Template SSC-based
Objectives-Module-Matrix
TC 13 Physics
Bachelor

Consistency Between ASIIN ILO's with NCAAA ILO's of B.Ed. in Physics Programe

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Guidance for the development of an objectives-modules-matrix

An objectives matrix allows for the alignment of a degree program in two ways:

1. A simple objectives-modules-matrix maps the intended learning outcomes (competency profile) of a degree program against the modules that contribute to achieving this profile.
2. A SSC-based objectives matrix is furthermore a tool for the alignment of the expected competency profiles with the exemplary learning outcome statements with (predominantly) suitable Subject Specific Criteria (SSC) of ASIIN from the perspective of the HEI. These are available for technical and natural sciences as well as for typical interdisciplinary programs.

As a first step, this „mapping"-method helps to determine whether the learning outcomes of a degree program reflect the exemplary learning outcome statements of the SSC, complement them or deviate from them.

Thereby the learning outcomes statements of the SSC represent the ideal degree program objectives of the respective subject area. In case of deviating orientation of a program or of interdisciplinary degree programs it might be useful to provide complementary learning outcomes. Deviations from the SSC depending on the profile and the orientation of the degree program are possible and can be explained by the HEI.

As a second step, one should reflect to what extent each module of a degree program contributes to achieving one or several learning objectives. The defined intended learning outcomes on program level should be reflected in the relevant module descriptions. Thus a horizontal assessment functioning in two directions is possible. It can be analyzed whether all learning objectives at program level are covered by the modules. Additionally, it can be assessed whether the overarching learning objective at program level is reflected appropriately in the module objectives at the module level.

The objectives-modules-matrix can also be used internally at the HEI as a tool when drafting and further developing objectives and learning outcomes.

Program Intended Learning Outcomes

Domain		Code	Intented learning Outcomes (NCAAA)
by successful completion of this program, students would be able to:			
A	Knowledge	a1	Recognize the basics, principles, and theories of physics, in the different branches.
		a2	Name the basic concepts in Sceince Education, the Arabic language, and Islamic studies.
		a3	Define the basic concepts in physics, Education Assistance, such as mathematics, chemistry, and computer.
B	Cognitive Skills	b1	Use the principles and theories of mathematics in solving physics problems of different branches.
		b2	Use of various hardware components of the physical laboratory to conduct physical experiments.
		b3	Apply the knowledge gained and the use of modern teaching strategies in explaining the physical systems.
C	Interpersonal Skills and Responsibility	c1	Take into account the ethical and professional principles in the discussion of issues related to the teaching profession.
		c2	Apply the professional and ethical principles to the teaching profession.
		c3	Develop the cooperative learning through discussions and collaborative work in the classroom.
D	Communication and Numerical Skills	d1	Use computer programs in physical systems applications.
		d2	Take responsibility for self-learning and lead the team.

Objectives-Module-Matrix, TC 13 Physics Bachelor (B.Ed. in Physics).

Objectives-Module-Matrix for the degree program XYZ

Objectives-Module-Matrix, TC 13 Physics Bachelor (B.Ed. in Physics).

TC 13 – Physics - BachelorASIIN SSC	Intended Learning Outcomes[1] of the Degree Program	Corresponding Modules
Specialist Competences		
Graduates		
They have sound knowledge of classical physics (mechanics, electrodynamics, thermodynamics, vibrations, waves and optics) and are familiar with the fundamentals of quantum, atomic and molecular, nuclear, elementary particle and solid state physics;	**Recognize the basics, principles, and theories of physics, in the different branches.**	PHYS111, PHYS124, PHYS126, PHYS123, PHYS122, PHYS213, PHYS214, PHYS215, PHYS223, PHYS314, PHYS224, PHYS311, PHYS322, PHYS324, PHYS412, PHYS413, PHYS415, PHYS423.
They are familiar with important mathematical methods used in physics and can use these to solve physics problems;	**Use computer programs in physical systems applications.**	MATH111, PHYS121, PHYS212, PHYS221, PHYS311, PHYS322.
They have an extensive understanding of the fundamental principles of physics, their inherent relation and mathematical formulation and, based on this, have acquired methods suitable for theoretical analysis, modelling and simulation of relevant processes.;	**Use computer programs in physical systems applications.**	PHYS215, PHYS314, PHYS411, PHYS421.

[1] See Section 2.1 „Program Objectives and Learning Outcomes“ of the *General Criteria for the Accreditation of Degree Programs* of ASIIN, as of 2016

They have applied their knowledge to physics problems in an exemplary manner and studied some areas in greater depth, thereby acquiring a first basis for problem solving competence;	**Use the principles and theories of mathematics in solving physics problems of different branches.**	PHYS223, PHYS322.
They have a basic capacity to comprehend physics problems. This will in general however not yet facilitate a deeper understanding of current research areas;	**Apply the professional and ethical principles to the teaching profession.**	PHYS421.
They are therefore in a position to independently classify physics-based and to some extent also interdisciplinary problems that require a target-oriented and logic-based approach, and to analyze and/or solve them by using natural scientific and mathematical methods.	**Use the principles and theories of mathematics in solving physics problems of different branches.**	PHYS223, PHYS221, PHYS322, PHYS412, PHYS411.
They are familiar with basic principles of experimentation, are able to use modern physics measurement methods, and are in a position to assess the significance of results correctly	**Use of various hardware components of the physical laboratory to conduct physical experiments.**	PHYS126, PHYS213, PHYS22, PHYS224, PHYS312, PHYS313, PHYS323, PHYS324, PHYS413, PHYS415, PHYS412, PHYS423, PHYS424.

They have generally also acquired an overview knowledge in selected other natural science subjects or technical disciplines	**Define the basic concepts in physics, Education sceinces, such as mathematics, chemistry, and computer.**	EDU116, EDU17, EDU118, MATH111, CHEM111, EDU126, EDU216, EDU217, EDU226, EDU316, EDU317, EDU326, EDU327, EDU416, EDU417.
They are able to apply their knowledge to different fields and act responsibly in their professional activity. They are moreover able to recognize new trends in their subject area and integrate the relevant methodology – possibly after appropriate qualification – into their further work.	**Name the basic concepts of in Science Education, the Arabic language, and Islamic studies.**	ARAB101, SALM101, SALM102, SALM103, SALM104, EDU117, EDU326, EDU327, EDU416, EDU417.ENG101, FCH101, SOCI101, VOW101, LHR101, ENT101, HAF101, EDU427.
Such graduates		
are able to continuously and self-reliantly extend and deepen the knowledge acquired in the Bachelor's degree program.	**Take responsibility for self-learning and lead the team.**	EDU217, EDU221, EDU411, EDU421, EDU427.
are familiar with suitable learning strategies (lifelong learning) for this;	**Apply the knowledge gained and the use of modern teaching strategies in explaining the physical systems**	EDU326, EDU417.
are in particular capable of a consecutive Master's degree program in principle;		
Social Competences		

Graduates		
They have learnt communication techniques and are familiar with the basic elements of the relevant specialized English;		
are aware of social and ethical responsibility in their actions and are familiar with the professional ethical principles and standards of physics;	**Take into account the ethical and professional principles in the discussion of issues related to the teaching profession.**	EDU217, EDU221, EDU411, EDU421, EDU427.
They are able to solve a simple scientific problem and to present their results orally (lecture) and in writing (demonstrated in a Bachelor's thesis) and	**Develop the cooperative learning through discussions and collaborative work in the classroom.**	This applies to most courses.
They have gained initial experience with regard to generic qualifications (e.g. time management, study and work techniques, willingness to cooperate, capacity for teamwork, ability to communicate, rules of good scientific practice) in their degree program, and are able to develop these skills further.	**Take responsibility for self-learning and lead the team.**	EDU217, EDU221, EDU411, EDU421, EDU427.