# Syllabus overview:

Analysis of the old and improved version of the Agroforestry module syllabuses taught at the four Forestry Faculties (UB, UFS, UoM, UNIOS)

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**Education Forum** 

## General comments for all modules

- The most (sometimes the only) changes in the new syllabuses are in the domain of teaching content (some content is added or removed), and in the domain of literature.
- Difficulties in formulating goals and outcomes are typical for most analyzed curricula
- The "Teaching methods" section is not written in an appropriate way in some syllabuses.
- <u>The alignment of all elements</u> of the teaching process should be improved in <u>all</u> syllabuses. For example, if the goal is "application of knowledge", this must be visible in the outcomes, teaching methods and assessment method.
- In several syllabuses, numerous well and clearly formulated outcomes are planned, but the teaching/learning methods and assessment methods are very traditional (lectures and term papers).
- However, there are no essential changes either in the domain of teaching or learning, or in the domain of assessment. In fact, there are no changes in the quality of teaching and learning between the two versions of the syllabus.

## 1. Agroforestry Systems UB

#### Changes in syllabuses

7 Total Changes

Content

5 Replacements

0 Insertions

Styling and Annotations

22 Styling

0 Annotations

- Objectives and outcomes have not been changed in the new version of the syllabus.
- However, both require improvement.
- The outcomes must be formulated as measurable indicators of the achievement of the educational goal. If the goal is "...enable students to acquire knowledge..." in the outcomes, it must be visible how it will be measured or recognized that someone has acquired knowledge.
- A useful help for teachers in formulating the outcomes is usual beginning of the outcome phrase: At the end of this course, students should be able to: ...
- If the goal is "acquire knowledge", the corresponding outcomes could be, for example: Students should be able to: demonstrate knowledge of ...; demonstrate understanding of basic concepts of ...; ...define, compare and contrast concepts, or procedures, or...
- In the section with outcomes, two outcomes are formulated in one sentence, and they should (since outcomes are verifiable and measurable statements) be separated. Teachers can formulate one or more outcomes. The number of outcomes should correspond to the number of relevant ways to check whether the goal has been achieved.
- The wording of the outcome that students will show "full ability to apply knowledge..." does not correspond to the statements in the objective part. Changes can go in two directions: Either "application of knowledge" should be visible in the objectives section, or the statement in the outcome section should only have indicators of understanding of the acquired knowledge. Taking into account the information provided in the section on teaching methods and teaching content, in which practical activities of students are foreseen, then there is justification to specify the objective of the course by adding "application of knowledge".
- The outcome of "preparation for doctoral studies" is not precise enough to be measured and verified. Doctoral studies require different competencies, it is not clear in which competency and how this subject is incorporated. Whether the ability to work on sources, to solve problems, to carry out simple research and the like. When the contribution to doctoral studies is specified, it should also be visible in the goal section.

- The teaching methods section has been changed and more elaborated. It is clear that resolving case studies is main teaching/learning method for "applying knowledge" goal.
- However, the statements did not specify what the students will do in field trip and what goal or outcome these students' activities could contribute to.
- The assessment model has not been changed in new version. It is planned that students' practical works before the exam carry slightly more than half of the points. If they are engaged in meaningful relevant activities, there are greater chances that the outcomes (preparation for doctoral studies and applying of knowledge) will be realized.
- It is necessary for the teacher himself/herself to assess the <u>alignment</u> of the key elements of the subject presented in the syllabus by answering the following questions:
  - Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?
  - Are the outcomes linked to the objectives? The outcomes (one or more) must be formulated in such a way that they are verifiable.
  - Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?
  - Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
  - O Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
  - Are all elements aligned: goals, outcomes, content, teaching/learning methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

### Modul 2. Forest amelioration UB

#### Changes in syllabuses

Total Changes	Content	Styling and Annotations
8	4 Replacements	1 Styling O Annotations
0	1 Insertion	
	2 Deletions	Annotation

- The objectives have not been fundamentally changed in the new version.
- There are changes in the "Content" section, but no essential changes in the domain of teaching and learning.
- The "Outcome" section has not been changed in the new version. Sentences describing the outcome are not formulated in appropriate way. Outcomes should be formulated as measurable indicators of educational goal achievement. Outcomes should describe the behavior of students at the end of the teaching/learning process in which we can see and measure whether there are teaching/learning effects. Outcomes should not describe process as it is done in this version of syllabus ("Training for independent observation, planning and maintenance of biological facilities").
- If the goal is to "... introduce students with..." in the outcome part, there should be statements that express how it will be measured, that is, to recognize that someone has acquired knowledge. For example: Students should be able to: demonstrate knowledge of...; demonstrate understanding of basic concepts of ...; ...define, compare and contrast concepts, or procedures, or... Therefore, if the goal is to "introduce" students with the basics of some content, the outcomes must be recognized through the measurable behaviors of students that they know and understand basic concepts, procedures, principles, laws, etc.
- A useful aid for formulating an outcome is a common phrase to start an "outcome sentence": At the end of this course, students should be able to: ...
- Teaching methods have not been changed in the new version. There are several types of teaching: lectures, practical work, exercises. The statements did not specify what the students will do in practical work and exercise, and what goal or outcome these students' activities could contribute to. For effective teaching and learning, it is necessary for students to engage in relevant and meaningful activities related to the objectives of the course.
- The key principle in formulating teaching methods is to explain student activities and to align these learning activities with goals and outcomes. It is not necessary to mention the

- evaluation criteria ("... through the preparation of seminar papers, they show personal initiative in solving problems in this area...").
- The assessment section has not been changed in the new version. Various student activities
  are planned during the course. Students' activities before the exam carry more than half of
  all points.
- It is necessary for the teacher himself/herself to assess the alignment of the key elements of the subject presented in the syllabus by answering the following questions:
  - Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?
  - Are the outcomes linked to the goals? The outcomes (one or more) must be formulated in such a way that they are verifiable.
  - Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?
  - Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
  - Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
  - Are all elements aligned: goals, outcomes, content, work methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

# Modul 3. Trade and marketing of forest products

#### Changes in syllabuses

Total Changes Content Styling and Annotations 3 Replacements 0 Styling O Annotations 4 Deletions

- In the new version of the syllabus, the objectives of the course have been expanded: "to understand terms and relationships...; to enable successful planning and implementation of activities related to the marketing...; mastering techniques for conducting market research; will be introduced to the concepts of bioeconomy and circular economy...; will be trained to use official databases...". It would be much more precise if each goal were formulated in a separate sentence. This approach can facilitate the formulation of appropriate outcomes.
- Outcomes should be formulated as measurable indicators of educational goal achievement. If the goal is "...to understand terms and relationships in the field of trade..." the outcome must show how it will be measured or recognized that someone has acquired knowledge.
- A useful aid for formulating an outcome is a common phrase to start an "outcome sentence": At the end of this course, students should be able to: ..." For example, for the goal "...to understand terms and relationships in the field of trade...", the corresponding outcomes could be: Students should be able to: demonstrate knowledge of...; demonstrate understanding of basic concepts of ...; ...define, compare and contrast concepts, or procedures, or...
- The realization of the goal "enable successful planning and implementation of activities related to the marketing of these products on the market", can be measured with several outcomes. For example: ...students will be trained to independently solve basic problems in the field of trade and commodity; students will master access and use of official databases; students will be trained in the effective use of market research technique... To make it easier to check whether the goals have been achieved, several outcomes can be formulated that compositely describe the educational goal related to the application of knowledge.
- Formulation of outcomes should be improved. It is much more efficient if each outcome is formulated in separate sentence. Outcomes should describe the behavior of students at the end of the teaching/learning process in which we can see and measure whether there are teaching/learning effects. Outcomes should not describe process as it is done in this

- version of syllabus ("Acquired theoretical and practical knowledge through the interpretation of teaching content with a problem-based approach...")
- Teaching methods, the most important element of the syllabus, are somewhat more precisely worded compared to the previous version (Lectures, class discussions, consultations, visiting experts, seminar work and case studies, presentations and interactive work in the class). It is not clear what are the difference between "class discussions" and "interactive work in the class"?
- In addition, it is positive that there are a greater number of different teaching and learning methods, because this increases the possibility of achieving goals and outcomes. The question arises whether, with the expected load of students (only 2 ESPB), all the planned work methods can be practiced and whether all the planned goals can be achieved? In a student-centered approach to teaching, time management is very important. This means that we have to leave enough time for students to be deeply involved in the tasks. If the time is too short, the student will engage in fake activities.
- The question that the teacher should constantly ask himself/herself is: "Can the chosen teaching/learning methods lead to the planned goals? Are students in a position to practice the skills needed to realize the goal of applying knowledge through "discussion, term papers and case studies"? Do these situations sufficiently engage the student's capacity for problem solving, data selection and organization, application of research techniques, professional decision making, team collaboration, and the like (all competencies required for successful trading and marketing)?"
- Although the planned methods of teaching and learning are diverse, part of the assessment is quite traditional (activities during classes, seminars and exams). Case studies are not mentioned in the assessment as part of the pre-exam activities, although it could be a good way to assess the 'application of knowledge' that appears in the objectives. A significant number of points are carried by the written and oral exam. The teacher must ask himself what kind of questions appear in these exams; do they require the application of knowledge? If we include "application of knowledge" in the objectives, then it must appear in the assessment. If the exam questions check only knowledge and understanding of basic concepts and procedures, students will not take seriously our intentions to train them for practice and will learn in a classic way. These are all questions for the teacher's reflective practice, since we have no insight into what, which tasks, make up the knowledge testing situation.
- It is necessary for the teacher himself/herself to assess the alignment of the key elements of the subject presented in the syllabus by answering the following questions:
  - Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?

- Are the outcomes linked to the goals? The outcomes (one or more) must be formulated in such a way that they are verifiable.
- Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?
- Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
- Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
- Are all elements aligned: goals, outcomes, content, work methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

# Modul 4. Agroforestry Systems UFS

## Changes in syllabuses

- In the new version of the curriculum, the course objectives are written in a less appropriate way. The statement of educational objectives expresses only what the teacher will teach the students ("...to give detailed information..."), but it is not clear what we expect the students are going to learn by the end of the course. A better formulation of the objectives is in the old version of the curriculum (...to improve the knowledge and skills of bachelors for more efficient use of land...).
- The curriculum does not specify outcomes, so it is difficult to assess what students are expected to know and be able to do at the end of the course.
- Therefore, there is a need for further specification of course objectives.
- This is especially obvious if several aspects of the curriculum are compared at the same time: Goals, Teaching methods, Assessment and Requirements. Planned Teaching methods include individual work on assignments ("preparing research project reports"). Coursework can encompass a wide range of activities, so it is not clear what kind of students' activities is planned.
- Other sections (Course Description, Teaching Methods) mention other learning environments (Vrazhdebna Training and Experimental Field Center in real production conditions), and the "requirements" section only mentions the lecture hall.
- The method of assessing and evaluating students' activities has not changed in the new version of the curriculum, so we can assume that the activities in the course have not changed.
- This further means that the alignment of all teaching aspects presented in the curriculum should be improved. It should be clearly stated what exactly the objectives are in the domain of knowledge and what in the domain of skills, what exactly the students will know and what they will be able to do at the end of this course (that's why there is an Outcomes section is very useful). It is necessary to specify the environments in which teaching and learning take place, teaching methods, which teaching method can ensure the realization of which teaching/learning goal, etc.

- It is necessary for the teacher himself/herself to assess the alignment of the key elements of the subject presented in the syllabus by answering the following questions:
  - O Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?
  - Even if it is not mandatory, the teacher should formulate the outcomes for the subject he/she is teaching. The outcomes (one or more than one) must be linked to the objectives and must be formulated in such a way that they can be verified. An outcome statement usually begins with the phrase: "At the end of this course, students should be able to...". This can help the teacher to be precise with her/his expectations of the teaching/learning process.
  - Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?
  - o Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
  - O Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
  - Are all elements aligned: goals, outcomes, content, work methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

## Modul 5. Mediterranean ornamental plants UoM

### Changes in syllabuses

Total Changes Content Styling and Annotations

6 Replacements
0 Insertions
3 Deletions

Styling and Annotations
57 Styling
0 Annotations

- This syllabus differs the most from old version, but majority of changes were in styling domain.
- Goals and outcomes are adequately defined. The changes in this section in the improved version of the syllabus relate only to the introduction of agroforestry content. It is planned various outcomes to be realized in this course (to recognize...; apply knowledge...; suggest the optimal way...; recognize the importance...; organizes maintenance of gardens).
- "Teaching method" section has several teaching methods: frontal teaching, student-centred learning where students are given certain tasks or chapters that they need to know; practical work where students learn about morphological characteristics of plant species; field visit of ornamental plants nurseries). The outcomes seem to be more varied and ambitious than the planned teaching methods. Most of the teaching and learning activities seem to be about knowledge. The question is how the student will learn to "apply the knowledge"
- A significant number of points in the "Assessment" section is intended for the "practical exam". However, it seems that it is about checking the knowledge and understanding of the morphological characteristics of plant species. The question arises as to how to check whether students have acquired the skills foreseen in the outcomes. The term paper as a type of assignment that carries points in the "Assessment" section, was not previously mentioned either in the "Teaching methods" or in the "Outcomes". What is the purpose of the term paper? What is the task of the students when they work on it?
- It is necessary for the teacher himself/herself to assess the alignment of the key elements of the subject presented in the syllabus by answering the following questions:
  - Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?
  - Are the outcomes linked to the goals? The outcomes (one or more) must be formulated in such a way that they are verifiable.

- o Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?
- Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
- Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
- Are all elements aligned: goals, outcomes, content, work methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

# Module 6. Forestry in rural areas UoM

## Changes in syllabuses



- This syllabus differs the most from old version. Nevertheless, those changes are more in formal aspects of syllabus, not in the content.
- The Goals and Outcomes are very well defined. The changes in this section in the "improved version" of the syllabus relate only to the introduction of agroforestry content.
- It is planned various outcomes to be realized in this course (Analyze specific problems...; Use knowledge...; Integrate the knowledge of related disciplines...; Apply agroforestry practices...; Use non-timber...; Know the production methods). Most of the outcomes relate to the acquisition of some skills and competences, not just knowledge.
- "Teaching method" section has not been changed in the "improved version". In the contrast to well defined goals and outcomes, the "Teaching method" section has statements that are not precise enough ("Teaching, individual and group work of students, preparation of seminar papers, consultations"). The outcomes seem to be more varied and ambitious than the planned teaching methods.
- "Assessment" section has not been changed in the "improved version". Models for evaluating student participation and acquired knowledge and skills are very traditional (Two colloquiums with 20 points each, a seminar paper up to 5 points, attendance, and activity during class up to 5 points and a final exam with 50 points). The main problem is that when the "Outcome" section mentions "Application of knowledge", the "Assessment" section should specify the assessment models that evaluate the students' competencies and skills. This means that alignment of all elements of syllabus should be improved.
- It is necessary for the teacher himself/herself to assess the alignment of the key elements of the subject presented in the syllabus by answering the following questions:
  - Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?

- Are the outcomes linked to the goals? The outcomes (one or more) must be formulated in such a way that they are verifiable.
- Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?
- Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
- Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
- Are all elements aligned: goals, outcomes, content, work methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

# Module 7. Agroforestry UNIOS

## Changes in syllabuses

Total Changes

Content
22 Replacements
47 Insertions
17 Deletions

Styling and Annotations

15 Styling

O Annotations

- It could be said that this syllabus has really been changed and improved because most of the changes relate to the insertion, replacement and deletion of content.
- The improved version of syllabus has "Outcome" section that previous didn't have.
- Although the outcome statements are very well defined, the wording of the objectives needs to be improved. The goals are not formulated in a good way. Either they say what the teacher will do, or they indicate the teaching content, but they do not indicate what we want the students to know, be able to perform, have competencies, etc. at the end of the course.
- The "Teaching method" section is missing in the new version of the curriculum as well as in the old one. This is a very significant problem because teaching/learning methods are a key element of the teaching process. The student will learn what he practices during the lesson, especially when the intended outcomes include skills and practical knowledge.
- Some students' activity can be recognized through detailed assessment model. Exercises, term papers, reflective review are planned. The most important question is how the skills and competencies planned in the "outcome" part will be taught.
- It is necessary for the teacher himself/herself to assess the alignment of the key elements of the subject presented in the syllabus by answering the following questions:
  - Are the objective(s) well formulated to maintain the function of the course in the development of students' professional competencies at the master's level? At what level do we want the students to master the subject, do they only have to know and understand certain knowledge or do they have to practically apply the knowledge or do we hope that they can achieve more complex forms of knowledge (e.g., to analyze, to evaluate or to create a new solution)?
  - Are the outcomes linked to the goals? The outcomes (one or more) must be formulated in such a way that they are verifiable.
  - Is the choice of content appropriate for the desired goals and outcomes? Is the volume of content being taught overwhelming?

- Is the choice of teaching/learning methods in alignment, are they aligned with the set goals and outcomes? The choice of teaching and learning methods is a key aspect of the syllabus and the entire teaching and learning process. For example, we cannot expect that a student will be able to apply something if they have not practiced that application, or that they will be able to solve a problem if they have not practiced solving problems. Many educational goals can be realized only through independent practice of relevant activities by students.
- Is the method of assessment and evaluation of student activities harmonized with all previous elements? For example, if we stated "application of knowledge" in the objectives, a "paper-and-pencil" type test as an exam is not consistent with "application of knowledge". This kind of evaluation can only test students' inert knowledge.
- Are all elements aligned: goals, outcomes, content, work methods, evaluation of student learning after and during the teaching process? Assessment of general alignment (alignment) gives the opportunity to locate "problems", weak points of the syllabus that require further refinement.

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