Practitioner's Guide:

Curriculum / Syllabus development

Curriculum / Syllabus development

Brief Description

At the heart of all education and training courses lies the curriculum. Curriculum development is much more than simply listing the content of a course. It takes into consideration the learning that the students achieve, the activities and experiences that bring the learning about, the process of planning and organising these activities and experiences and the piece of writing which embraces this planning.

The **curriculum** defines the training required for a particular profession / job position, for example, a foresters certificate course or land management course. On the other hand, the **syllabus** describes the objectives and contents of subjects that form part of a certificate course; e.g. the subject of land survey.

Nevertheless, major shifts in education and training are difficult to achieve, they often take many years to complete. In comparison with other elements of formal education systems, training institutions and even universities seem particularly resistant to changes in organisational and educational strategies, processes and methodologies, even when functioning in dynamic external environments.

The training institution and university sector in many countries seems to maintain a safe distance from theorising about teaching and learning. Although changes are taking place in many training institutions and universities throughout the world, these are often structural rather than conceptual. It is likely that economic imperatives are responsible for the changes rather than a perception of the need to improve the effectiveness of learning. During the late 1980s and 1990s there has been an increasing interest by many training institutions and universities, often driven by pressure associated with greater external scrutiny, in developing a more systematic approach to change management.
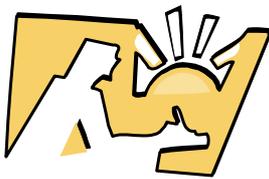
Curriculum / Syllabus development

Proposed Main Users	Trainers, lecturers, training institutions, universities, colleges.

Purpose of the Method

The **curriculum** (and therefore also the **syllabus** for the courses) is central to the teaching and learning process. Some writers (for example Miller, Turner and Innis, 1986) have advocated "curriculum-led" institutional development as a vehicle for change. The degree of autonomy of teachers and even institutions in the development of curricula is very variable. In some training institutions, teachers and lecturers are able to make quite wide-ranging decisions on the development of the curriculum, subject to approval from the institution. In many education institutions, however, overall development of the curriculum often remains the responsibility of a few, an elite group located at the top of a hierarchy. Discussions about curriculum development tend to involve a small number of persons in senior academic and, in some cases, government positions, and usually centre around the content of teaching.

There are two serious problems associated with this hierarchical approach:

▶ Firstly, the assumption is made that a small, privileged group is aware of the reality of the external environment, and that their own theoretical understanding and experience is sufficient to enable them to develop curricula, which will bring about effective learning.

▶ Secondly, as discussed earlier, it is believed that learning will take place through transmission of knowledge, and that the subject-related expertise of teaching staff is sufficient to convey knowledge to the learners. Curricula developed using this approach rarely provide guidance to teachers and learners on how the learning process may be facilitated. Teachers are left to fend for themselves, amidst all the constraints, which are present in training institutions or universities (Taylor, 1998b).

Even in those training institutions where teachers have a greater degree of autonomy in the curriculum development process, there is rarely any mechanism or agreed-upon principle for increasing the involvement of other stakeholders. The lecturer is still considered as the expert, and the assumption is made that he or she will deliver the goods as a result of expertise garnered through professional activities such as academic study and research, or through personal linkages with the relevant "industry" in which graduates will be employed. Authority over what will be taught to the majority is vested in the minority.

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Advantages

▶ A curriculum assists training organisations to determine what the students need to know, it sets the standard of training.

▶ The curriculum defines what students should know and be able to do by the end of training.

▶ The curriculum / syllabus supports trainers and teachers alike in providing high-quality learning experiences for all students.

▶ The curriculum / syllabus is expected to be up-to-date and provide an insight into how the professions being trained for are in-line with the current practices and future trends.

▶ The syllabus provides an instrument for effective learning and teaching strategies that could be additionally supported by research and practice.

▶ The syllabus initiates discussions concerning curriculum integration within and across different subjects.

▶ The curriculum defines the standard to be set for evaluating student / trainee performance.

▶ The curriculum provides "outsiders" (private sector, government agencies) within an insight into the contents and training approach.

Limitations

▶ Curricula and syllabus do not necessarily have a legal character and they are not binding, they are indicative.

▶ The curricula does not contain a detailed lesson plan, this is usually included only in the subject syllabus.

▶ The curricula does not cover everything a student needs to know.

▶ Once they are developed and approved they are usually difficult to modify and revise due to the effort required to do so.

▶ Slow changes in the curricula often means that the curricula is not always up-to-date and in line with current trends and practices.

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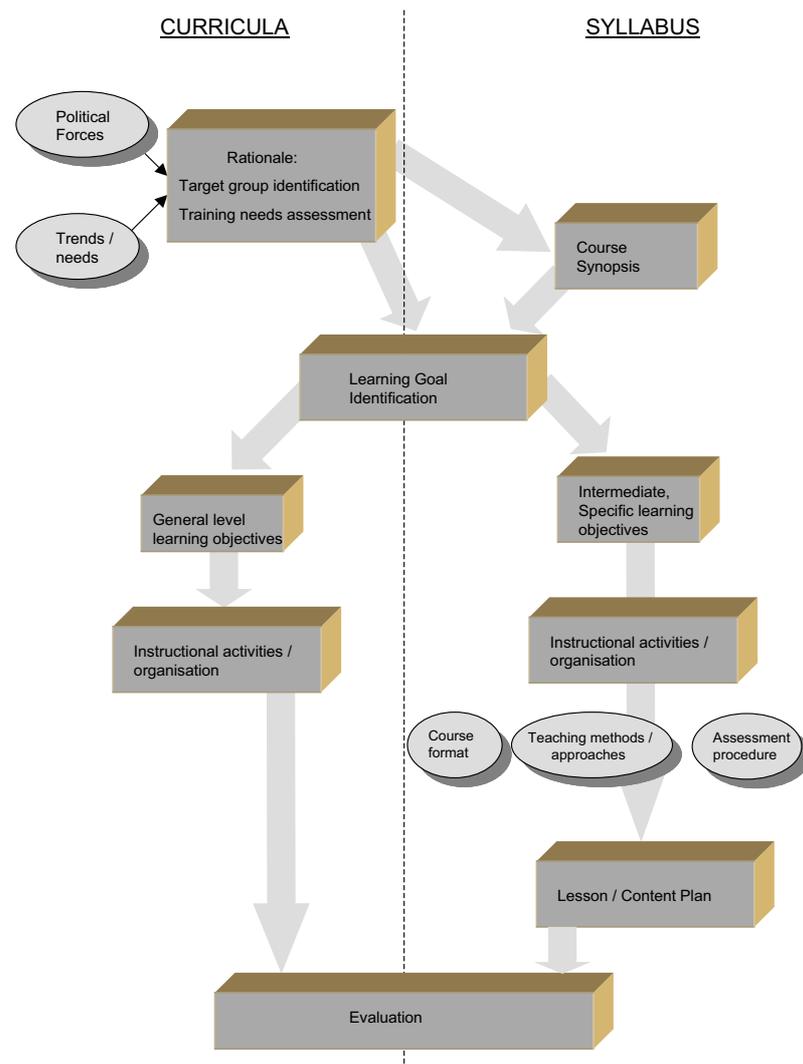
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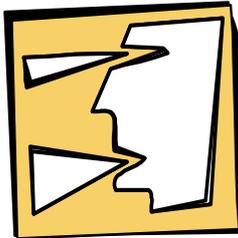
A basic model for curriculum / syllabus development

Verduin's model (1980) was developed to document and guide a system of curriculum / syllabus development that was used in urban adult education centres. It recognizes the peculiar needs of adult learners. The model can be applied to different sectors, including the forestry sector. The approach promoted by Verduin includes taking the "learners" from where they are in life to where they need to be according to the organisations and their individual perspectives.

Verduin's model has five major elements: **rationale, outside political forces, goal identification, instructional activities and organization, and evaluation**. These elements all have sub-elements. The description contained in these guidelines depict Verduin's model in terms of how they relate to curriculum / syllabus development for forestry management.

Figure 1: Inter-relationship: Curricula / Syllabus & Verduin's five elements

Curriculum / Syllabus development

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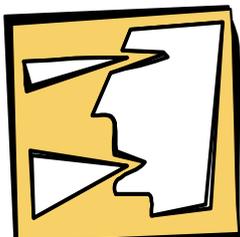
1. Rationale

The first element of curriculum planning is that of the rationale, or explaining why a curriculum is being developed or revised. However, for the subject syllabi the rationale is included in the synopsis. In Forestry, one can take the rationale directly from the people to be trained. One of the core beliefs of a hallmark of good curriculum development is that one develops long-term relationships with "clients" to move them through a training stream. For example, learners may start with the Foresters Certificate and move through Forest Rangers. A successful curriculum takes learners from where they are and moves them to where they need to be to meet their own and the organisations goals. The rationale has two steps: target group identification and needs assessment of trainees has to be included in a training course.

▶ **Target Group Identification.** It is critical to identify the primary target group to be reached through the training course. The more one knows about the target group and the more specific target group has been identified, the better it is to design a curricula or syllabus that best meets their needs. In Forestry one may have dealt with Foresters in the past, in future private plantations owner and other target groups may be added. In this case the curricula / syllabus would need to be adapted according to the target groups needs and requirements. The first step that needs to be undertaken is to get to know the target group and to understand their motivation for learning. Often training courses may target two or more diverse target groups. It is then important to understand the differences between the groups and design training courses to meet both sets of needs.

▶ **Needs Assessment.** Needs assessments can be formal or informal. It is periodically advantageous to conduct formal needs assessments for the forestry sector. When working with a new professional picture of say the Forest Rangers that also embrace their role in the private sector, and then it is mandatory to conduct a formal needs assessment. Informal needs assessments can be conducted by keeping one's ear to the ground, visiting potential employers of the Foresters and Forest Rangers.

2. Political Forces

It may also be worthwhile thinking through the effects of outside political forces to act as modifiers between rationale and goals. This is particularly appropriate for Forest management where the identified target audience needs must be harmonized with the desires of powerful outside forces. Three types of outside forces operating on the syllabus / curriculum development process include government agencies, private organizations, and non-governmental organizations.

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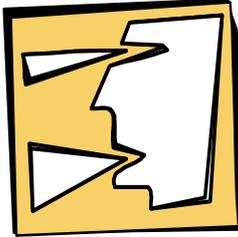
▶ **Government Agencies.**. Regulations and legal requirements are regularly imposed upon the forestry professionals. The effects that the Acts have on the forestry sector (for example the privatisation efforts) as well as external factors such as the desire to pursue the ISO 9002 or the standards means that the curriculum and syllabus needs to be constantly revised.

▶ **Private Organizations.** Curricula and syllabus contents can be affected by private organizations in a variety of ways. Private forestry sector on the timber and non-timber sectors can set the technical standards associated with a certain skill set. For example, private log millers may establish and use the standards that govern the ways that forest products are measured. A training programme in forest measurements needs to account for these rules, and the need for new training programmes may arise when new rules are put into place. Market forces can be significant factors in the need for and type of training programme developed.

▶ **NGOs.** Non-governmental organizations such as environmental groups can have major impacts on the demand for continuing training programmes. One example of this is through the establishment of sustainable development criteria that drive much present-day management. Other NGOs are important for funding continuing training programmes.

3. Learning Goal Identification

The most important element in a curriculum development model is the goal identification. Learning activities are developed as specific responses to goal statements. The process of defining the goal statements determines what will be taught and what will not. It also determines how easy it will be to evaluate what is learned. Goals give curriculum developers targets to shoot for. Learning activities are attempts to hit those targets and evaluations are measures to see how many targets were hit. Three levels of goals can be set for curriculum: general goals, intermediate goals, and specific goals. Similar hierarchy of goals can also be set for the subject syllabus.

▶ **General Level (Abstract).** These goals are the guiding principles behind large-scale training courses. For instance, the Forestry course may have 1-2 general goals. One could be: sustainable management of the Forests.

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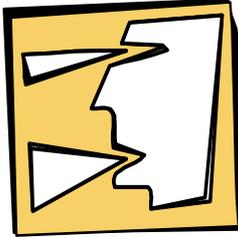
▶ **Intermediate Level (Course/Subject Level/Measurable Objectives).** These goals are generally responsible for driving the training course or subject level. They are generally simple statements of what subject's participants will learn in a particular course. It is very important to state these goals in measurable terms. This can be done by making them active imperatives with the learner as the subject and a statement of quality as the ending. For example: Learners will be able to estimate the volume of timber in a stand by taking plots to measure height, diameter, and number of trees per acre, using diameter tapes, clinometers, loggers tapes as tools, or using a computer course to perform their calculations and be within 5 percent of the instructor's estimate.

▶ **Specific Level (Class Session Level / Measurable Objectives).** These are very task-oriented goals and relate to small discrete pieces of learning that must take place to achieve mid-level goals. These goals are often not enumerated in detail, but are left to be derived from the mid-level goals. An example of a specific-level goal would be to learn to identify the three particle sizes used in soil classification of sand, silt, and clay.

4. Instructional Activities and Organisation

The development and organization of instructional activities is the central part of the development of the curriculum and syllabus. While it will be broadly only broadly defined in the curriculum it will be much more detailed in the subject syllabus. If trainers and managers are thorough in their goal development, then the selection, development, and organization of instructional activities is a fairly straightforward process

▶ **Develop or use specific learning experiences to achieve goals at all three levels.** Like goals, learning experiences are hierarchical. Specific learning experiences that will cover a class session or two are the building blocks of syllabus and serve specific-level goals. Together these specific-level experiences make up the learning experiences of a course or subjects and serve a series of mid-level goals.

▶ **Need to recognize hierarchy of knowledge, attitudes, skills, and abilities (KASA).** Learning covers different sorts of material. Knowledge learning requires acquisition of knowledge or facts. Knowledge learning is the basis of all learning. Ability learning involves manipulation of knowledge through synthesis and prediction. Ability learning is a higher order learning than knowledge learning, because knowledge is a first step to developing abilities. Skills' learning is the practical application of knowledge and ability learning. Skill learning is very hands-on and is viewed by some as being basic.

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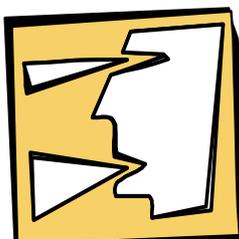
▶ **Need to know or assume entry-level of KASA performance to design appropriate instruction.** Each subject syllabus within a training course needs to assume an entry level of KASA. Knowing or assuming where Foresters and Forest rangers who will be trained are allows the trainers to design instructional activities to take the students where they need to be.

▶ **Use prerequisites to try and get entry-level KASA performance.** In training, students are not always long-term learners as they would be in a university or college courses. Therefore, it is very important to use define prerequisite classes or skills to ensure entry-level KASA performance.

5. Evaluation

The final step in the model of both the curriculum for a whole course and subject syllabus development is evaluation. This can be used to measure student and teacher achievement, to give feed back to learning activities, and to determine the effectiveness of broad educational courses.

▶ **Measure goal achievement.** Goals that are well developed and described in measurable ways are fairly easy to evaluate. The achievement of these goals by learners can be measured using a pre- and post-tests. The results of this evaluation can be used to improve the courses. In another setting, these results could have been used to grade learners.

▶ **Formative evaluation.** Formative evaluations are done during an educational course with a goal of improving course decisions. Formative evaluations are often used to measure intermediate student achievement of learning objectives.

▶ **Summative evaluation.** Summative evaluations are more formal and seek to evaluate course effectiveness. The evaluations are undertaken by assessing achievement of course objectives and course impact . Various levels of summative course evaluations are used. These levels comprise a hierarchy; the higher the level achieved in a summative evaluation, the more information the trainer will have regarding course effectiveness:

1. **Inputs level** evaluation looks at the resources necessary to conduct a course.

2. **Activities level** consists of listing the activities involved in conducting the course.

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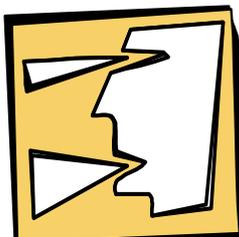
3. **Involvement level** lists the number and type of participants in a course.

4. **Reactions level** characterizes the response or reaction of learners to a course and the instructor.

5. **KASA change level** attempts to measure changes in the knowledge, attitude, skills, and abilities of the students.

6. **Practice change level** looks at behaviour changes in the learners because of an educational experience.

7. **End results level** attempts to see if the overall broadest programme objectives are met. In other words, is the world a better place because of the forestry certificate training programme?

Process approach:

Before planning or reviewing any certificate course, several issues have to be addressed. The development of both the curriculum and the syllabus should be undertaken in a participatory manner. The exercise should not be undertaken merely by the upper management of an organisations but should involve the management, the trainers and the professionals working in the field. A step-by-step approach is being proposed and these have also been depicted in figure 2:

tep 1   Review of positions in the Department:
Organisational / institutional management needs to assess and review all of the job positions in the department with respect to the ability to meet the vision and goals of the department. The review would need to take into consideration both internal and external factors, including the changes taking place in the forestry profession, the increasing role of the private sector, ISO 9002, results of the training needs assessment and so on.

Step 2 Establish a Curriculum Design Team:
The proposal would be to establish a Curriculum Design Team. The team should be made up of members from the training institute, representatives from industry and private sector along with lecturers and professional from the field. Consideration should be also possibly given of integrating an "independent" forestry professional, a representative of the human resource department of the organisation and also an instructional design expert. This person would be responsible for assisting to match the best pedagogical approaches with the resources available to the training institution. The team would be the main "working" body charged by the management of the organisation to ensure that the whole curricula are reviewed and revised.

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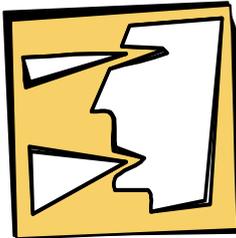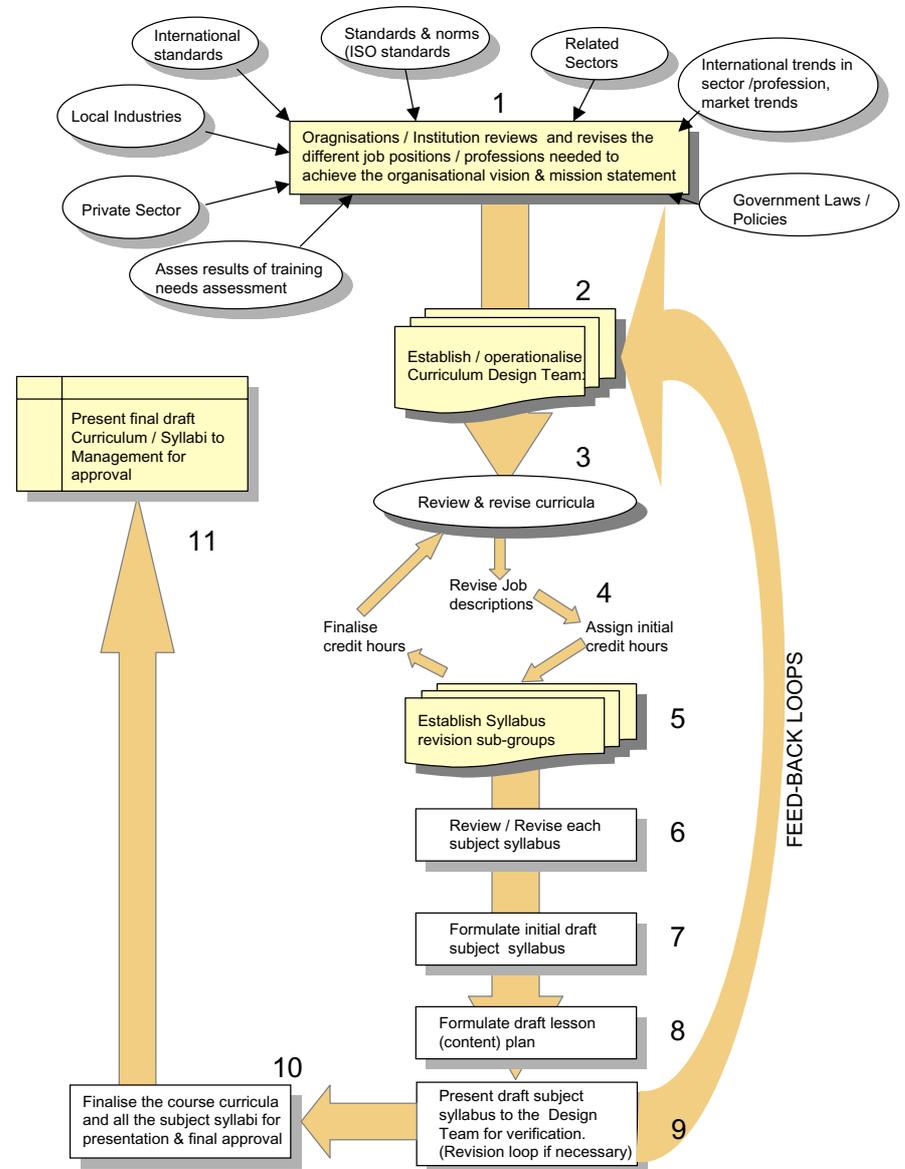
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Figure 2: Curriculum / syllabus stakeholder participation process


Step 3 Review / Revise the Curricula:

On the basis of the recommendations made by senior management of organisation / institution, the Curricula Design Team would revise and update the course curricula. The team would make use of all available information on the training needs, including the any training needs assessment. The team would undertake a systematic review of the curricula for the whole certificate courses, including all of the various subjects that would have to be covered in the curriculum. The team will allocate the initial credit hours for each subject. This will only be indicative initially and will be finalized once all the subject syllabi have been completed.

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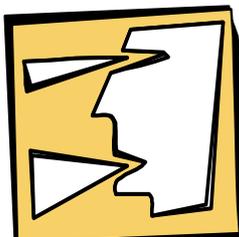
Step 4 Define Job Descriptions and Assign Credit Hours:
The team could also assist in the process of defining proper job descriptions for the relevant positions defined by the management of the organisation / institution, this may prove useful in defining the training needs and thus the curricula of the course. In addition, the Curricula Design Team could assign the initial credit hours that will be allocated to each of the subjects defined in the curricula.

Step 5 Establish sub-team to elaborate the subject syllabus:
Once all the subjects have been defined, then sub-teams can be formed who will be charged with the task of reviewing and revising the syllabi of all of the subjects. The sub-team will formulate the revised syllabi for each subject.

Steps 6 - 8 Review syllabus, formulate initial draft subject syllabus and lesson plan:
The sub-team made up of professionals and trainers will develop the subject syllabus. The template attached to this tool kit / guideline may prove useful for this purpose. The sub-teams will also formulate the lesson / content plans for each subject. Each sub-team will also outline the appropriate techniques for assessing student achievement.

Step 9 Submit initial draft subject syllabus and lesson plan to Curricula Design Team:
Each sub-team will then submit the draft syllabi to the Curriculum design team / board for verification with the curriculum. A feed-back loop between the syllabus sub teams and the Curricula Design Team would be undertaken in which proposed changes would be integrated into the syllabus and duplications and overlaps removed.

Step 10 Finalise the curricula and syllabi:
The Curricula Design Team would be responsible for ensuring that the subjects are in line with the overall course curricula, that duplications and overlaps have been streamlined and that the course is manageable and can be implemented to the level desired in the given time period.

Step 11 Submit revised curricula and syllabus to management for approval:
The Curriculum design team would submit the curricula and all of the subject syllabi to the senior management for final approval.

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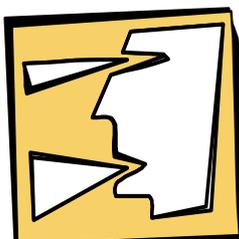
Curricula, Syllabus and Lesson-plan templates

The following templates are designed to guide curricula and syllabus training institutions during the design or revision stage of curricula and syllabi.

Template 1: Curriculum template

### COURSE CURRICULA:

Please describe here the exact name of the certificate course for which the curricula is for.

RATIONALE	:	*The first element of curriculum planning is that of the rationale, or explaining why a curriculum is being developed or revised. The rationale has two steps: target group identification and needs assessment of trainees has to be included in a training course*
		Target Group Identification. *It is critical to identify the primary target group to be reached through the training course..*
		Needs Assessment. *Needs assessments can be formal or informal.*
PRE-CONDITIONS	:	*In some cases the trainees / students may have to have completed another course or have certain knowledge before they can attend this course.*
MAIN SUBJECTS INCLUDED IN THE COURSE	:	*The main subjects that will be covered in the course should be spelled out here While describing the main courses a link should also be drawn with the relevance of the course to the professional needs in the private and other public sectors*
LEARNING GOALS / OBJECTIVES (General, intermediate learning goals)	:	***General Level (Abstract).*** *These goals are the guiding principles behind large-scale training courses. For instance, the Forestry Course may have 1-2 general goal*
COURSE FORMAT	:	*In the course format section it is necessary to describe how this course is structured and how the classes will be carried out. If the course has multiple formats including lectures, practical field training and time in a laboratory then these should be carefully spelled out here.*
TEACHING METHODS / APPROACHES	:	*The section on the teaching methods and approaches should give the students / trainees more information on the pedagogical style of teaching / training that will be undertaken throughout the whole course in all subjects.*
EVALUATION PROCEDURES	:	*Summative evaluations are more formal and seek to evaluate course effectiveness. The evaluations are undertaken by assessing achievement of course objectives and course impact.*

Evaluation procedures continued:
1. ***Inputs level****: resources necessary to conduct a course.*
2. ***Activities level*** *listing activities involved in course.*
3. ***Involvement level*** *lists the number / type of participants*
4. ***Reactions level*** *characterizes the response or reaction of learners to a course and the instructor.*
5. ***KASA change level*** *attempts to measure changes in the knowledge, attitude, skills, and abilities of the students.*
6. ***Practice change level*** *looks at behaviour changes in the learners because of an educational experience.*
7. ***End results level*** *attempts to see if the overall broadest course objectives are met.*

REFERENCES	:	*Literature, books, articles and other relevant works that should be read by the students / trainees should be listed in this section of the syllabus*

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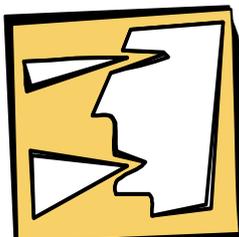
Template 2: Syllabus template

SUBJECT SYLLABUS:

Please describe here the subject for which the following syllabus is for (i.e. Land Survey)

COURSE TITLE :
Write down the exact title of the course for which this is one subject. For example it could be the Forest Ranger Certificate Course

SUBJECT :
The subject title should also clearly define the subject being addressed in the course. Again the selection of the title for the subject should clearly define what the subject is all about.

SUBJECT SYNOPSIS :
The subject synopsis is similarly structured to an executive summary. It describes why the subject exists at all, how it fits into the rest of the certificate course.

SUBJECT CODE :
The subject code is usually defined by the training institution, in this case it would be the Training Unit

CREDIT HOURS :
The Training Unit is responsible for defining the way in which the credit hours are calculated. The total number of credit hours available for the whole Certificate course also has to be assigned by the Training Unit.

SEMESTER :
In this section the semester in which the course will be undertaken has to be defined. In other words, it could be the 3rd Semester of the 2 year Forest Rangers Certificate.

PRE-CONDITIONS :
In some cases the trainees / students may have to have completed another subject or have certain knowledge before they can attend this course.

LEARNING GOALS / OBJECTIVES
(Intermediate and specific learning goals) :
Intermediate Level (Subject Level / Measurable Objectives). *These goals are generally responsible for driving the training course and subjects. They are generally simple statements of what course participants will learn*
Specific Level (Class Session Level / Measurable Objectives). *These are very task-oriented goals and relate to small discrete pieces of learning that must take place to achieve mid-level goals.*

SUBJECT FORMAT :
In the subject format section it is necessary to describe how this subject is structured and how the classes will be carried out. If the subject has multiple formats including lectures, practical field training and time in a laboratory then these should be carefully spelled out here.

TEACHING METHODS / APPROACHES :
The section on the teaching methods and approaches should give the students / trainees more information on the pedagogical style of teaching / training that will be undertaken.

ASSESSMENT PROCEDURE :
The exact grading / assessment procedure should be detailed for the students / Trainees. In this section it is important to describe the percentage allocation for the tests, assignments, practical work, attendance and final examination

STUDENTS RESPONSIBILITIES :
The students / trainees also have a number of responsibilities. Some of these are defined in the Training Unit rules and regulations others may not be as explicit. In this section it would be important to define the exact responsibilities of the students.

REFERENCES :
Literature, books, articles and other relevant works that should be read by the students / trainees should be listed in this section of the syllabus

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Template 3: Course content / lesson plan template

COURSE SCHEDULE / CONTENT

COURSE TITLE: Insert the name of the course as it appears on the syllabus of the course

Nr.	Main Topic	Sub-Topic	Teaching Method	Learning Objectives	Instruments / Equipment	Estimated Time (Hours)		
						Theory	Practical	Total
Insert the number of the course here	Give the exact title of the main topic which forms part of the overall course	The topic being handled in the respective class maybe a sub-topic. In this case define the name of the sub-topic here.	Describe the type of teaching methods that will be used, this may include lectures, group work, field trips, etc reference can also be made to the fact whether visual aids material will be used, powerpoint presentations and son on.	The specific learning objective of this part of the course should be clearly spelled out here. It can be derived from the overall syllabus documents.	In some cases specific instruments or equipment will be sued for the training. For example, the use of GPS, maps, charts etc. These should be noted here..	The number of hours that will be devoted to the theory in this section needs to be noted here	The number of hours that will be devoted to the theory in this section needs to be noted here	The total number of hours to be spent on the theory and practical is summed

References and Sources Used

Cloughesy, M; A. Scott Reed, *Training Managers for 21st Century Flexible Learning Pathways:* A Forestry Extension Perspective on Curriculum Development...; Fisheries Queenstown, NZ, 12.2001

Freire, P., (1972), *The Pedagogy of the Oppressed.* New York: Herder and Herder

Helvetas, (1997) *Social Forestry Support Programme Project Document.* Hanoi: Swiss Agency for Development and Co-operation and Ministry of Agriculture and Rural Development of the S.R. of Vietnam, September 1997.

Hobbs, S.D., A.S. Reed, and B.B. Hobbs. 1993. *Technology transfer:* putting research into practice. Journal of Forestry 91(10):12-14.

Reed, A.S., J.J. Garland, and L.E. Biles. 1996. *Extension forestry organizational processes, programs, and policies.* Presented at International Union of Forestry Research Organizations Extension Working Party, 1996, Freising, Germany.

Rowntree, D., (1981), *Educational Technology in Curriculum Development.* London: Harper and Row

Senge, P., (1990), *The Fifth Discipline.* London: Falmer Press

Taylor, P. (1998b), *Participatory Curriculum Development - Some Experiences from Vietnam and South Africa,* in Training for Agricultural Development, 1996-98. Rome: FAO

Verduin, J.R. 1980. *Curriculum building for adult learning.* Southern Illinois University Press/Carbondale and Edwardsville.