terms of what the instructor is going to do. Two key questions that need to be considered in the determination of course objectives are:

- What is the purpose of giving this particular course for this particular group of trainees at this particular stage?

- What do the trainees expect to get out of it in terms of ***gaining new knowledge, developing required attitudes, acquiring useful skills?***

The following example is an illustration of how course objectives can be stated:

Example. Introduction to statistics

At the end of the course, the student will be able to --

- **Describe** with illustration the importance and use of statistics.
- **Apply** elementary statistical methods to data analysis.
- **Interpret** and present data in the form of graphs, tables, and diagrams as well as in simple statistical terms.
- **Describe** the role computer play in statistics.
- **Use** computers to analyze statistical data

As the example illustrates, action verbs (describe, apply, interpret, use, etc.) are the key features of course objectives written in the terms of the learner.

7.2 Pre-requisite Requirements

Learning builds upon learning in a slow process of accumulation. When we look into a training program, we see that it is composed of courses that are inter-related and interconnected. For maximum effect, these courses must have their own chain of continuity. The issue of determining which course follows which one, or which course must precede which one is so critical that it requires wise decision. Learning in higher education should not be just a matter of accumulating grade points. It is rather a matter of accumulating knowledge, developing attitude and acquiring skills progressively until a definite level of change of behavior and standard of performance is observed in the learner.

In higher education, establishing a sequence of cumulative learning or continuity and of integration is a central issue. How can a previous learning of a given course facilitate the learning of a new experience? How can the learning experiences of a particular course reinforce the learning of the next one? How are the courses of the department program interrelated in their proper sequential chain so as their cumulative impact can ensure the expected graduate profile to be attained in the end? When we consider the principle of prerequisite requirements in a higher education institution, we are concerned with what criteria are relevant or appropriate for organizing college courses. This deals with the designing of the overall pattern of the courses to be taught indicating their sequential relationship to each other. It therefore, follows logically that the required prerequisites must clearly be indicated before offering a given course in a given time.

7. 3 Selection and Sequencing of Content and Learning Experiences

Selecting content for a course is not done in a haphazard manner nor is it a matter of personal preference. **Content** is simply defined as the body of knowledge or a set of student activities contained in a course. This can only be a representative sample of all the knowledge that can be included in it. That is why the question of what knowledge to include in a course becomes very crucial. Learning experiences refer to the interaction of the students with the environment created or suggested by their instructor(s). Reading, writing, dramatizing, experimenting, listening, researching, observing are all examples of experiences which can lead to learning. While these are teaching methods from the instructors' point of view, they become learning experiences from the students' point of view. The learning experiences we select should be those, which will best hold the students' interests and help them to attain the course objective with the least difficulty and in the shortest time. They must also be suitable for the types of student in the class or

group, taking into account their academic backgrounds and previous and current experiences.

At this point it is in order to look at the nature of content in more detail. Each area of knowledge or discipline can be viewed as consisting of two organically linked components: a **substantive body of knowledge (content)** and a **specialized method of inquiry** for acquiring the knowledge (**method or process**). A study of any area of knowledge, therefore, involves mastering both aspects. The study of Natural Science, for example, would mean mastering the facts, principles, laws and theories discovered so far as well as the process by which this knowledge has been acquired. Most curriculum planners agree that the content we select, for a course or subject should reflect, as much as possible, the process by which it was discovered. In this way, a proper balance between content and method can be maintained; even though there are different views concerning the importance and emphasis placed on each in education. However, at a time when education is increasingly being understood as "the process of equipping an individual to perform undefined function in unpredictable situations", method or process cannot be overlooked. The stress must be not so much on producing an *educated* person as on producing an educable person who can learn and adopt himself efficiently all through his life to an environment that is ceaselessly changing.

An unthinking absorption of the content of a course will lead us in the direction quoted above. Equal emphasis should also be given to the process by which life-long learning is possible.

Course content is understood as consisting of several levels. The raw materials are the **specific facts**, which refer to descriptive ideas at a low level of abstraction. Examples are descriptions of the branches of government, of the characteristics of the circulatory system, etc. These form a substantial component of any course. However, there is

usually no agreement as to which facts are worth including in a course. Two instructors may come up with a substantially different list of topical facts for the same course, depending on their experience and training. This fact is a good reminder that courses offered by more than one instructor should be team-developed so as to ensure that each one covers the same ground. Albeit their importance, specific facts only constitute the raw material for the development of more complex thinking skills.

Basic ideas and principles represent another level of course content. Basic ideas, once understood, will explain many specific phenomena. They serve as anchors on which the specific facts can be attached. Science educators, for example, emphasize that the teaching of science be organized around broad principles, because most facts serve as means to the end of gaining an understanding of concepts and principles. Basic ideas give control over a wide range of subject matter, organize the relationship between facts, and thereby provide the context for insight and understanding. Basic ideas are also referred to as **conceptual schemes, major generalizations and themes.**

It is also essential to pay attention to the **scope and sequence** of course content. Scope is a way of stating what is to be covered in a course. We should state what content is to be covered and what mental processes are to be acquired. Scope should also be seen as a means of determining both the **breadth and depth** of content covered. It is well to remember that, the wider the coverage (breadth) the less time there is to develop depth of understanding and a high level of conceptualization. We should not confuse a more extensive coverage of course content with depth.

Sequence refers to the arrangement of course topics in a defined order. It is the criteria by which vertical progress from one level to another is determined. Sequence is a means of ensuring continuity in learning. Ideas to be dealt with in a

course can be arranged in the order of their complexity and abstractness.

The content selected must also be valid and significant. If the content reflects contemporary scientific knowledge in the area, we can say it has met this criterion. Another dimension of content validity is how fundamental it is. The most enduring concepts, principles, laws and theories should be included in a course of study. It is well to distinguish between surface details or superficial knowledge from basic knowledge in a field of study.

In selecting content for a course, points listed in Box 8 are helpful.

Box 8: Additional Decision Points in Content Selection

- The assessment of needs and the specific objectives provide a preliminary guide for suggesting the lines of emphasis.
- Obsolescence of course content can be a serious problem in curriculum development. Because there is explosion of knowledge in several fields of study, course teams should give heed to the up to dateness of the materials included in their course.
- The content chosen should be representative of the discipline. In order to be representative instructors are usually forced to select only major concepts, ideas and skills that provide insight into the discipline. If the content of instruction is carefully chosen and organized so as to emphasize these characteristic features of a discipline, a relatively small volume of knowledge may suffice to yield effective understanding of a far larger body of material.
- One of the main criteria to be considered in the selection of content is time. The question of fitting in selected content into the available time is often a problem to most instructors. Even when one is able to determine the amount of time available for teaching a given course, unforeseen circumstances may disrupt its smooth running.

7.4 Teaching and Learning Methods

The goal of teaching is to bring about meaningful learning. Learning--which can be defined as a relatively permanent change in the behavior of a learner--can occur outside of formal instruction (that which occurs in schools and colleges). Experience tells us that the bulk of any one's learning and education comes from the informal source.

Learning which results from formal instruction is purposeful. In teaching, the desired behavioral outcomes (learning) are pre-specified and all the activities of both teachers and students are consciously geared towards them.

From research and accumulated experience, the literature on learning provides some fundamental principles of learning which, if used properly, can enhance learning. A selection of these are:

- Learners differ in their ability to learn: there are above-average, average and below-average students. To be successful, instructors have to give provision for these differences;
- A motivated learner acquires what he learns more readily than one who is not motivated. The relevant motives include both general and specific ones, for example, desire to learn, need for achievement (general), desire for a certain reward or to avoid a threatened punishment (specific);
- learning under the control of reward is usually preferable to learning under the control of punishment,
- learning under intrinsic motivation is preferable to learning under extrinsic motivation;
- Tolerance for failure is best taught through providing a backlog of success that compensates for experienced failure.

- the personality of the learner, for example, his/her reaction to authority, may hamper or enhance his/her ability to learn from a given instructor;
- active participation by a learner is preferable to passive reception when learning, for example, from a lecture or a motion picture;
- meaningful materials and meaningful tasks are learned more readily than materials and tasks which give little sense or which are not understood by learners;
- information about the nature of a good performance, knowledge of the learner's mistakes, and knowledge of successful results aid learning.

The use of a variety of teaching methods, based on the nature of the objectives to be achieved, is also indispensable. A selection of some methods and techniques are given in Box 9.

Box 9: Types of Teaching-Learning Methods

Laboratories:- "Hands - on" activities in which students investigate a question using materials and equipment in laboratory or natural area.

Field experiences:- Field studies may be simple or complex, short or long, but they should involve the students in an authentic investigation of some phenomena.

Individual research projects:- Investigations in which student study something new to them. Students plan and complete a project in which they ask a question based on observation of some phenomena, gather evidence and propose an explanation. Students outline a detailed proposal of the project before they begin their investigation, which alerts students and instructors to potential problems.

Issue-centered Problems:- Opportunities for students to apply their knowledge to relief situations and problems. Students study an issues to develop an understanding of the scientific and societal aspects of the problem.

Discussion Instructor facilitates discussion of concepts and ideas.

Debates:- Students choose a local issue related to their study area and which point of view to argue.

Cooperative learning:- Students with specific role work together in a team to accomplish shared goals. Essential components include positive interdependence, face-to-face interaction, individual accountability, small group and interpersonal skills, and group processing.

Student-writing:- Writing is incorporated into many activities, including essays on exams, short explanations of lecture material, and library or independent research projects.

Student Reading:- Students read primary scientific literature or articles based on it, making reasonable judgments on the appropriateness of research methods and arguing points of view supported by information in the article.

Student speaking:- Students present oral reports of independent or

Student explanations-of-concepts:- Students explain and relate concepts to each other or the instructor includes a variety of activities such as concept mapping.

Analysis of data:- Students examine data collected by other investigators. Students explain how data were collected and analyzed and determine if they agree with the interpretation of results.

Lectures:- Verbal explanations of concepts lecturer can be a dynamic and efficient way of presenting information to students, but they never should be the only way.

Demonstrations:- Illustrations of natural phenomena and scientific investigations that are difficult for students to see or conduct during a regular class period.

Audiovisuals:- programs that are stopped at appropriate points with questions for discussion interjected by instructor.

There is a general consensus among educators in the Addis Ababa University that the lecture and demonstration methods were overused. One could, however, observe from Box 9 that the list of variety of teaching and learning methods is very long. As a general rule, more participatory (student-centered) methods are more effective in learning. The course designer needs to incorporate in his/her course plan a variety of methodologies appropriate for the achievement of stated objectives. Emphasis should, however, be given to student-centered approaches.

7.5 Required Resources in Designing a Course

There is no doubt that the instructor with more resources would be more effective than the one with resource constraints. In the process of designing a course, it is always advantageous that one clearly identifies the givens, such as, class size, the number of rooms available, technologies, etc. This means defining the challenges of one's situation so that one can make decisions about what to do.

The constraints and resources of one's situation take many forms; some tangible, others not. Instructors work with or without physical and material resources such as books, technology, a classroom, and furniture. The lack of physical resources may encourage the instructor to use available resources in creative ways. The availability of technology may allow groups of students work independently. Time is another important consideration in designing a course. How often, how long, and over what period of time will the class meet? How much time is available to the instructor to prepare for the course? Teaching priorities can be adjusted according to the length of the course. The kinds of activities designed may be affected by the amount of time available, both in class and before class.

The institutional philosophy, policy and curriculum are important givens. Having to work within existing curricular

guidelines is both a constraint and a resource: so is having to devise one's own syllabus. The type of administrative and clerical support provided by the institution affects an instructor's choices. For example, lack of clerical support will suggest streamlining paperwork and materials. Support from the administration for innovation will encourage experimentation.

The numbers, levels, and cultural backgrounds of the students are both a constraint and a resource. For example, a large class may cause an instructor to focus on classroom management. A multilevel class may influence the instructor's selection of materials or activities.

The instructor is the most important given. The background, experience, and beliefs play a significant role in the choices one makes. For example, one instructor will focus on certain content because he/she deems it essential to successful learning, while another will ignore the same content. An instructor who usually develops his/her own material may choose to use published materials when teaching a course whose content is new to him/her.

7.6 Evaluation

How will I assess what students have learned? How will I assess the effectiveness of the course? For most instructors, evaluation means evaluation within the course, for instance, assessing students' proficiency, progress, or achievement. How proficient are students in listening? Are students improving their writing skills? Have they learned to function in English in the workplace? Instructors build-in some form of student evaluation when developing a course, ranging from formal tests to informal assessments.

Evaluation in course development also includes evaluation of the course itself. Was the course effective? In what ways? Where did it fall short? Such an evaluation may not be directly

linked to assessment of student progress, although student evaluation and test results can provide feedback on the effectiveness of the course. If the students do well on tests or are judged to have made progress, presumably the course has been effective. But if students do not make progress or do not demonstrate a certain level of achievement, the effectiveness of the course may be questioned. Finding where the fault lies would be one of the purposes of course evaluation and could involve having students suggest why they did not make the progress expected. It is, therefore, mandatory that course evaluation systems be built-in during the design of the course. Why does one evaluate? Generally speaking, a course is evaluated to promote and improve its effectiveness. This may be an internal matter, as when the instructor is concerned with developing the best course possible, in which case the evaluation is done largely to the benefit of the students and the instructor. However, courses are also evaluated to provide documentation for policy reasons, such as continued funding or retention in the curriculum. In such cases, evaluation is an external matter, and the instructor may be required to use certain methods of evaluation or to document the effectiveness of the course in a manner prescribed by an outside party.

What can be evaluated? Any part of the process of course development can be evaluated, including the assumptions about and analysis of students' needs or backgrounds, goals and objectives, materials and activities, means of assessing students' progress, student participation, student roles, and the teacher's roles. Thus each element of the framework is itself subject to evaluation. Was the needs assessment effective? Did I seek the right input, and did it enable me to make appropriate decisions about the course? If not, why not? Were the goals and objectives appropriate and achievable? Should they be changed? Did students find the material appropriately challenging, or was it too easy or too difficult? Were the activities appropriate? Did all students participate easily? Did I find suitable ways to evaluate students' progress? Did the tests measure what had been learned?

When does one evaluate? In curriculum design, a distinction is usually made between **formative evaluation**, which takes place during the development and implementation of the curriculum for purpose of modifying it as it is being developed, and **summative evaluation**, which takes place after the curriculum has been implemented. We can think of evaluation as an ongoing part of the entire process. Thus evaluation can occur in the planning and teaching stages of the course, after it is over, and when it is re-planned and re-taught.

ANNEX

ADDIS ABABA UNIVERSITY Format Guide for Revised Curriculum

1. Background of the Department (not exceeding one page)

- developmental history of the Department
- type, number and evolution of programs and activities
- rationale for curriculum review process (short and general)

2. **General Objectives of the Department**—General statements indicating what the Department stands for. e. g. *To train secondary school teachers that have Subject area knowledge and pedagogical skills.*

3. **Specific Objectives of the Department**—more detailed objectives reflecting all programs & activities of the Department. e.g. *To train secondary school teachers who have Mathematical knowledge and pedagogical skills, etc*

4. Programs of the Department

- list all programs—including research programs, degree programs, diploma programs, minor programs, service course programs, etc.

5. **Curriculum/Curricula of Program/s**—each training program must have a distinct curriculum.

5.1 Rationale of Curriculum—justifications for designing the present curriculum

- review-results of different bodies in Addis Ababa University
- observed needs of society, learner, market, etc.
- stakeholder-needs and responses, identified strengths and weakness of the old curriculum
- survey results if available

5.2 Graduate **Profile** (expressed in behavioral & observable forms)

Graduate profile should reflect the specific attributes a graduate acquires by going through the program: **knowledge** (subject area and any related knowledge) **skills** (practical skill, communication skill, etc.) **attitudes** and **values** (ethical, professional, commitment to social responsibility, team work, etc.)

5.3 Program Requirements

- **Admission Requirements** (if different from general university requirements, give justification)
- **Graduation Requirements**
- **Degree Nomenclature** (both in English and Amharic)

5.4 Teaching-Learning Methods and Materials (Major ones)

- strategies such as lecture, lab, field, tutorials, etc. including delivery modes, such as, regular, outreach, distance, continuing, AVU, etc. and materials such as texts, libraries, laboratories, audiovisual materials, computers, etc.

5.5 Resource Profile

- human—staff profile(available staff) and critical shortages
- material—available buildings, library, other facilities, etc. and critical needs (with justification)
- administrative structures including standing and ad hoc committees, such as Exam. Committee, Curriculum Committee, etc.

5.6 Quality Assurance—maintaining quality of program

This should answer whether the program is managed in a transparent way and whether problems can easily be seen if and when they arise.

- program management monitoring systems (clear areas of responsibility & accountability)

- Curriculum Evaluation Guide that involves formative and summative
- evaluations (such as, internships, externships, comprehensive exams, projects, theses, etc.)
- a mechanism of standardization of course offerings, such as, course outlines, exam content, external audit, such as external examiners, etc.

5.7 Selection and sequencing of courses

5.7.1 Selection—show change of courses(old and new)

- major compulsory
- major elective
- minor compulsory
- minor elective
- supportive courses
- General Education courses
- pedagogical courses as applicable

5.7.2 Sequencing

- schedule of course in the whole program
- course numbering—note that course codes need to be four letter-initials followed by three digit numbers where the first digit represents YEAR and the last digit represents SEMESTER(odd number is for First Semester and even number for second Semester course). The middle number(second digit could be used pragmatically)
- determination of time for phasing out and phasing in courses (students going into the 2nd year by 2000/01 AY will start with the new curricula. Can courses from the new curricula be offered at 3rd and 4th year levels? Which? Replacing what?)

5.7.3 Courses Description

- Summary of course in one paragraph, usually in a catalogue form
- needs to reflect nature of course-content, objectives and methods
- prerequisite requirements

6. Appendix

- course codes and numbers (please do not give an old number to a revised or new course if different from old one)
- endnotes
- course equivalence (for new or revised courses, please indicate their equivalence from the old curricula)
- others