

ERASMUS PLUS HIGHER EDUCATION CAPACITY BUILDING

Agreement

on instructional strategy for curricula design in the framework of the project



Erasmus+ Project

**New and Innovative Curricula in Precision Agriculture / (NICOPA)
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Executive Summary

Central to the NICOPA curricula design process will be the systematic analysis of curricula offerings. The analysis phase will consist of formative, summative, qualitative, and quantitative measures to determine the value and effectiveness of the curricula offerings. This multi-level evaluation system incorporates regular reviews of student performance, user feedback, assessment performance analysis, and district, state, and national content standards and assessments. NICOPA curricula development will also emphasize innovation, effective implementation, evaluation of student learning, and continuous improvement. NICOPA will seek to balance enhancements and additional options with the recognition that students have a wide range of learning styles and needs.

Decisions about improvements and updates to the curricula will be also guided by feedback from a variety of critical stakeholders: teachers and administrators, students and parents, university boards, and outside evaluators such as accrediting organizations and sponsors.

A leader/specialist for the development of the curricula in the university and teachers responsible for the development and introduction of new disciplines, courses and curricula should be appointed in each partner university. It is advisable to involve these teachers in training in European universities in 2019-2020.

The curricula description must meet the standards in Framework for Qualifications of European Higher Education Area and the requirements of national qualification frameworks; the curricula description has to be in the English language.

Curricula description should be designed according to the template of the curriculum/module description provided in the Information Management Package.

The template should include:

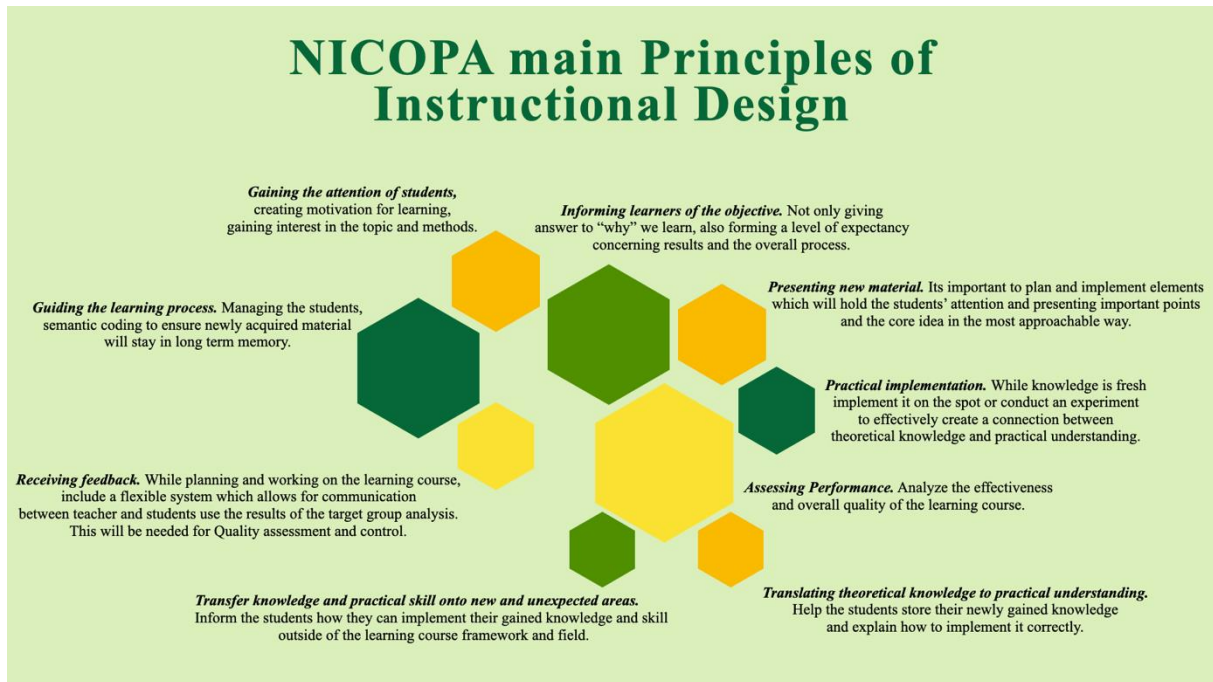
- (1) Degree type (BA, MA) and title of the study programme;
- (2) Duration and language of instruction. It is recommended to introduce at least 50% of lessons/courses in English;
- (3) Prerequisites for the described new/modernized curricula: obligatory admission requirements and requirements for study progress (test, exam, thesis);
- (4) Aims of the new/modernized curricula and competences foreseen by the study programme should be clearly described;
- (5) Expected learning outcomes (knowledge, skills, competences in the terms of “know-understand-can”) should be clearly defined;
- (6) The academic structure of the study programme should be described in detail (courses/modules, lecture face-to face; seminar; webinar; ECTS points and students’ workload). The ECTS grading scale ranks the students on a statistical basis;
- (7) Work hours of lectures, seminars, practical works, laboratory works should be balanced;
- (8) Content of the study programme should be shortly and comprehensively described;
- (9) Teaching materials and syllabus (textbooks, manuals, tutorials, handbooks) using modern educational technologies not older than 3 years; not less than 50% of the materials should be in English language.

The process of development of new and modernized curricula should be carried out according to the ADDIE model. This model is designed to support not only quality course development but a feedback loop that ensures continuous improvement. Currently ADDIE is regarded as the standard approach to developing new learning courses. This agile process is incorporating the

elements of Analysis, Design, Development, Implementation, and Evaluation.

Main Principles of Instructional Design

9 principles based on the “9 instructional events and corresponding cognitive processes” by the American psychologist Robert Mills Gagne, one of the founders of instructional design and author of several books on education:



NICOPA curricula development is guided by these key principles and tenets:

- ✓ Curricula fosters breadth and depth of understanding in the subject area;
- ✓ Content is aligned to national and state standards;
- ✓ Curricula is supported by quality, reputable, recently published textbooks and/or proven instructional resources and materials;
- ✓ Content and assessments are aligned, accurate, and unbiased;
- ✓ Content is current, relevant, and provides real-world applications;
- ✓ Content is appropriate for the learner (age, ability, background, learning style, etc.);
- ✓ Instructional design is adaptable and flexible in order to best meet individual needs of students;
- ✓ Instructional design provides students opportunities to improve learning skills using technological tools;
- ✓ Lesson structure is consistent and supports learning sequence of motivation, instructional content, application activities, review of key concepts and assessment;
- ✓ Scope of course is appropriate with regard to the amount of content, length of course and lessons, and course requirements;
- ✓ Lesson introduction effectively presents its objectives, assesses prior knowledge, sets expectations, and motivates;
- ✓ Background information prepares students to access new content, skills, and strategies;
- ✓ Curricula includes opportunities for developing problem-solving and critical thinking skills and real-world applications;
- ✓ Curricula includes opportunities for collaboration and independent study;
- ✓ Curricula incorporates timely and appropriate feedback to students.

ADDIE Model – 5 Stages of Curriculum Development

1. Need Analysis

- ✓ Formulating the subject field and the objectives of the analysis;
- ✓ Defining who the learners are to conduct need analysis;
- ✓ Creating questionnaires for each target group;
- ✓ Conducting surveys, collecting and analyzing information → creating a report and a list of needs;
- ✓ Creating a list of competencies (knowledge and skills) which should be gained from the course.

Possible target groups: Employers, students, students' parents, alumni, first year students, students who have not been accepted to university, schoolteachers, university lecturers, members of student selection committee.

2. Design

Creating a Curriculum description:

- ✓ Name of the course, target group, time effort of the participants (including theoretical and practical part, practical exercises, independent work, exams and tests, excursions etc.);
- ✓ Description of the competencies which will be conveyed (what will the participant know, understand and be able to do after successfully participating in the course);
- ✓ Time and quality plan of course (deadlines, responsibilities, control procedures and quality assurance).

Creating a list of possible academic content:

- ✓ List of individual seminars within the course, description of each seminar (goals and results), planning learning aids and teaching materials, planning for classroom and laboratory, planning excursions, etc.

Assessing plans and descriptions while creating them:

- ✓ Organizing internal and external quality control;
- ✓ Discussing academic content and plans with representatives of the target groups;
- ✓ Last modifications taking into account opinions of experts and results of discussions.

3. Development

- ✓ *Creating a draft version of the academic content:* complete list of individual seminars within the course, complete description of each seminar (goals and results), list of learning aids and teaching materials, plans for classroom and laboratory (buying, installing all necessary materials), preparing excursions, etc.
- ✓ *Preparing the educational and technical staff:* Short training courses on the theme of the new course. Testing presentations and seminars for student pilot groups (representatives of target groups) implementing new material and conducting in classrooms.
- ✓ *Assessing drafts and test runs while creating and conducting them.* Conducting internal and external quality control. Discussing academic content and test seminars with representatives of the target groups. Making last modifications on the draft taking into account opinions of experts and results of discussions.

4. Implementation

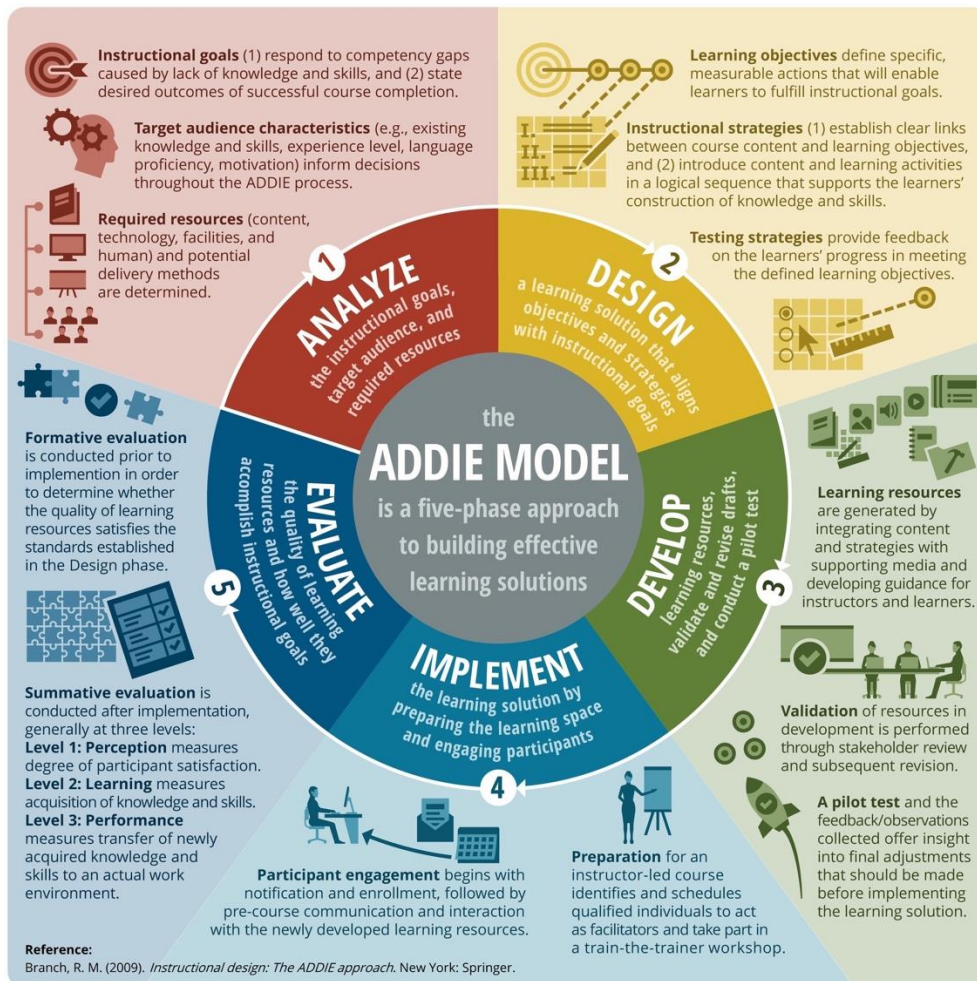
- ✓ Conducting course in test phase quality assessment and quality control of the academic content. Conducting internal and external quality control. Discussing

- academic content and test seminars with representatives of the target groups.
- ✓ Making final modifications on the course, taking into account opinions of experts and results of discussions.

5. Evaluation

After gathering first information on the learning course its effectiveness must be evaluated.

- ✓ Comparing set goals with real outcome academic content, the gained competencies of participants, the exercises (are they doable? are they conducive?).
- ✓ Modifications on the course as a whole or on certain elements must be made → course must be reviewed and renewed as needed.



Modernization of Existing Learning Courses

- Analyzing new needs and requirements;
- Conducting a review analysis;
- Analyzing whether the academic content of the course is in accordance with the new requirements;
- Reviewing the quality assurance system and modifying it if needed;
- Creating a plan on steps to improve the existing learning course.

Quality Control

Quality Assessment of the modernized/new curricula/courses/modules should be conducted in accordance with the document “Recommendations for Quality Assessment for Curricula NICOPA” by responsible quality groups assigned in each partner university.

1. Quality Group

Each partner university should create a **quality group** that will be responsible for the quality level of each new or modernized curricula/course/module in the target field. Quality groups should organize constant monitoring and control the implementation of the relevant tasks regarding the process of modernization and development of curricula/courses/modules.

2. Quality Indicators

Quality group in each partner university should develop its own **quality indicators** for peer reviews of each new/modernized curricula/courses/modules or curricula package in the target field. It should be done before creating new or modernizing the old ones.

3. Peer evaluation of new/modernized curricula/courses/modules

Quality assessment of implementation of new and modernized curricula/courses/modules will be carried out using **peer review template**. Peer reviewers will use the quality indicators to evaluate new/modernized programmes.

Each partner university should create a list of potential peer reviewers (organizations or persons) that it considers competent enough to conduct a peer review of its new/modernized curricula/courses/modules.