Curriculum Overview of Master Degree of Biology Education

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Curriculum Overview
Master Degree of Biology Education

Master Degree of Biology Education curriculum is structured to match the competence profile with the currents, trends and future issues, and the stake holder of education. The curriculum criteria that needs to be met the user's needs in biology education field. The concentration definition is based on education issues and development sectors to ensure student's competences on the biology education. The curriculum consist of 4 semesters which are presented in a curriculum map. The curriculum map is structured to correlate to meet a vision-mission of University, faculty with the program learning outcomes

1. Vision of Master's Degree of Biology Education Study Program

To become an excellent study program in education and digital technology-based biology education at the ASIAN level.

2. Qualification Profile of Master's Degree of Biology Education Study Programme

The Qualification Profile (QP) of master's degree in Biology Education Study Program and its specifications is presented in the table below.

Table 2.1 QP of Master's Degree of Biology Education Study Programme

No	Occupational Profile	Specifications
1	Educators	able to design, implement, and appropriately evaluate technology-based biology learning.
2	Researchers in Biology Education	have qualification and active performance in national and international scientific forums and able to publish research results in accredited national and international journals
3	Consultant and Developer in Biology Education	have the ability to analyze curriculum, learning media, and evaluation problems in the biology education field, thus providing appropriate solutions.

3. Programme Education Objective (PEO) of Master's Degree of Biology Education Study Programme

Program Education Objectives of master's degree of Biology Education Program are to produce graduates as educators, researchers, and consultants in the field of Biology Education, which is described as follows:

1. able to design, implement, succeed, and assess biology learning based on local wisdom and digital technology.
2. able to design and carry out research in biology and biology education and communicate it in various scientific forums.
3. able to design curriculum and management of education units as well as implementing in lifelong learning.

4. Program Learning Out-came (PLOs) of Master's Degree of Biology Education

Learning Outcomes of PLO for Master's Degree of Biology Education Study Program are presented in Table below. The PLOs are classified into two areas of social competence and specialist competence.

Table 4.1 PLOs of Master's Degree of Biology Education Study Programme

Area	Code	Learning Outcome
Social Competences	PLO1	Have integrity and professional ethics, self-development, and make innovations to improve the quality of education and community lifelong learning (PLO1).
	PLO2	Able to apply analytical, critical, innovative, and abstraction thinking skills in the field of biology education (PLO2).
	PLO3	Able to work together in multicultural groups and collaborate with various parties/stakeholders in solving a problem in the field of education (PLO3).
Specialist Competences	PLO4	able to analyse the basic philosophy and theory in the study of biology and biology learning (PLO4)
	PLO5	Able to design and manage classical, laboratory, natural and digital/virtual-based biology learning in education units (PLO5)
	PLO6	Able to design and publish a research through various approaches/methods to solve problems in the field of biology education (PLO6).
	PLO7	Able to manage and develop digital technology-based biology learning tools according to the characteristics of students (PLO7).
	PLO8	Able to design and conduct evaluations and assessments of learning in educational units (PLO8).
	PLO9	Able to improve mastery of biological material in the fields of plant and animal structure, environment, conservation, biomolecular, and biotechnology (PLO9).
	PLO10	Able to analyse and synthesize problem solutions in biology learning through interdisciplinary, transdisciplinary and multidisciplinary approaches (PLO10).

The relevance between PLO and PEO of Master's Degree of Biology Education Study Program is described in the matrix below.

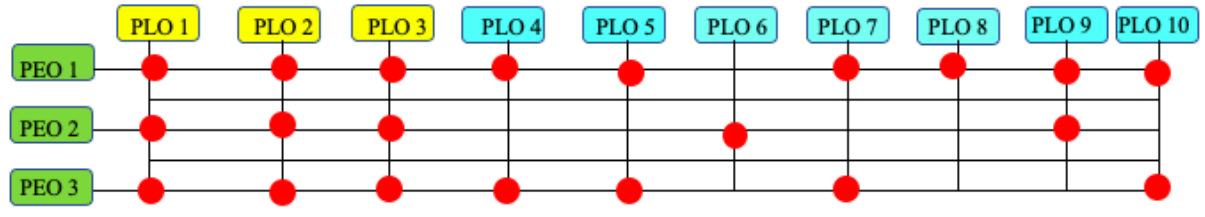

Figure 4.1 Matrix of PLO and PEO of Master's Degree of Biology Education Study Program

5. The Subject Specific Criteria (SSC) of Master's Degree of Biology Education

The Subject Specific Criteria (SSC) are given from ASIN SSC 10 about Life Sciences for Master's Degree, which can be accessed online at https://www.asiin.de/. The description of SSC is presented in the table below:

Table 5.1. SSC of Master's Degree of Biology Education

SSC (Subject-Specific Criteria)		
Subject-Specific Competences	SSC 1	have advanced their knowledge in core subjects, subject-relevant or interdisciplinary subjects
	SSC 2	are in a position to discuss complex life science issues as well as own research results comprehensively and in the context of current international research and present these in writing (e.g., Master's thesis, scientific publication) and orally (e.g., lecture with free discussion)
	SSC 3	have gained subject-specific and interdisciplinary problem-solving competence
General and Social Competences	SSC 4	have gained the ability to combine specialized knowledge of various component disciplines, carry out independent scientific work and organize, conduct, and lead more complex projects, as well as publish the results
	SSC 5	have acquired social competencies, such as abstraction ability, systems analytical thinking, capacity for teamwork, ability to communicate, international and intercultural experience, and others, and are therefore especially prepared to take on leadership responsibilities
	SSC 6	are in a position also to assess the social and environment-related effects of their actions

The relevance of PLO and SSC of Master's Degree of Biology Education is presented in the matrix below.

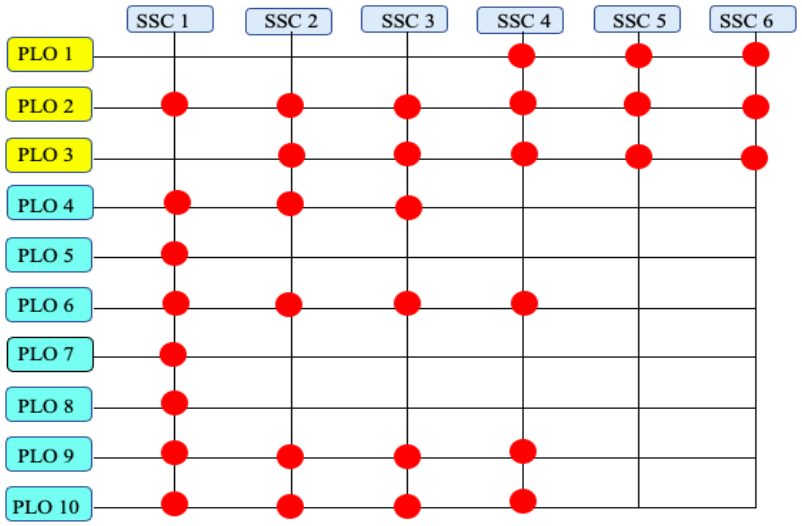

Figure 5.1. Matrix of PLO and SSC of Master's Degree of Biology Education Study Program

6. The Curriculum Structure

The curriculum map is structured into: pedagogy, biology field, and Thesis Complex, where the courses have to be taken consecutively. The Pedagogy and biology studies provide professional and practical exercises to an educator, researcher, and public policies or biology education analyst. It is an estuary to all studied courses. While the thesis complex is designed to support the forming of intended graduate profiles as a researcher in biology education, curriculum developer, and public policy in biology education. Both research in public policies or academic research with the purpose of developing theories.

Table 6.1 Curriculum Structure of Master's Degree of Biology Education Study Program

No	Course Group	Credits	ECTS
1	General Course	9	23.4
2	Compulsory Courses	29	75.4
3	Elective Courses	6	15.6
Total		44	114.4

Below is the latest curriculum map of The Master of Biology Education Program.

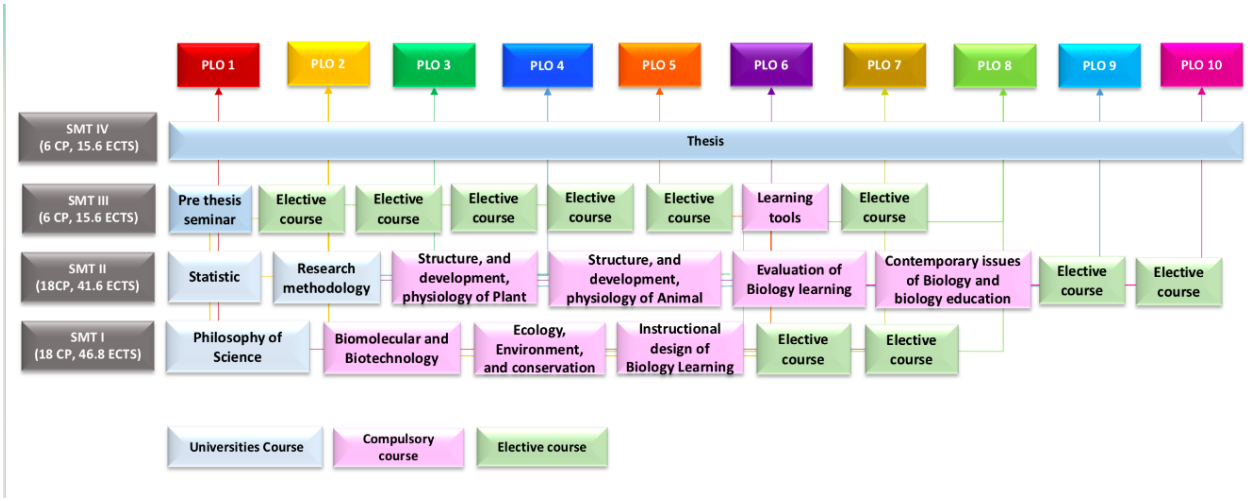

Figure 6.1. Curriculum map.

Table 6.2. Course Distribution

Semester	Course code	Course Name	Credit (SKS)	ECTS
1	30081013	Philosophy of science	3	7,8
	34181024	Design instructional of biology	4	10,4
	34182014	Genetic Molecular dan Biotechnology	4	10,4
	34182033	Ecology, environment dan conservation	3	7,8
		Elective course 1	2	5,2
		Elective course 2	2	5,2
		Amount	**16**	**46,8**
2	30082013	Statistic	3	7,8
	30082023	Research Methodology	3	7,8
	34182024	Evaluation of Biology learning	2	5,2
	34363072	Structure, Development and Physiology of Plant	2	5,2
	34363082	Structure, Development and Physiology of animal	2	5,2
	34182042	Contemporary issues of biology and biology education	2	5,2
		Elective course 3	2	5,2
		Amount	**18**	**41,6**
3	341831042	Biology learning tools	2	5,2
	30083042	Thesis Seminar	2	5,2
		Elective course 3	2	5,2
		Amount	**6**	**15,6**
4	30084024	Thesis	6	15,6
		Amount	**6**	**15,6**
			46	**119,6**

Table 6.3. List of Elective Courses

No.	Course Codes	Courses	Credits	ECTS	Semester
1	34363022	Neuroscience	2	5,2	Available in every semester
2	34361022	Scientific Publications	2	5,2	
3	34261012	Bioinformatics in Biology Learning	2	5,2	
4	34363012	Information Technology in Biology Learning	2	5,2	
5	34363052	School Based Management	2	5,2	
6	34361032	Online Learning Development	2	5,2	
7	34361042	Applied Microbiology	2	5,2	
8.	34261002	Digital Learning tools	2	5,2	
9.	34361052	Out Door learning Model	2	5,2	

The subject matter of Master of Biology education offers the unique opportunity to earn the master's degree while simultaneously pursuing a the high skill in pedagogy and education policy, biological subject and genera subject.

Table 6.3 Subject Matter (SM) of Master Degree of Biology Education Study Program

Kode	Subject Matter (SM)	Desriptions	Courses
SM1	Pedagogical subjcet	It demonstrate mastery of sophisticated theoretical subject matter of Pedagogic competence. In this subject that study design and develop of the learning process include from Learning planning, implementation and evaluation. it engages in rigorous intellectual analysis, criticism and problem-solving of education issues.	• Design instructional of biology • Evaluation of Biology learning • Biology learning tools • Contemporary issues of biology and biology education • Neuroscience • Information Technology in Biology Learning • School Based Management
SM2	Biological Subject	It studies about the modern biology as the content bonded of the learning proccess.	• Molecular Genetics and Biotechnology • Ecology, Environment and Conservation Structure, Development and Physiology of Plant • Structure, Development and Physiology of Animals • Bioinformatics in Biology Learning
SM3	General Subject	It demonstrate a high order of skill in design, applying and publish of the research.	• Philosophy of science • Research Methodology • Statistic • Scientific publication