CURRICULUM DOCUMENT
STUDY PROGRAMME: BIOLOGY EDUCATION

FACULTY OF MATHEMATICS, NATURAL SCIENCES AND INFORMATION TECHNOLOGY EDUCATION
UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG
2025

DOCUMENT

Development of Higher Education Curricula

Biology Education Study Programme

Semarang, 2025

Name of Team Leader : Praptining Rahayu, S.Si., M.Si.
NIDN : 0607098303
Study Programme : Biology Education
Faculty : Faculty of Mathematics, Natural Sciences and Information Technology

UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG
Year 2025

Process	Responsible			Date
	Name	Position	Signature	
Formulator	1. Praptining Rahayu, S.Si., M.Si.	Head of Study Programme		3 September 2025
	2. Rivanna Citraning Rachmawati, S.Si., M.Si.	Programme Secretary		3 September 2025
	3. Ipah Budi Minarti, S.Pd M.Pd.	Head of Laboratory		3 September 2025
	4. Dr Prasetiyo, S.Pd M.Pd	Lecturer		3 September 2025
	5. Dr Azizul Ghofar Candra Wicaksana, S.Pd M.Pd	Lecturer		3 September 2025
Reviewer	Dr Fenny Roshayanti, M.Pd.	Head of the Professional Development Institute		3 September 2025
	Nurina Happy,S.Pd M.Pd	Head of the Centre for Curriculum, CoE and MBKM		3 September 2025
Approval	Eko Retno Mulyaningrum, S.Pd M.Pd	Vice-Dean 1 for Academic Affairs FPMIPATI		3 September 2025
Establishment	Dr Supandi, S.Si., M.Si.	Dean of FPMIPATI		3 September 2025
Supervision	Dr Lilik Arianto, S.Pd., M.Pd.	Secretary of the Quality Assurance Agency		3 September 2025

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FOREWORD

We offer our heartfelt thanks to the Almighty God for all His grace and blessings, which have enabled this Curriculum Document for the Biology Education Study Programme to be compiled and finalised successfully. This document serves as a vital academic guide for the management of education, learning, and the evaluation of graduate learning outcomes within the Biology Education Study Programme, FPMIPATI, at the University of the Indonesian Teachers' Union, Semarang.

The curriculum document has been compiled as a curriculum guide for a five-year period (2025). This curriculum document has been designed in accordance with various national regulations, such as Law No. 12 of 2012 on Higher Education, the National Standards for Higher Education (SN-Dikti), and refers to the Indonesian National Qualifications Framework (KKNI), Ministry of Education, Culture, Research and Technology Regulation No. 53 of 2023 on Quality Assurance in Higher Education, subsequently updated by Ministry of Education, Culture, Research and Technology Regulation No. 39 of 2025. The curriculum has been developed collaboratively and participatively, involving various stakeholders, including lecturers, students, alumni, employers, and partners from the business and industrial sectors (DUDI), to ensure alignment between graduate profiles, learning outcomes, and societal needs.

This curriculum is designed to address future challenges, advancements in science and technology, and labour market needs, whilst maintaining the distinctiveness and vision of the Study Programme. We extend our deepest appreciation and gratitude to the entire drafting team, lecturers, educational staff, and other parties who have contributed to the development of this curriculum.

We recognise that this curriculum will require further refinement in the future in line with the dynamic development of science and the needs of society. Therefore, we welcome all constructive feedback and suggestions aimed at enhancing the quality of education within the Biology Education Programme. We hope this curriculum document will serve as a useful guide for the entire academic community in carrying out educational and learning activities, particularly within the Biology Education Programme.

Semarang, September 2025
Dean of the Faculty of Mathematics, Natural Sciences and Information Technology
Universitas Persatuan Guru Republik Indonesia Semarang

Dr. Supandi, S.Si., M.Si.
NPP 097401245

PROGRAMME IDENTITY

No	Name of Higher Education Institution (HEI)	UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG
1	Faculty	FPMIPATI
2	Department	Biology Education
3	Accreditation Status	Excellent
4	Level of Education	Bachelor's
5	Graduate Qualification	S.Pd
6	Academic Vision	To develop biology education oriented towards bio-entrepreneurship, based on digital technology and local wisdom, to produce outstanding graduates with a strong sense of identity
7	Number of Students	129
8	Number of Lecturers	20
9	Programme Address	Jl. Sidodadi Timur No. 24, Karangtempel, Semarang Timur District, Semarang City, Central Java 50232
10	Tel	(024) 8316377
11	Programme Website	https://pendidikanbiologi.upgris.ac.id/

1 Foundations of Curriculum Design and Development

1.1 University Values

The core values of the Universitas Persatuan Guru Republik Indonesia Semarang, as set out in the 2015–2034 Master Development Plan, are to be a 'meaning university', acting as a provider, creator and guardian of the meaning of life. Furthermore, Rector's Decision No. 013.a/SK/UPGRIS/II/2025 establishes the university's value system (University Value) as the learning outcome for graduates of the University of Teachers' Union of the Republic of Indonesia, Semarang: "Demonstrating character and AdAb that reflect adaptability, enthusiasm and integrity as an expression of devotion to God Almighty".

Adab is closely linked to a brand, reputation or positive image; it is a symbol of the institution's long-term relationship with its stakeholders. Noble conduct or moral character is the key to trust; when combined with competence, it becomes the key to credibility. Good manners thus form the foundation of character. In the context of the University of the Indonesian Teachers' Union in Semarang, "AdAb" is also an acronym for the character values fostered within the campus environment: Ad (adaptive), A (enthusiastic) and b (integrity).

Adaptive signifies the spirit and ability to innovate, be creative, inclusive, and proactive in facing change; to adapt easily to circumstances; to possess a high level of concern; to respect differences; and to be non-discriminatory. Sub-values of adaptability include creativity and innovation (thinking outside the box, fostering curiosity, developing problem-solving skills, creating an environment that supports creativity, and valuing failure), responsiveness in dealing with emergencies or unexpected situations (courage and accepting risk), interpersonal adaptability (adjusting to change, the ability to understand others, effective communication skills, flexibility, building positive relationships, conflict resolution, and learning from experience), professional development (a commitment to continuous learning and deepening understanding), and stress management (recognising and understanding stressors, mental resilience, and managing time and priorities).

Enthusiasm is a reflection of spirit, joy, or a strong interest in every activity undertaken. Enthusiasm also implies having a strong drive to engage, learn more, participate actively, be optimistic, and include God in every activity. True enthusiasm is

also an expression of gratitude for the potential bestowed by God upon every person. With that potential, everyone will fulfil their duties to the best of their ability. People with high enthusiasm will carry out their duties with joy, delight, and total energy in their activities, confident that God will always provide the best. Enthusiastic people tend to be more spirited and energetic when engaging in activities they enjoy or are interested in. Enthusiasm is tested when one faces obstacles: whether one will remain steadfast and resolute or, conversely, give up. Enthusiastic people have the conviction that they can learn or perform their work with their best effort. Achievements will always be directly proportional to enthusiasm. People with high enthusiasm pour their hearts into their thoughts and actions. Enthusiasm reflects a self-image grounded in self-confidence and competence.

Integrity is the consistency between words and actions that align with one's conscience and prevailing norms. Integrity is honourable conduct even when no one is watching. Integrity builds reputation and trust. A person of integrity acts ethically and commendably whether or not they are being observed by anyone, and conducts themselves in accordance with moral ethics and the principles they hold dear. Those who live with good intentions, whether willing or not, will not betray the trust of others. Integrity is more closely related to the 'heart'—the ability to cultivate one's conscience, including honesty, sincerity, and dedication. Integrity is built upon three key elements: leadership, coherence, and commitment. These three are fundamental values that serve as a guide in our relationship with God, fellow human beings and the environment, as well as in professional/work relationships and the advancement of knowledge.

1.2 Philosophical Foundation

The results of the curriculum evaluation with stakeholders indicate that the VMTS framework and the Graduate Profile of the Biology Education Study Program remain relevant to the world of work for the next 10 years. This curriculum is designed for **Generation Z students, who generally require strengthening of mental resilience and the ability to become** independent **individuals**. The presence of mental resilience and independence will foster individuals possessing **survival skills**.

Based on the results of the curriculum evaluation, the Biology Education Program at the University of the Indonesian Teachers' Union, Semarang (UPGRIS) has formulated its educational objectives as follows:

1. outstanding graduates with a strong sense of identity who are capable of educating, designing, teaching and evaluating the learning processes and outcomes of students in biology subjects oriented towards digital bio-edupreneurship and local wisdom
2. outstanding graduates capable of integrating entrepreneurship into biology education and biology education oriented towards digital bioedupreneurship and local wisdom
3. outstanding graduates capable of solving problems related to digital-based bioedupreneurship and local wisdom through research

Efforts to achieve the Program's educational objectives are carried out by determining 1) the scope of educational content, 2) teaching methods, and 3) the role of lecturers.

The scope of the study Program's educational material is grouped into subject areas or a Body of Knowledge (BoK) comprising 1) University Characteristics, 2) Pedagogical Knowledge, 3) Biological Knowledge, 4) Science and Climate Change Knowledge, 5) Basic Supporting Scientific Knowledge, 6) Research and Publication, 7) Health, Safety and Environment (HSE), 8) Bioethics, 9) Personal Development, and 10) Program Characteristics.

The teaching methods employed include problem-based learning, project-based learning, strengthening students' skills through quizzes and assignments, and providing work experience for students through placements at educational institutions or in industry sectors aligned with the Study Program's Centre of Excellence (CoE). The educational process is integrated with the UPGRIS Adab values, entrepreneurial values, and the potential of local wisdom. The role of lecturers is to act as designers, role models, facilitators, and motivators for students.

1.3 Sociological Foundation

Currently, the world of education is accompanying Generation Z students who are growing up amidst rapid developments in information technology and climate change. The Program curriculum needs to be designed in accordance with the characteristics of Generation Z students, developments in information technology, and climate change, with

the hope that the educational process carried out meets the needs of students, society, and the world of work.

Generation Z possesses the following characteristics: 1) proficiency in using technology, 2) creativity and innovation, 3) the ability to access materials and information from diverse sources, 4) a preference for communication via technology, 5) an awareness of the need for balance between the digital and real worlds, and 6) a need for guidance to strengthen discipline and mental resilience. To align with the characteristics of Generation Z, the scope of the Program's educational content is categorised into: 1) University Identity, 2) Pedagogical Knowledge, 3) Biological Knowledge, 4) Scientific Knowledge and Climate Change, 5) Foundational Knowledge Supporting Academic Disciplines, 6) Research and Publication, 7) Health, Safety and Environment (HSE), 8) Bioethics, 9) Personal Development, and 10) Program Characteristics.

The educational process is designed by applying problem-based learning, project-based learning, assignments, and providing work experience through internships in both educational institutions and industry. The educational process is integrated with the UPGRIS Code of Conduct, entrepreneurial values, local wisdom, and climate change, whilst utilising developments in information technology.

1.4 Psychological Foundation

Generation Z students will be the ones using this curriculum. Generation Z students possess the following characteristics: 1) they are proficient in using technology, 2) they are creative and innovative, 3) they are able to access materials and information from various sources, 4) they prefer communication via technology, 5) they are aware of the need for a balance between the digital and real worlds, and 6) they require guidance to strengthen their discipline and mental resilience. To facilitate these characteristics of Generation Z students in order to guide and optimise their abilities, learning is designed by applying problem-based learning, project-based learning, assignments, and providing work experience through internships both within the university and in industry. The educational process is integrated with the UPGRIS Adab values, entrepreneurial values, local wisdom, and climate change, whilst utilising developments in information technology.

1.5 Historical Foundation

The historical foundation in curriculum development emphasises the importance of the relationship between education in the present, the past, and the future. The curriculum must be designed to: be relevant to the context of the times, reflecting the needs, challenges, and opportunities faced by students today; honour and pass on the nation's noble historical and cultural values, as the identity and foundation of students' national character; integrate lessons from the nation's golden age and world civilisations into the learning process, to enrich students' perspectives and foster historical awareness; and prepare students to face the dynamics of the 21st century, including mastery of digital technology, critical thinking, creativity, adaptability, and social awareness. Furthermore, the curriculum must also be designed to equip students with the competencies required in the era of Industry 4.0 and Society 5.0, such as data literacy, technological literacy, and human literacy; and to encourage students to be able to interpret the direction of societal development, think visionarily, and be prepared to contribute in an ever-changing future. Several skills demanded in the 21st century, comprising three main aspects, are presented in Table 1.

Table 1. 21st-century skills

Aspect	Indicator	Skills
Cognitive skills	Processing and cognitive strategies	a. Critical thinking b. Problem solving c. Analysis d. Logical reasoning e. Interpretation f. Decision-making g. Executive function
	Knowledge	a. Literacy and communication skills b. Active listening skills c. Knowledge of disciplines d. Ability to use evidence and make judgements based on information e. Digital literacy
	Creativity	a. Creativity b. Innovation
Interpersonal skills	Teamwork skills	a. Communication b. collaboration c. Teamwork d. cooperation e. coordination f. empathy g. perspective-taking h. trust

Aspect	Indicator	Skills
		i. service orientation j. conflict resolution k. negotiation
	Leadership	a. leadership b. responsibility c. assertive communication d. self-presentation e. social influence
Intrapersonal skills	Intellectual openness	a. Flexibility b. Adaptability c. Appreciation of art and culture d. Personal and social responsibility e. intercultural competence f. appreciation of diversity g. capacity for lifelong learning h. intellectual interest and curiosity
	Work ethic, responsibility	a. initiative b. self-direction c. responsibility d. perseverance e. productivity f. persistence g. self-regulation h. metacognitive skills, anticipating the future, reflective skills i. professionalism j. ethics k. integrity l. citizenship m. work orientation
	Self-efficacy	a. self-regulation (self-monitoring and self-assessment) b. physical and mental health

1.6 Legal Basis

The legal basis for curriculum development is based on legislation and decisions issued by higher education institutions, as follows.

1. Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers (State Gazette of the Republic of Indonesia Year 2005 Number 157, Supplement to the State Gazette of the Republic of Indonesia Number 4586).
2. Law of the Republic of Indonesia Number 12 of 2012 concerning Higher Education (State Gazette of the Republic of Indonesia Year 2012 Number 158, Supplement to the State Gazette of the Republic of Indonesia Number 5336).

3. Government Regulation No. 4 of 2014 on the Organisation of Higher Education and the Management of Higher Education Institutions.
4. Presidential Regulation of the Republic of Indonesia No. 8 of 2012, on the Indonesian National Qualifications Framework (KKNI).
5. Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 73 of 2013 on the Implementation of the KKNI in the Higher Education Sector.
6. Regulation of the Minister of Education and Culture No. 7 of 2020 concerning the Establishment, Amendment and Dissolution of State Higher Education Institutions, and the Establishment, Amendment and Revocation of Licences for Private Higher Education Institutions;
7. Regulation of the Minister of Education, Culture, Research, and Technology No. 13 of 2022 on Amendments to Regulation of the Minister of Education and Culture No. 22 of 2020 on the Strategic Plan of the Ministry of Education and Culture for the Years 2020–2024;
8. Regulation of the Minister of Education, Culture, Research and Technology No. 6 of 2022 concerning Diplomas, Competency Certificates, Professional Certificates, Degrees, and the Equivalence of Diplomas from Higher Education Institutions in Other Countries;
9. Regulation of the Minister of Education, Culture, Research, and Technology No. 53 of 2023 on Quality Assurance in Higher Education;
10. Regulation of the Minister of Higher Education, Science and Technology No. 39 of 2025 on Quality Assurance in Higher Education;
11. Decision of the Minister of Research, Technology, and Higher Education No. 123 of 2019 on Internships and the Recognition of Semester Credit Units for Industrial Internships for Bachelor's and Applied Bachelor's Degree Programs;
12. Decision of the YPLP PT PGRI Semarang No. 075/P.Y/U/Kpts/3.1/YPLP PT PGRI/V/2019 dated 10 May 2019 on the Statutes of PGRI University of Semarang;
13. Decision of the Board of YPLP PT PGRI Semarang No. 05.A/P.Y/U/Kpts/3.1/YPLP PT PGRI/I/2015 regarding the Master Development Plan (RIP) of the University of the Indonesian Teachers' Union, Semarang, for the years 2015–2034
14. Decision of the Rector of the University of the Indonesian Teachers' Union, Semarang, No. 056/SK/UPGRIS/IX/2024 regarding the Establishment of the Vision,

Mission, and Objectives of the University of the Indonesian Teachers' Union, Semarang;

15. Rector's Decision of the University of the Indonesian Teachers' Union, Semarang, No. 013.a/SK/UPGRIS/II/2025 regarding Learning Outcomes for Graduates of Study Programs at the University of the Indonesian Teachers' Union, Semarang;
16. Decision of the Rector of the University of the Indonesian Teachers' Association, Semarang, Number 012/SK/UPGRIS/II/2025 regarding the Establishment of the Structure and Distribution of Courses for Undergraduate Students at the University of the Indonesian Teachers' Association, Semarang;
17. Decision of the Rector of the University PGRI, Semarang, Number 014/SK/UPGRIS/II/2025 regarding the Determination of Course Credits for Master's Degree Students at the Universitas Persatuan Guru Republik Indonesia Semarang.
18. Decision of the Rector of the Universitas Persatuan Guru Republik Indonesia Semarang, Number 034.a/SK/UPGRIS/IV/2025 regarding the Determination of the Distribution of General Courses/Compulsory Curriculum Courses and UPGRIS Distinctive Courses within the University PGRI , Semarang.
19. Rector's Decree on the Vision, Mission, Objectives, and Targets of the Faculty.
20. Rector's Decision on the Academic Vision of the Study Program.

2 Curriculum Evaluation & Tracer Study

An evaluation of the implementation of the previous curriculum was carried out for the 2022–2025 curriculum implementation period as follows.

2.1 Curriculum Evaluation

There are two types of curriculum evaluation, namely:

a. Formative Evaluation

An evaluation of the previous and current curriculum, namely the OBE curriculum, in the Biology Education Study Program revealed a need for optimisation regarding the implementation of project-based learning. Based on feedback from partners, this project-based learning method can be further optimised to facilitate each student in carrying out a series of activities to complete a project; therefore, teaching materials need to be further developed to provide more structured guidelines for project implementation and to give each student the opportunity to participate in the project process. Students' success in project-based learning requires the full support

of the supervising lecturer; therefore, a coaching approach by the lecturer towards students should be applied during the learning process.

The second evaluation concerns the improvement of English language skills. Students need to be encouraged and supported to develop a greater interest in improving their English language skills. Mastering English is vital for them to enhance their knowledge and understanding and to navigate the world of work, given that expanding their knowledge and understanding naturally requires broad literacy and access to a wealth of literature, much of which is currently in English. Similarly, when entering the world of work, they will always require additional insights to develop themselves; thus, proficiency in English will facilitate their continuous expansion of knowledge and understanding to support their professional roles.

The third evaluation relates to the bioedupreneurship orientation. In the implementation of the future curriculum, there is a need to enhance the integration of courses on a larger scale to achieve this bioedupreneurship objective. It is hoped that the Program's courses can be oriented towards bioedupreneurship. Thus, in realising a graduate profile that is competent in implementing scientific knowledge into entrepreneurship, the focus should not be solely on entrepreneurship-based courses, but rather all Program courses should be integrated to support these competencies.

b. Summative Assessment.

Industry partners consider the academic vision and objectives of the Biology Education Study Program to remain relevant to developments in the worlds of education and employment. However, they have provided some feedback regarding the development of course delivery, specifically the need to enhance students' project management skills and improve their English language proficiency.

Table 2.1 Curriculum Evaluation

Results of External Evaluation (with industry partners)

Curriculum Feedback	Action Plan
Improving project implementation skills	Optimisation of project-based learning delivery
Improvement of English language skills	Gradual implementation of English in lectures Involving students in the 'English Our' Program organised by LSC UPGRIS

Internal evaluation

Curriculum evaluation is carried out in stages; at this stage (3–4 December 2024), an external evaluation is being conducted in collaboration with industry partners. Internal evaluation will be carried out in the next phase.

Table 2.2. Evaluation of the 2022 Curriculum and Follow-up Actions for the 2025 Curriculum

Evaluation Components	Review	Action Plan
Academic Vision – Educational Objectives – and Strategies for Achieving Educational Objectives		
a. Relevance of the Academic Vision, Educational Objectives, and Strategies for Achieving Educational Objectives to the Faculty's VMTS	The academic vision of the study Program and the FPMIPATI VMTS are relevant	Optimising the relevance of the academic vision to the FPMIPATI VMTS
b. Relevance of the Academic Vision, Educational Objectives, and Strategies for Achieving Educational Objectives to learning outcomes	Learning outcomes need to be optimised in terms of character building, laboratory skills, and soft skills	Optimising character development by developing character-building Programs outside of learning activities; enhancing laboratory work by improving the effectiveness of laboratory-based learning through projects
c. Relevance of the Academic Vision, Educational Objectives, and Strategies for Achieving Educational Objectives to the graduate profile	The academic vision remains relevant to the graduate profile	Develop the academic vision to enhance its relevance to the needs of the workplace
d. Relevance of the Curriculum to the KKNI (according to level)	It is sufficiently aligned with the KKNI level, but has not yet been systematically documented.	Strengthening the documentation of the curriculum's alignment with the KKNI level.
e. Curriculum relevance to Ministerial Regulation No. 53 of 2023	Not all aspects of Ministerial Regulation 53/2023 have been accommodated.	Integrate the mandatory components of Ministerial Regulation 53 into the new curriculum.
f. Relevance of the curriculum to the world of work	Still limited to certain sectors.	Involvement of practitioners to provide input on work-based competencies.
g. Scope of competencies/skills (academic fields of study Programs and the needs/demands of the world of work)	The scope of competencies is already broad, but not yet evenly distributed across all courses.	Review the distribution of competencies within the syllabus for each course.
h. Clarity of competency/skill content	Some competencies have not yet been formulated in a specific and measurable manner	Revise the formulation of competencies using clear and measurable indicators
Program Graduate Profile		
Alignment of the Graduate Profile with the world of work	The graduate profile as a biology educator, a researcher in biology education, and an entrepreneur in the field of biology and/or biology education is sufficiently aligned with the job market related to the biological sciences	Developing the graduate profile by referring to the results of the tracer study to ensure greater relevance to the world of work

Evaluation Components	Review	Action Plan
Programme Learning Outcomes		
a. Scope of Competencies	Already covers aspects of attitude, knowledge, and skills	Focus group discussions with external stakeholders to ensure alignment with industry needs
b. Clarity of references for formulating learning outcomes	Not all learning outcomes refer to national documents (SN Dikti, KKNI, Ministerial Regulation 53/2023)	Strengthening of official references in the formulation of PLOs
c. Coherence in the formulation of learning outcomes	Students demonstrate difficulty in integrating knowledge across courses.	Alignment of prerequisites across courses and their distribution across each semester
d. Quality of formulation (specific, measurable, and observable)	The number of PLOs is excessive; CPMKs have not yet been formulated in the 2022 curriculum document	Developing PLOs and CPMKs formulated according to the SMART criteria (Specific, Measurable, Achievable, Relevant, Time-bound), so that they are easily measurable and observable in the learning and assessment processes.
e. The relationship between learning outcomes and the graduate profile	Needs to be optimised, particularly regarding the profiles of entrepreneurs and researchers	Carry out clear and documented mapping between each PLO and the established graduate profile. Ensure that teaching methods and materials support the achievement of PLOs relevant to the graduate profile.
Curriculum Structure		
a. Overall scope of courses at one level (learning outcomes, profiles, and courses)	PLOs are already covered, but the distribution of the learning load is not yet proportional	Adjustment of credit distribution based on course complexity
b. Inter-level linkages (Bachelor's and Master's, where applicable)	-	-
c. Organisation of courses (University-level, faculty-level, department-level courses (compulsory and optional))	Already structured and divided into compulsory and elective courses, but needs to be expanded to include CoE-based elective courses	Add new elective courses in line with the CoE
d. The relevance of the course structure to the policy on fulfilling the study load outside the degree Program (for Bachelor's degree Programs)	Not yet fully relevant to Programs facilitating learning outside the degree Program	Revision of the curriculum structure, taking into account opportunities for learning outside the degree Program in line with the availability of supporting Programs
Course Description		
a. Depth of learning material	In general, the learning material is sufficiently in-depth	Align the depth of the material with the KKNI cognitive levels
b. Breadth of learning material	In general, the learning material is sufficiently broad	Prioritising the expansion of learning material related to the world of work by involving practitioners in the learning process

Evaluation Components	Review	Action Plan
c. Relevance of CPMK to PLO	Course descriptions are not yet accompanied by CPMK formulations, so the development of CPMK is not yet fully relevant to PLO	Conducting workshops on the development of CPMK and learning materials to optimise the relevance of CPMK and PLO
d. Course formats (lectures/theory, seminars, practicals, fieldwork, etc.)	Already varied	Optimise the implementation of course formats in accordance with the characteristics of the course and PLO
Course Distribution		
a. Academic sequence of courses	Already structured, but there are courses whose prerequisites are not yet consistent	Review of course distribution and prerequisites
b. Proportion of compulsory courses, elective courses, and general education courses	The proportion of elective courses still needs to be increased	Adding elective courses relevant to the CoE
c. Credit load per semester	Already proportionate, but requires adjustment to accommodate study Programs outside the department	Adjust the total number of credits per semester to allow flexibility for study Programs outside the department
Human Resources (HR)		
a. Academic relevance	Lecturers' academic expertise is aligned	Academic development of lecturers through seminars/training relevant to their fields of study
b. Professional Experience	Professional experience and specialised expertise still need to be enhanced	Encouraging lecturers to participate in industry-academia collaboration Programs, training, and competency certification
c. Qualifications and adequacy of educational staff based on their job type (administration, librarians, technicians, laboratory assistants, etc.)	The qualifications and number of educational staff are already adequate	Development of educational staff competencies through training Programs and competency certification
Facilities and Infrastructure		
a. Laboratories (workshops/studios/fields, etc.)	Laboratory rooms are in good condition and suitable for learning activities	Improvement of administrative management
b. Laboratory equipment and materials (workshop/workshop/studio/field/etc.)	The majority of equipment and materials meet requirements	The number of microscopes requires periodic renewal
c. Library	The collection is adequate, but digital access remains limited	Increase access to online journals and the latest reference e-books
d. Classrooms	Sufficiently representative	Air conditioning and internet connectivity have been improved
Curriculum flexibility		
Learning resources		
a. Semester Lesson Plans	Flexibility is not yet optimal as the focus remains on face-to-face teaching	There is a need to diversify learning methods: hybrid, online, fulfilment of learning requirements outside the degree Program, and micro-credentials

Evaluation Components	Review	Action Plan
b. Teaching Materials	The majority of teaching materials used still originate from external sources	Enhancing the integration of lecturers' research outcomes and PKM into teaching materials, as well as the development of teaching materials by lecturers
c. Media (ICT)	The use of ICT remains limited	Optimise the LMS, educational videos, and AI tools for learning
d. Support for devices in achieving PLO	Not all tools and media support the achievement of PLO	Evaluation of resources/media against learning outcome indicators
Learning Process		
a. Transformation of the teaching and learning experience	Not all lecturers have adopted a transformative learning approach	Training and support for the implementation of transformative learning
b. Use of the case-based method or team-based project learning with an assessment weighting of more than 50%	The weighting of assessment in the case-based method/team-based project method has not yet reached more than 50%	Implementation of the CBL and TBL methods must account for at least 50% of teaching, in accordance with Ministerial Regulation No. 53/2023
c. Alignment of the learning process with the Course Syllabus	Some learning processes do not yet fully adhere to the RPS	Monitoring and evaluation of learning implementation in accordance with the RPS
d. Compliance in conducting learning through the UPGRIS SPADA	The use of SPADA is not yet optimal	Optimisation of SPADA usage
e. The learning process is collaborative, involving interaction between learners	The learning process does not yet fully prioritise collaboration and interaction between individual learners	Training in collaborative and interactive learning strategies
f. Implementation of character values (university values) in and outside the classroom	Not yet integrated into the Course Syllabus	Integrate character values into the RPS
g. Lecturer attendance	Lecturer attendance meets standards	Maintain optimal lecturer attendance through monitoring and evaluation
h. Student attendance	Some students do not meet the standards	Approaches and support provided by the tutor
Learning assessment		
a. Assessment planning contract	Not all lecturers have explicitly communicated assessment criteria at the start of the course	Initial monitoring and evaluation
b. Assessment procedures	Assessment procedures are not yet standardised across lecturers	Standardisation of assessment procedure formats
c. Scope of assessment (attitude, knowledge, general and specific skills)	Assessment still focuses on the knowledge aspect	There is a need to integrate OBE-based assessment of attitudes and skills into the assessment rubric
d. Alignment of assessment techniques with assessment aspects	Assessment techniques are not yet aligned with learning outcomes	Revision of the Course Syllabus to incorporate OBE-based assessment techniques (Outcome-Based Education)
e. Verification of assessment instruments	Mid-term and final assessment instruments have been verified	Optimising the verification process regarding the alignment

Evaluation Components	Review	Action Plan
	by the quality assurance team and the study Program	of CPMK to ensure the measurement of PLO
f. Grading in accordance with applicable regulations	Already compliant, but not yet properly documented	Marking using the system
g. Follow-up on assessment results (grade entry, enrichment, remedial work)	The grade entry system is already in place in accordance with the rules and the specified academic calendar	Ensuring the grade entry system is user-friendly, has data validation, and aligns with the established academic calendar
Graduates		
a. Cumulative Grade Point Average (CGPA)	The average GPA is good at 3.76	Maintaining the quality of teaching and academic guidance
b. Duration of Study	Average duration of study: 3.6 years	Assignment of final project supervisors at the end of the 5th semester and conducting regular monitoring and evaluation of the final project supervision process
c. Graduate employment	Graduates are well-placed	Optimising the tracer study system, encouraging alumni to utilise the job fair Program run by the UPGRIS Career Centre
d. Graduate waiting period	3–12 months	Optimising career guidance services and alumni networks through the career centre
e. Job relevance to field of expertise	High relevance	Maintaining and enhancing engagement with the business and industry sectors (DUDI) in curriculum development and work placements
f. Starting salary	Average starting salary of 2.7 million	Enhancing entrepreneurial competencies
g. Graduate Distribution	45.65% are employed in private companies. 42.39% are employed in government agencies, 11% are self-employed. The majority of graduates work in the fields of education, agriculture and banking	Enhancing entrepreneurial skills
h. User Satisfaction	Generally falls into the “very good” and “good”, though English language proficiency requires improvement	Improving English language skills in collaboration with the UPGRIS Language Centre
i. Academic achievements	Improving performance at national and international levels	Maintaining and improving performance by motivating students to participate in competitions, and motivating lecturers to mentor students in competitions
j. Professional Certification	Students have the opportunity to undertake the BNSP professional certification scheme for Plant Tissue Culture and Orchid Cultivation Practitioners	Enhancing the integration of competencies in line with the certification scheme and the curriculum

Evaluation Components	Review	Action Plan
	through LSP P1 UPGRIS prior to graduation and receive a PPG scholarship from the Ministry of Education and Culture	

2.2 Tracer Study

The results of the evaluation of the impact on graduates' capabilities, resulting from the implementation of the old curriculum, are described as follows.

a. Employment status

The employment status of Biology Education Program alumni is as follows: working in government agencies, in private companies, as self-employed, and in non-profit organisations.

b. Average monthly income: Rp. 2,722,431 per month

c. Field of work

Education

Agriculture and Plantation

Health

Banking

Furniture

Marketplace

d. Job type

Teacher

Staff

Entrepreneur

Freelancer

Assistant Supervisor

Headteacher

e. Relationship between field of study and occupation

Relationship between field of study and occupation: 78.66% very strong

f. Feedback on the curriculum

1. Courses related to entrepreneurial skills should be strengthened
2. Improvement of public speaking skills
3. Improvement of English language skills

4. Increase the number of practical sessions
5. Introduce a course in educational psychology
6. Improvement of problem-solving, communication, ethics, decision-making and time management skills
7. Digital marketing content
8. Increasing teaching practice
9. Computerisation and data processing materials

g. Input for Program development
   1) Improvement of skills relevant to the industry
   2) Strengthening pedagogical competencies through training

h. Follow-up on the Study Program

Table 2.2. Curriculum Input from Alumni and Curriculum Follow-up Plan

Curriculum Input	Follow-up Plan
Courses related to entrepreneurial skills are strengthened	Development and improvement of learning strategies in core entrepreneurship courses
Improvement of public speaking skills	Teaching methods in each course provide student activities to hone speaking skills
Improvement of English language proficiency	The gradual implementation of English in the delivery of lectures
Increasing the number of practical sessions	Delivery of lectures based on practical work and projects
Introducing a course in educational psychology	Enhancing and developing course materials for the 'Student Development' module
Improving problem-solving, communication, ethics, decision-making and time management skills	Optimising the delivery of project-based teaching
Digital marketing materials	Developing course materials for Strategic Marketing Analysis
Incorporating teaching practice	Implementation of a 3-month teaching placement
Computerisation and data processing materials	Optimisation of ICT and Statistics courses

Table 2.3. Program Input from Alumni and Program Action Plan

Program Input	Action Plan
Improvement of skills relevant to the industry	Aligning with industry needs regarding required skills, expanding cooperation on industrial placements
Strengthening pedagogical competencies through training Programs	Organising workshops to enhance pedagogical competencies

2.3 SWOT Analysis

Based on the results of the tracer study and analysis of stakeholder input, a SWOT analysis was conducted to serve as a basis for formulating strategies to achieve the objectives. Subsequently, criteria and success indicators for the TS Study Program were drawn up to facilitate the monitoring and evaluation of the success of the Programs that have been established. In the SWOT analysis of the vision, mission, goals and objectives, as well as the strategies for achieving them, four SWOT elements of the TS Study Program were identified, comprising strengths, weaknesses, opportunities and threats

Based on the SWOT analysis of these four elements, the following four strategies were established:

a. SO Strategy (Strength-Opportunity), namely a strategy to utilise strengths to capitalise on opportunities.
b. Strategy WO (Weakness-Opportunity), namelya strategy to address constraints/weaknesses by capitalising on opportunities

c. The ST (Strength-Threat) strategy, which involves using strengths to address threats.

d. The WT (Weakness-Threat) strategy, which involves addressing constraints or weaknesses to counter threats.

These four strategies are shown in the SWOT matrix in Table 2.4.

Table 2.4. SWOT Matrix

SWOT Elements		Internal	
		Strengths / Potential	**Weaknesses**
External	**Opportunities (Opportunity)**	**SO Strategy**	**WO Strategy**
		a) Enhancing understanding and internalisation of VMTS achievements by the academic community and all stakeholders. b) Optimising lecturers' public leadership as a representation of public duties in supporting the Faculty's vision and mission c) Increasing the number of students participating in competitions, both at national and international levels d) Utilising alumni networks to accelerate graduates' employment	a. Strengthening synergies in the implementation of UPGRIS VMTS within integrated work Programs. Strengthening international networks to support the strategic performance of study Programs (IKS), particularly international IKS. b. Involving students in all lecturers' research activities c. Recruiting students to participate in PKM d. Publishing students' final projects in seminars or journals e. Improving English language skills through English bridging courses
	Challenges / Threats	**ST Strategy**	**WT Strategy**
		1. Strengthening understanding of VMTS implemented in academic and non-academic activities of the academic community, as well as all Program stakeholders 2. Expansion of networks and implementation of cooperation at both national and international levels to accelerate the realisation of the Faculty's excellence. 3. Establishment of external advisory bodies at national and international levels 4. Increased use of online media to enhance understanding of lectures 5. Involvement of the industry in the curriculum or learning processes, research and community engagement 6. Improving the quality of laboratory facilities to meet current technological needs 7. Continuous improvement of learning materials to align with industry needs 8. Consider involving experts from leading ASEAN universities to evaluate all	a. Development of outreach methods and VMTS tracer studies for the entire academic community and all stakeholders. b. Utilising the alumni network to assist recent graduates in securing employment, finding work placement locations, internships, and final project topics. c. Enhancing English language proficiency for lecturers d. Workshops (cyber pedagogy) or enhancing lecturers' skills in teaching via online systems in line with Education 4.0 teaching and learning.

		aspects of the study Program	

3 Vision, Mission and Educational Objectives

3.1 University Vision, Mission and Objectives

a. University Vision

To become an outstanding and distinctive university

b. University Mission

1. To provide education that produces outstanding and self-reliant scholars;
2. To conduct research as the foundation for the advancement of knowledge and the enhancement of the quality of learning;
3. To carry out community service for the betterment of life and living; and
4. To set an example in the delivery of education, research and community service.

c. Objectives of the University

1. The realisation of outstanding and self-reliant intellectuals;
2. To achieve academic excellence and research-based learning;
3. The realisation of community service that benefits life and living; and
4. The implementation of exemplary leadership in the delivery of education, research and community service.

3.2 Vision, Mission and Objectives of the Faculty

a. Vision

To become a Faculty of Mathematics, Natural Sciences and Information Technology that is excellent and has a distinct identity.

b. Mission

1. To deliver education and exemplary practices to produce graduates in the fields of Mathematics, Natural Sciences, and Information Technology who are outstanding and possess a strong sense of identity
2. To conduct innovative research to enhance the quality of learning in the fields of Mathematics, Natural Sciences, and Information Technology
3. To carry out community service as an implementation of research outcomes to improve the quality of life and well-being of the community

4. To engage in partnership activities with domestic and international institutions as a manifestation of the Tridharma of Higher Education

c. Objectives

1. To produce outstanding and distinctive graduates of the Bachelor's Program in Mathematics, Science, and Information Technology
2. To produce research outputs as a basis for improving the quality of learning, advancing knowledge and enhancing professionalism in the fields of Mathematics, Science and Information Technology Education
3. Producing high-quality community service projects as a means of applying research findings to improve the welfare of the community
4. Establishing partnership networks with domestic and international institutions as a manifestation of the Tridharma of Higher Education

3.3 Vision, Academic Focus and Educational Objectives of the Study Programme

a. Academic Vision of the Study Programme

To develop a biology education Program oriented towards bio-entrepreneurship, based on digital technology and local wisdom, to produce outstanding graduates with a strong sense of identity.

b. Educational Objectives of the Study Programme

The educational objectives of the Study Program are set out in Table 3.1 below.

Table 3.1. Programme Educational Objectives (PEO)

No	Program Educational Objective Code	Description of Program Educational Objectives
1	PEO-1	Outstanding graduates with a strong sense of identity who are capable of educating, designing, teaching and evaluating the learning processes and outcomes of students in biology-oriented subjects based on digital bio-entrepreneurship and local wisdom
2	PEO-2	Outstanding graduates capable of integrating entrepreneurship into biology education and biology with a focus on digital bioedupreneurship and local wisdom
3	PEO-3	Outstanding graduates capable of resolving issues related to digital bioedupreneurship and local wisdom through research

c. Strategies for Achieving the Educational Objectives of the Study Programme

The results of the formulation of strategies for achieving the objectives of the Biology Education Study Program are described in Table 3.2.

Table 3.2. Programme Educational Objective Achievement Strategies (PEO)

Formulation by the VMTS Team	FGD Results
1. Developing a Programme curriculum oriented towards digital bio-entrepreneurship and local wisdom 2. Developing digital and local wisdom-based entrepreneurship-oriented learning 3. Developing mini-research project-based learning in relevant courses 4. Developing and enhancing the implementation of bioedupreneurship-oriented research based on local wisdom 5. Enhancing collaboration with partners to develop digital and local wisdom-based bioedupreneurship competencies	1. Developing a curriculum for study Programmes oriented towards digital bioedupreneurship and local wisdom 2. Developing project-based learning and mini-research focused on bioedupreneurship, utilising digital technology and local wisdom 3. Developing bioedupreneurship-oriented research and community engagement based on digital technology and local wisdom 4. Enhancing collaboration with partners to develop digital-based bioedupreneurship competencies and local wisdom.

4 Graduate Profile, Programme Educational Objectives (PEO) & Programme Learning Outcomes (PLO)

4.1 Graduate Profile and Programme Educational Objectives

The graduate profile of the Biology Education Study Programme is described in Table 4.1 below.

Table 4.1. Graduate Profile and Description

No	Graduate Profile (PL)	Description of Graduate Profile
1	GP-1 A Bachelor of Education in Biology capable of teaching biology at upper secondary school level or equivalent, science at lower secondary school level or equivalent, and capable of teaching science and biology at various levels in private tuition. Profile 1: Biology and Science Educator	1) Able to plan lessons in the fields of Science and Biology by applying innovative models, methods and teaching materials; 2) able to deliver lessons in the fields of Science and Biology professionally; 3) able to develop assessment tools and conduct learning assessments; 4) able to communicate and collaborate effectively; 5) possesses character and conduct grounded in the values of Pancasila; 6) applies health and safety (K3) skills
2	GP-2 A Bachelor of Education in Biology who possesses bio-entrepreneurship and is capable of engaging in entrepreneurship in the fields of biology education and biology based on local wisdom Profile 2: Entrepreneurs in the fields of education and biology	1) Able to implement knowledge and understanding of educational science and biology in innovating entrepreneurial products 2) able to create business plans; 3) able to run a business
3	GP-3 A Bachelor of Biology Education who is capable of addressing issues related to biology education and biology through research based on local wisdom	1) Able to analyse problems encountered in the environment and within the community relating to education and biology; 2) able to design and conduct research by applying research methods appropriate to

No	Graduate Profile (PL)	Description of Graduate Profile
	Profile 3: Researcher in the fields of education and biology	the problem; 3) able to compile research reports; 4) able to apply health and safety skills

Table 4.2 Table of correlation between graduate profiles and the educational objectives of the study Programme

No	Graduate Profile (GP)	Programme Educational Objectives (PEO)		
		TPP-1	TPP-2	TPP-3
1	GP-1	√		
2	GP-2		√	
3	GP-2			√

4.2 Formulation of PLO

The learning outcomes for graduates of the Biology Education study Programme are described in Table 4.3 below.

Table 4.3 Graduate Learning Outcomes of the Study Programme

Code	Description of Graduate Learning Outcomes (GLO)
PLO-1	Demonstrates character and conduct that reflect adaptability, enthusiasm and integrity as an expression of devotion to God Almighty
PLO-2	Examine in depth the concepts and principles of pedagogy, the essentials of biology, science (including the study of climate change), mathematics, technology and its developments, as well as the basic principles of scientific methodology and other fields, so as to be able to formulate procedural problem-solving approaches
PLO-3	Solve problems critically and wisely by applying the concepts of pedagogical principles, the essentials of biology, science—including the study of climate change, mathematics, technology and its developments—the basic principles of scientific methodology and other fields by utilising science and technology, and be able to develop oneself and adapt to the situations faced
PLO-4	Establishing effective communication, both oral and written, regarding the basic principles of scientific methodology and their application by utilising science and technology in research within the fields of biology and biology education
PLO-5	Integrating essential concepts of biology and its developments into practical activities in the laboratory and in the field, whilst observing the principles of bioethics and Health and Safety at Work (H&S)
PLO-6	Being able to make decisions and select various alternative solutions to problems in the fields of biology and biology education, both independently and in groups, whilst internalising the spirit of entrepreneurial values
PLO-7	Taking responsibility for one's own work and being entrusted with responsibility for the achievement of work outcomes in the fields of biology and biology education.
PLO-8	Able to develop technology-based multimedia focused on bioedupreneurship in the fields of education and entrepreneurship
PLO-9	Able to use plant cultivation and Plant Tissue Culture techniques based on local wisdom in entrepreneurship grounded in bioedupreneurship
PLO-10	Evaluate and integrate concepts of religion, nationality, the constitution, language, and Technology Based Entrepreneurship with the 5A values (anti-violence, anti-drugs, anti-bullying,

Code	Description of Graduate Learning Outcomes (GLO)
	anti-intolerance, and anti-corruption) to support the development of professional knowledge and practice

Table 4.4. Alignment of PLOs with the KKNI

KKNI Level for Bachelor's Degree Programs	PLO Description									
	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10
S-a	√									
S-b	√									
S-c	√									
S-d	√									
S-e	√									
S-f	√									
PP		√								√
KK			√	√	√			√	√	
KTJ-a						√				
KTJ-b							√			

4.3 Matrix of the relationship between PLO and Graduate Profile

Table 4.5. Matrix of the Relationship between Programme Profile and PLO

Code	Description of Programme PLO	GP1	GP2	GP3
PLO-1	Able to demonstrate character and conduct that reflect adaptability, enthusiasm and integrity as an expression of devotion to God Almighty	√	√	√
PLO-2	Examine in depth the concepts of pedagogical principles, essential biology, science (including the study of climate change), mathematics, technology and its developments, as well as the basic principles of scientific methodology and other fields, so as to be able to formulate procedural problem-solving approaches	√		√
PLO-3	Solve problems critically and wisely by applying concepts and principles of pedagogy, essential biology, science (including the study of climate change), mathematics, technology and its developments, the basic principles of scientific methodology and other fields, utilising science and technology, and be able to develop oneself and adapt to the situations faced	√		√
PLO-4	Establishing effective communication, both oral and written, regarding the basic principles of scientific methodology and their application by utilising science and technology in research within the fields of biology and biology education			√
PLO-5	Integrating essential biological concepts and their development into practical activities in the laboratory and in the field, whilst observing the principles of bioethics and Health and Safety at Work (H&S)	√		√
PLO-6	Able to make decisions and select various alternative solutions to problems in the fields of biology and biology education, both independently and in groups, whilst internalising the spirit of entrepreneurial values			√
PLO-7	Take responsibility for one's own work and be entrusted with responsibility for achieving results in the fields of biology and biology education	√	√	√

Code	Description of Programme PLO	GP1	GP2	GP3
PLO-8	Able to develop technology-based multimedia focused on bio-entrepreneurship in the fields of education and entrepreneurship		√	
PLO-9	Able to utilise plant cultivation and Plant Tissue Culture techniques based on local wisdom in entrepreneurship grounded in bioedupreneurship		√	
PLO-10	Evaluate and integrate concepts of religion, nationality, the constitution, language, and Technology Based Entrepreneurship with the 5A values (anti-violence, anti-drugs, anti-bullying, anti-intolerance, and anti-corruption) to support the development of professional knowledge and practice.	√	√	√

4.4 Matrix of PLO Program Links with Program Study Objectives/PEO

Table 4.6. Matrix of the relationship between the Program's PLOs and the Program's Educational Objectives

Code	Description of Program PLO	PEO1	PEO-2	PEO-3
PLO-1	Able to demonstrate character and conduct that reflect adaptability, enthusiasm and integrity as an expression of devotion to God Almighty	√	√	√
PLO-2	Examine in depth the concepts of pedagogical principles, essential biology, science (including the study of climate change), mathematics, technology and its developments, as well as the basic principles of scientific methodology and other fields, so as to be able to formulate procedural problem-solving approaches	√		√
PLO-3	Solve problems critically and wisely by applying the concepts of pedagogical principles, the essentials of biology, science (including the study of climate change), mathematics, technology and its developments, the basic principles of scientific methodology and other fields, utilising science and technology, and be able to develop oneself and adapt to the situations faced	√		√
PLO-4	Establishing effective communication, both oral and written, regarding the basic principles of scientific methodology and their application by utilising science and technology in research within the fields of biology and biology education			√
PLO-5	Integrating essential biological concepts and their development into practical activities in the laboratory and in the field, whilst observing the principles of bioethics and Health and Safety at Work (H&S)	√		√
PLO-6	Able to make decisions and select various alternative solutions to problems in the fields of biology and biology education, both independently and in groups, whilst internalising the spirit of entrepreneurial values			√
PLO-7	Take responsibility for one's own work and be entrusted with responsibility for achieving results in the fields of biology and biology education	√	√	√
PLO-8	Able to develop technology-based multimedia focused on bio-entrepreneurship in the fields of education and entrepreneurship		√	
PLO-9	Able to utilise plant cultivation and Plant Tissue Culture techniques based on local wisdom in entrepreneurship grounded in bioedupreneurship		√	
PLO-10	Evaluate and integrate concepts of religion, nationalism, the constitution, language, and Technology Based Entrepreneurship with the 5A values (anti-violence, anti-drugs, anti-bullying, anti-intolerance, and anti-corruption) to support the development of professional knowledge and practice.	√	√	√

5 Determination of Study Materials

5.1 Body of Knowledge (BoK)

The study materials are formulated on the basis of the PLO descriptors for the Biology Education Programme, which are further detailed in Table 5.1.

Table 5.1. Study materials based on the PLO for the study Programme

PLO	Description of Programme PLO	Study Materials
PLO-1	Able to demonstrate character and conduct that reflect adaptability, enthusiasm and integrity as a manifestation of piety towards God Almighty	BK-01. Religion BK-02. Pancasila Education BK-03. Citizenship BK-04. Indonesian BK-05. English BK-06. PGRI Studies BK-07. Community Service BK-08. Technology Based Entrepreneurship
PLO-2	To examine in depth the concepts of pedagogical principles, the essentials of biology, science (including the study of climate change), mathematics, technology and its development, as well as the basic principles of scientific methodology and other fields, so as to be able to formulate procedural problem-solving approaches	BK-09. Understanding of learners BK-10. Learning BK-11. Mastery of educational disciplines BK-12. Botany BK-13. Zoology BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-17. Microbiology BK-18. Biotechnology BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology BK-23. Environment BK-24. Basic Physics BK-25. Basic Chemistry BK-26. Mathematical Biology BK-27. Statistics BK-28. Biology English BK-29. Research Methods in Biology Education BK-30. Scientific Publication
PLO-3	Solve problems critically and wisely by applying concepts and principles of pedagogy, essential biology, science (including the study of climate change), mathematics, technology and its developments, basic principles of scientific methodology and other fields by utilising science and technology, as well as being able to develop oneself and adapt to the situations faced	BK-09. Understanding of learners BK-10. Learning BK-11. Mastery of educational disciplines BK-12. Botany BK-13. Zoology BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-17. Microbiology BK-18. Biotechnology BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology

PLO	Description of Programme PLO	Study Materials
		BK-23. Environment BK-24. Basic Physics BK-25. Basic Chemistry BK-26. Mathematical Biology BK-27. Statistics BK-29. Research Methods in Biology Education BK-30. Scientific Publication
PLO-4	Developing effective communication, both oral and written, regarding the basic principles of scientific methodology and their application, utilising science and technology in research within the fields of biology and biology education	BK-29. Research Methods in Biology Education BK-30. Scientific publications
PLO-5	Integrating essential concepts of biology and their development into practical activities in the laboratory and in the field, whilst observing the principles of bioethics and Health and Safety at Work (HSW)	BK-12. Botany BK-13. Zoology BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-17. Microbiology BK-18. Biotechnology BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology BK-23. Environment BK-31. Laboratory Management and Health and Safety BK-32. Bioethics
PLO-6	Ability to make decisions and select various alternative solutions in problem-solving within the fields of biology and biology education, both independently and in groups, whilst internalising the spirit of entrepreneurial values	BK-09. Understanding of learners BK-10. Learning BK-12. Botany BK-13. Zoology BK-17. Microbiology BK-18. Biotechnology BK-23. Environment
PLO-7	Takes responsibility for one's own work and can be entrusted with responsibility for achieving results in the field of biology and biology education	BK-11. Mastery of the scientific field of education BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology
PLO-8	Ability to develop technology-based multimedia focused on bio-entrepreneurship in the fields of education and entrepreneurship	BK-33. Learning media BK-34. Multimedia
PLO-9	Able to use plant cultivation and Plant Tissue Culture techniques based on local wisdom in entrepreneurship grounded in bioedupreneurship	BK-35. Plant Tissue Culture BK-36. Plant cultivation techniques

PLO	Description of Programme PLO	Study Materials
PLO-10	Evaluate and integrate concepts of religion, nationality, the constitution, language, and Technology Based Entrepreneurship with the 5A values (anti-violence, anti-drugs, anti-bullying, anti-intolerance, and anti-corruption) to support the development of professional knowledge and practice.	BK-01. Religion BK-02. Pancasila Education BK-03. Citizenship BK-04. Indonesian BK-05. English BK-06. PGRI Studies BK-07. Community Service

5.2 Description of Study Materials

The study materials in the Biology Education study Programme curriculum are described in Table 5.2.

Table 5.2. Study Materials (BK)

No/Code	Study Materials (BK)	Description of Study Materials
CM-1	Religion	Humanity and Religion; the concepts of faith, Islam and ihsan in shaping the perfect human being; the concepts of ethics, morals and character (anti-corruption, anti-bullying, anti-intolerance, anti-sexual violence and anti-drugs); Islam fostering unity in diversity; Islam and the challenges of modernisation; Islam's contribution to the development of world civilisation; democracy and human rights from an Islamic perspective; and Islamic politics and law
BK-2	Pancasila Education	History and objectives of Pancasila Education, Pancasila as the nation's identity, Pancasila in the context of the 1945 Constitution, Pancasila as the foundation of the state, Pancasila as the ideology of the nation and state, Pancasila as a philosophical system, Pancasila and state policy, Pancasila as an ethical system, Actualisation of Pancasila values in the 5A: Anti-Corruption, Anti-Intolerance, Anti-Bullying, and Anti-Sexual Violence, Anti-Drugs; Correlation between state law "Pancasila" and religious law; Pancasila as the foundation for the development of science; Pancasila as a paradigm of scientific knowledge; Pancasila as a paradigm of national life
BK-3	Civics Education	Introduction to Citizenship Education, Development and Implementation of the State System of the Republic of Indonesia, Indonesian Democracy, Indonesian National Identity and Anti-Intolerance, Indonesian Citizenship, Human Rights (HAM), Anti-Bullying and Anti-Sexual Violence, Judicial Violations and the Enforcement of Human Rights, National Resilience, National Strategic Policy, the Archipelagic Outlook, Implementation of the Archipelagic Outlook in National Life, Methods of Measuring Indonesia's Territorial Waters and Airspace, Regional Autonomy, and Anti-Corruption and Anti-Narcotics
BK-4	Indonesian Language	History of the Indonesian Language, Varieties of the Language, Indonesian Spelling, Indonesian Sentences, Indonesian Paragraphs, Compiling a Bibliography, Writing Citations, Writing Academic Papers
BK-5	English	Simple Present Tense, Simple Past Tense, Present Continuous Tense, Present Perfect Tense, Simple Future Tense, Descriptive Text, Procedural Text, Recount Text

No/Code	Study Materials (BK)	Description of Study Materials
BK-6	PGRI Studies	History and Dynamics of PGRI, Nature and Identity of PGRI, Profile of Pancasila Students, Role of PGRI in Human Resource Development, PGRI Organisational Ethics, PGRI and Global Networks, Challenges Facing PGRI in the Age of Disruption
BK-7	Community Service Programme	Digital Literacy, Inclusive and Exclusive Leadership, National Perspective, Talent Development, Entrepreneurship, Problem Solving in the Community, Non-Formal Education, Public Speaking, Journalism
BK-8	Technology Based Entrepreneurship	Design thinking (Design Thinking Mastery), Business Model Canvas Theory (Business Models), Business Model Canvas Presentation and Review (Business Idea Creation), Marketing Management: STP, Marketing Mix, and SWOT analysis (Marketing Plan and Channels), Marketing Management: Digital Marketing, Branding (Marketing Plan and Channels), HR & Operational Management: Job Analysis and Supply Chain (Planning and Strategising), Financial Management: Financial Projections & Working Capital Requirements (Unit Product Cost and Pricing Methods), Visits to SME Partners (Starting a Business Through Problem Identification), Business Plan Development & Prototyping (Planning and Strategising, Prototyping), Business Communication & Analysis of Startup Funding Needs (Communication and Negotiation Skills), Assistance (Problem Solving and Decision Making), Assistance (Product Testing, Packaging), Business Feasibility Study (Business Planning and Feasibility Study), Expo & Investor Pitching (Long-Term Vision)
BK-9	Understanding of learners	a. the characteristics of learners from physical, psychological, social, and cultural aspects for the purposes of learning; b. educational services tailored to learners' characteristics; and c. the optimal development of learners' potential.
BK-10	Learning	a. the philosophical, legal, historical, sociological, psychological, and empirical foundations of education; b. concepts of educational psychology; c. learning and teaching theories, approaches and models of learning, teaching materials, and assessment for the purposes of learning; d. the application of information and communication technology in learning planning, delivery, evaluation, and management; the fundamentals of Artificial Intelligence regarding the application of AI in the design of learning media and assessment; e. improvement of learning quality based on process assessment and assessment of learning outcomes; and, f. development of a learning environment that is safe, comfortable, enjoyable, challenging, and fosters students' creativity.
BK-11	Mastery of educational disciplines	a. objectives, content, learning experiences, and assessment within the school curriculum; b. curriculum development in accordance with areas of responsibility; c. management of the school curriculum; d. professional ethics in education
BK-12	Botany	morphology, anatomy, physiology, reproduction, taxonomy, plant evolution

No/Code	Study Materials (BK)	Description of Study Materials
BK-13	Zoology	morphology, anatomy, reproduction, physiology, behaviour, taxonomy
BK-14	Human biology	anatomical structure, physiology, lifestyle and human health
BK-15	Ecology	Plants, animals, the environment and their interactions
BK-16	Biochemistry	structure, function, and interactions of biomolecules within the cells of living organisms
BK-17	Microbiology	bacteria, viruses, fungi, and protists
BK-18	Biotechnology	Fundamentals of biotechnology and applied biotechnology
BK-19	Genetics	genes, inheritance of traits, genetic variation; molecular biology
BK-20	Evolution	origins of life, mechanisms of evolution, adaptation, species diversification
BK-21	Cell and molecular biology	cell structure and function, as well as the fundamentals of molecular genetics, gene expression regulation, DNA replication, transcription, translation, and molecular analysis techniques
BK-22	General biology	cell structure and function, the chemical composition of organisms, biodiversity, body organisation, metabolism, interactions between organisms, and the fundamentals of inheritance.
BK-23	Environment	Environment and climate education
BK-24	Basic physics	School physics and biological physics
BK-25	Basic chemistry	School Chemistry and Basic Chemistry
BK-26	Biological mathematics	Biological Mathematics
BK-27	Statistics	collection, processing, presentation, analysis and interpretation of data
BK-28	Biology English	studying English within the context of biological vocabulary, sentence structure and grammar in relation to biological concepts, understanding biological texts, communicating in the field of biology
BK-29	Research Methods in Biology Education	Research Methods in Biology Education in education and biology
BK-30	Scientific publications	preparation of scientific articles and dissemination of research findings
BK-31	Management and Health and Safety in the Laboratory	Occupational Health and Safety in Laboratories, Laboratory Work Procedures, Laboratory Administration, Management of Hazardous Waste
BK-32	Bioethics	Moral and ethical issues in the context of biology
BK-33	Learning media	Digital (animation, videography) and non-digital learning media, development of digital biology learning resources and materials, research into learning media
BK-34	Multimedia	web design techniques and their implementation, multimedia systems, multimedia elements, multimedia classification, data compression techniques, multimedia security, and multimedia in networks, and multimedia project management (planning, implementation, and control of multimedia development projects)
BK-35	Bioentrepreneurship	fundamentals of marketing, planning and development of entrepreneurial products, utilisation of digital technology to develop businesses in the agricultural sector
BK-36	Plant Tissue Culture	plant tissue culture techniques

No/Code	Study Materials (BK)	Description of Study Materials
BK-37	Plant cultivation techniques	Cultivation techniques for orchids and other horticultural plants, including propagation, care, pest and disease control, cultivation environment engineering, and post-harvest technology covering sorting, grading, storage and preservation.

6 Course Design and Determination of Credit Weight

Courses are formed based on the Learning Outcomes (PLO) assigned to the course and the study materials corresponding to those PLOs. The matrix of correspondence between PLOs and study materials in the Biology Education study Programme is explained in Table 6.1 as follows:

Table 6.1 Matrix of alignment between LOs and Course Content

LLO	Course Content
PLO-1 Able to demonstrate character and conduct that reflect adaptability, enthusiasm and integrity as a manifestation of piety towards God Almighty	BK-01. Religion BK-02. Pancasila Education BK-03. Citizenship BK-04. Indonesian BK-05. English BK-06. PGRI Studies BK-07. Community Service BK-08. Technology Based Entrepreneurship
PLO-2 Analysing the concepts and principles of pedagogy, the essentials of biology, science (including the study of climate change), mathematics, technology and its development, as well as the basic principles of scientific methodology and other fields in depth, so as to be able to formulate procedural problem-solving	BK-09. Understanding of learners BK-10. Learning BK-11. Mastery of educational disciplines BK-12. Botany BK-13. Zoology BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-17. Microbiology BK-18. Biotechnology BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology BK-23. Environment BK-24. Basic Physics BK-25. Basic Chemistry BK-26. Mathematical Biology BK-27. Statistics BK-28. Biology English BK-29. Research Methods in Biology Education BK-30. Scientific Publication
PLO-3 Solves problems critically and wisely by applying concepts and principles of pedagogy, essential biology, science (including the study of climate change), mathematics, technology and its developments, basic principles of scientific methodology and other fields by utilising science and technology, and is able to develop oneself and adapt to the situations faced	BK-09. Understanding of learners BK-10. Learning BK-11. Mastery of educational disciplines BK-12. Botany BK-13. Zoology BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-17. Microbiology

LLO	Course Content
	BK-18. Biotechnology BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology BK-23. Environment BK-24. Basic Physics BK-25. Basic Chemistry BK-26. Mathematical Biology BK-27. Statistics BK-29. Research Methods in Biology Education BK-30. Scientific Publication
PLO-4 Establishing effective communication, both oral and written, regarding the fundamental principles of scientific methodology and their application, utilising science and technology in research within the fields of biology and biology education	BK-29. Research Methods in Biology Education BK-30. Scientific publications
PLO-5 Integrating essential biological concepts and their development into practical activities in the laboratory and in the field, whilst observing the principles of bioethics and Health and Safety at Work (HSW)	BK-12. Botany BK-13. Zoology BK-14. Human Biology BK-15. Ecology BK-16. Biochemistry BK-17. Microbiology BK-18. Biotechnology BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology BK-23. Environment BK-31. Laboratory Management and Health and Safety BK-32. Bioethics
PLO-6 Able to make decisions and select various alternative solutions to problems in the fields of biology and biology education, both independently and in groups, whilst internalising the spirit of entrepreneurial values	BK-09. Understanding of learners BK-10. Learning BK-12. Botany BK-13. Zoology BK-17. Microbiology BK-18. Biotechnology BK-23. Environment
PLO-7 Takes responsibility for one's own work and can be entrusted with responsibility for achieving results in the field of biology and biology education	BK-11. Mastery of the scientific field of education BK-14. Human biology BK-15. Ecology BK-16. Biochemistry BK-19. Genetics BK-20. Evolution BK-21. Cell and Molecular Biology BK-22. General Biology

LLO	Course Content
PLO-8 Able to develop technology-based multimedia focused on bio-entrepreneurship in the fields of education and entrepreneurship	BK-33. Learning media BK-34. Multimedia BK-35. Bioentrepreneurship
PLO-9 Able to use plant cultivation and Plant Tissue Culture techniques based on local wisdom in entrepreneurship grounded in bioedupreneurship	BK-36. Plant Plant Tissue Culture BK-37. Plant cultivation techniques
PLO-10 Evaluate and integrate concepts of religion, nationality, the constitution, language, and Technology Based Entrepreneurship with the 5A values (anti-violence, anti-drugs, anti-bullying, anti-intolerance, and anti-corruption) to support the development of professional knowledge and practice.	BK-01. Religion BK-02. Pancasila Education BK-03. Citizenship BK-04. Indonesian BK-05. English BK-06. PGRI Studies BK-07. Community Service BK-08. Technology Based Entrepreneurship

Furthermore, the courses in the Biology Education study Programme are structured based on the study materials and PLO descriptions outlined in Table 6.2 below.

Table 6.2 Determination of courses through study materials in PLO descriptors

Study Materials	Course Name
BK-01. Religion	Course MK-01. Islamic Religious Education Course Code 02. Catholic Religious Education Course MK-03. Christian Religious Education MK-04. Hindu Religious Education MK-05. Buddhist Religious Education MK-06. Confucian Religious Education
BK-02. Pancasila Education	MK-07. Pancasila Education
BK-03. Civics Education	MK-08. Civics Education
BK-04. Indonesian	MK-09. Indonesian Language
BK-05. English	MK-10. English
BK-06. PGRI Affairs	MK-11. PGRI Studies
BK-07. Community Service	MK-12. Community Service Programme
BK-08. Technology Based Entrepreneurship	MK-13. Technology Based Entrepreneurship
BK-09. Learner Understanding	MK-14. Learner Development MK-15. Basic Chemistry
BK-10. Learning	MK-16. Foundations of Education MK-17. Educational Psychology MK-18. Basic of Biology Learning MK-19. Biology Learning Strategies MK-20. Biology Learning Resources and Material Development MK-21. Biology Learning Assessment

Study Materials	Course Name
	MK-22. Biology Lesson Planning (TPACK) MK-23. Microteaching (TPACK) MK-24. PLP (TPACK) MK-57. Internship – Curriculum Development MK-58. Internship – Development of Lesson Plans MK-59. Internship – Development of Teaching Media and Materials
BK-11. Mastery of Educational Science	MK-25. Curricullum Review MK-26. Professional Ethics
BK-12. Botany	MK-27. Plant Developmental Structure MK-28. Plant and Fungal Diversity MK-29. Plant Physiology
BK-13. Zoology	MK-30. Structure and Development of Animals MK-31. Animal Diversity MK-32. Animal Physiology
BK-14. Human Biology	MK-33. Human Anatomy, Physiology & Health
BK-15. Ecology	MK-34. Ecology
BK-16. Biochemistry	MK-35. Biochemistry
BK-17. Microbiology	MK-36. Microbiology
BK-18. Biotechnology	MK-37. Biotechnology
BK-19. Genetics	MK-38. Genetics
BK-20. Evolution	MK-39. Evolution
BK-21. Cell and Molecular Biology	MK-40. Cell and Molecular Biology
BK-22. General Biology	MK-41. General Biology
BK-23. Environment	MK-42. Environment
BK-24. Basic Physics	MK-43. Basic Physics
BK-25. Basic Chemistry	MK-44. Basic Chemistry
BK-26. Mathematical Biology	MK-45. Mathematical Biology
BK-27. Statistics	MK-46. Biostatistics
BK-28. English for Biology	MK-47. English for Biology
BK-29. Research Methods in Biology Education	MK-48. Research Methods in Biology Education MK-50. Final Project
BK-30. Scientific Publication	MK-49. Scientific Publications
BK-31. Laboratory Management and Health and Safety	MK-51. Laboratory Techniques
BK-32. Bioethics	MK-37. Biotechnology
BK-33. Learning resources	MK-20. Biology Learning Resources and Material Development

Study Materials	Course Name
	MK-60. Digital Innovation in Biology Learning Resources and Materials MK-61. Learning Media Research MK-62. Web Design MK-63. Multimedia Technology MK-64. Multimedia Project Management
BK-34. Multimedia	MK-52. Innovation in Digital Learning Media MK-60. Innovation in Digital Biology Learning Resources and Materials MK-61. Research in Learning Media MK-62. Web Design MK-63. Multimedia Technology MK-64. Multimedia Project Management
BK-35. Bioentrepreneurship	MK-53. Development and evaluation of entrepreneurial products
BK-36. Plant Tissue Culture	MK-54. Plant Tissue Culture MK-65. Plant Propagation MK-66. Plant Protection MK-67. Environmental Engineering in Plant Cultivation Systems MK-68. Digital Agribusiness Entrepreneurship MK-70. Soil Biology
BK-37. Plant Cultivation Techniques	MK-55. Orchid Cultivation MK-56. Horticulture MK-65. Plant Propagation MK-66. Plant Protection MK-67. Environmental Engineering in Plant Cultivation Systems MK-68. Digital Agribusiness Entrepreneurship MK-69. Post-Harvest Technology MK-70. Soil Biology

The PLO and course mapping matrix for the Biology Education Programme is shown in Table 6.4 below.

Table 6.4 PLO-Course Mapping Matrix

No	Course	PLO									
		1	2	3	4	5	6	7	8	9	10
Semester 1											
1	Pancasila Education	√	√								√
2	English	√	√								√
3	Indonesian Language	√	√								√
4	Mathematical Biology	√	√	√				√			
5	General Biology	√	√	√			√				
6	Basic Physics	√	√	√				√			
7	Basic Chemistry	√	√	√				√			
8	Foundations of Education	√	√	√			√				
9	Laboratory Techniques	√	√			√					
Semester 2											
1	Islamic Religious Education	√	√								√
2	Catholic Religious Education	√	√								√
3	Christian Religious Education	√	√								√
4	Hindu Religious Education	√	√								√
5	Buddhist Religious Education	√	√								√
6	Confucian Religious Education	√	√								√
7	Civics Education	√	√								√
8	PGRI Studies	√	√								√
9	Professional Ethics	√	√	√				√			
10	Educational Psychology	√	√	√			√				
11	Student Development	√	√	√			√				
12	The Structure of Plant and Fungal Development	√	√	√		√	√				
13	Structure and Development of Animals	√	√	√		√	√				
14	Classrom Management										
Semester 3											
1	Biochemistry	√	√	√		√		√			
2	Animal Physiology	√	√	√		√	√				
3	Plant Physiology	√	√	√		√	√				
4	Biology Learning Strategies	√	√	√			√				
5	Basic of Biology Learning	√	√	√			√				
6	English for Biology	√	√	√				√			
Semester 4											
1	Biology Learning Assessment	√	√	√			√				

No	Course	PLO									
		1	2	3	4	5	6	7	8	9	10
2	Genetics	√	√	√		√		√			
3	Animal Diversity	√	√	√		√	√				
4	Plant and Fungal Diversity	√	√	√		√	√				
5	Human Anatomy, Physiology & Health	√	√	√		√		√			
6	Biology Learning Resources and Material Development	√	√	√			√		√		
7	Technology Based Entrepreneurship	√									√
Semester 5											
1	Biology Lesson Planning	√	√	√			√				
2	Cell and Molecular Biology	√	√	√		√		√			
3	Evolution	√	√	√		√	√				
4	Microbiology	√	√	√		√	√				
5	Ecology	√	√	√		√	√				
6	Research Methods in Biology Education	√	√	√	√			√			
7	Innovations in Digital Learning Media	√	√	√			√		√		
8	Horticulture	√	√	√		√	√			√	
Semester 6											
1	Curriculum Review	√	√	√				√			
2	Microteaching	√	√	√			√				
3	Biostatistics	√	√	√			√				
4	Biotechnology	√	√	√		√	√				
5	Environment	√	√	√		√	√				
6	Development and Evaluation of Entrepreneurial Products	√	√	√			√		√		
7	Tissue Culture	√	√	√		√	√			√	
8	Orchid Cultivation	√	√	√		√	√			√	
Semester 7											
1	Scientific Publications	√	√	√	√			√			
2	Internship - Curriculum Analysis	√	√	√			√				
3	Internship – Lesson Plan Development	√	√	√			√				
4	Internship – Development of Learning Materials	√	√	√			√				
5	Internship -Teaching Practice	√	√	√			√				
6	Innovation in Digital Biology Learning Resources and Materials	√	√	√			√		√		
7	Learning Media Research	√	√	√			√		√		

No	Course	PLO									
		1	2	3	4	5	6	7	8	9	10
8	Web design	√	√	√				√	√		
9	Multimedia Technology	√	√	√			√		√		
10	Multimedia Project Management	√	√	√			√		√		
11	Plant Propagation	√	√	√		√	√			√	
12	Plant Protection	√	√	√		√		√		√	
13	Environmental Engineering in Plant Cultivation Systems	√	√	√		√	√			√	
14	Digital Agribusiness Entrepreneurship	√	√	√		√	√			√	
15	Post-Harvest Technology	√	√	√		√	√			√	
16	Soil Biology	√	√	√		√		√		√	
Semester 8											
1	Final Project	√	√	√		√		√			
2	Community Service Programme – Problem Solving in the Community	√	√								√
3	Community Service Programme – Digital Literacy	√	√								√
4	Community Service Programme – Inclusive and Exclusive Leadership	√	√								√
5	Community Service Programme – Non-Formal Education	√	√								√

7 Organisation of Course Modules in the Study Programme

The distribution of courses within the Biology Education Study Programme is outlined in a course structure and matrix in Table 7.1 and Table 7.2 as follows.

Table 7.1. Course Structure

No	Credit Hours	Course Code	Course Name	Course Group				Course Group					
				Compulsory Course	Elective Course	Compulsory Courses in the Curriculum	UPGRIS Distinctive MK	MPK	MKK	MKB	MPB	MBB	MKDK
1	2	322512 1 601	Islamic Religious Education			√		√					√
		322512 1 602	Catholic Religious Education			√		√					√
		322512 1 603	Christian Religious Education			√		√					√
		322512 1 604	Hindu Religious Education			√		√					√
		322512 1 605	Buddhist Religious Education			√		√					√
		322512 1 606	Confucian Religious Education			√		√					√
2	2	322512 1 607	Pancasila Education			√		√					√
3	2	322512 1 608	Civics Education			√		√					√
4	2	322512 1 609	Indonesian Language			√		√					√
5	2	322522 1 610	English				√	√					
6	2	322522 1 611	PGRI Studies				√	√					
7	4	322524 4 612	Community Service Programme				√	√			√	√	

No	Credit Hours	Course Code	Course Name	Course Group				Course Group					
				Compulsory Course	Elective Course	Compulsory Courses in the Curriculum	UPGRIS Distinctive MK	MPK	MKK	MKB	MPB	MBB	MKDK
8	4	322524 2 613	Technology Based Entrepreneurship				√	√	√	√			
9	2	322532 1 614	Student Development	√				√	√				
10	2	322532 1 615	Classroom Management	√				√	√				
11	2	322532 1 616	Foundations of Education	√				√	√				
12	2	322532 1 617	Educational Psychology	√				√	√				
13	2	322532 1 618	Basic of Biology Learning	√				√	√				
14	2	322532 1 619	Biology Learning Strategies	√				√	√				
15	3	322533 2 620	Biology Learning Resources and Material Development	√				√	√	√			
16	3	322533 1 621	Biology Learning Assessment	√				√	√	√			
17	3	322533 1 622	Biology Lesson Planning	√				√	√	√			
18	2	322532 2 623	Microteaching	√				√	√				
19	4	322534 4 624	Internship	√				√	√			√	
20	3	322533 1 625	Curriculum Review	√				√	√		√		
21	2	322532 1 626	Professional Ethics	√				√	√				

No	Credit Hours	Course Code	Course Name	Course Group				Course Group					
				Compulsory Course	Elective Course	Compulsory Courses in the Curriculum	UPGRIS Distinctive MK	MPK	MKK	MKB	MPB	MBB	MKDK
22	3	322533 2 627	Structure and Development of Plants and Fungi	√				√	√				
23	2	322533 2 628	Plant and Fungal Diversity	√				√	√				
24	3	322533 2 629	Plant Physiology	√				√	√				
25	3	322533 2 630	Structure and Development of Animals	√				√	√				
26	2	322533 2 631	Animal Diversity	√				√	√				
27	3	322533 2 632	Animal Physiology	√				√	√				
28	3	322533 2 633	Human Anatomy, Physiology & Health	√				√	√				
29	3	322533 1 634	Ecology	√				√	√				
30	3	322533 2 635	Biochemistry	√				√	√				
31	3	322533 2 636	Microbiology	√				√	√				
32	2	322533 1 637	Biotechnology	√				√	√				
33	2	322532 1 638	Genetics	√				√	√				
34	2	322532 1 639	Evolution	√				√	√				
35	2	322532 1 640	Cell and Mollecular Biology	√				√	√				
36	3	322533 1 641	General Biology	√				√	√				
37	2	322533 1 642	Environment	√				√	√				
38	2	322532 1 643	Basic Physics	√				√	√				
39	2	322532 1 644	Basic Chemistry	√				√	√				

No	Credit Hours	Course Code	Course Name	Course Group				Course Group					
				Compulsory Course	Elective Course	Compulsory Courses in the Curriculum	UPGRIS Distinctive MK	MPK	MKK	MKB	MPB	MBB	MKDK
40	2	322532 1 645	Mathematical Biology	√				√	√				
41	2	322532 1 646	Biostatistics	√				√	√				
42	2	322532 1 647	English for Biology	√				√	√				
43	3	322533 1 648	Research Methods in Biology Education	√				√		√			
44	2	322532 1 649	Scientific Publications	√				√	√	√	√		
45	6	322576 5 650	Final Project				√	√		√	√		
46	2	322532 2 651	Laboratory Techniques	√				√	√				
47	2	322532 2 652	Innovations in Digital Learning Media	√				√	√	√			
48	3	322533 2 653	Entrepreneurial Product Development and Evaluation	√				√	√				
49	3	322533 2 654	Plant Tissue Culture	√				√	√	√			
50	2	322532 2 655	Orchid Cultivation	√				√	√	√			
51	2	322533 2 656	Horticulture	√				√	√				
52	2	322542 4 657	Internship - Curriculum Analysis	√				√				√	
53	2	322542 4 658	Internship - Lesson Plan Development	√				√				√	

No	Credit Hours	Course Code	Course Name	Course Group				Course Group					
				Compulsory Course	Elective Course	Compulsory Courses in the Curriculum	UPGRIS Distinctive MK	MPK	MKK	MKB	MPB	MBB	MKDK
54	2	322542 4 659	Internship - Learning Media Development	√				√				√	
55	3	322543 2 660	Innovation in Digital Biology Learning Resources and Materials		√			√				√	
56	2	322542 2 661	Learning Media Research		√			√				√	
57	2	322542 2 662	Web design		√			√				√	
58	3	322543 2 663	Multimedia Technology		√			√				√	
59	2	322542 1 664	Multimedia Project Management		√			√				√	
60	2	322542 2 665	Plant Propagation		√			√				√	
61	2	322542 1 666	Plant Protection		√			√				√	
62	2	322542 1 667	Environmental Engineering in Plant Cultivation Systems		√			√				√	
63	2	322542 1 668	Digital Agribusiness Entrepreneurship		√			√				√	
64	2	322542 2 669	Post-Harvest Technology		√			√				√	
65	2	322542 1 670	Soil Biology		√			√				√	

													CPL3+CPL6+ CPL8									CPL6+CPL9												
VI	19	8	Telaah Kurikulum (3 SKS) CPL1 + CPL2+CPL3+ CPL7	Microteaching (2 SKS) CPL1 + CPL2+ CPL3+ CPL6+ CPL7	Biostatistik (2 SKS) CPL1 + CPL2+ CPL3+ CPL6	Bioteknologi (2 SKS) CPL1 + CPL2+ CPL3+ CPL5+ CPL6	Lingkungan (2 SKS) CPL1 + CPL2+ CPL3+ CPL5+ CPL6	PEPW (3 SKS) CPL1 + CPL2+ CPL3+ CPL6+ CPL8	Kultur Jaringan Tumbuhan (3 SKS) CPL1 + CPL2+ CPL3+ CPL5+ CPL6	Budidaya Anggrek (2 SKS) CPL1 + CPL2+ CPL3+ CPL5+ CPL6																									
V	21	8	Perencanaan Pembelajaran Biologi (3 SKS) CPL 1+ CPL 2+CPL 3+CPL 6	Biologi Sel dan Molekuler (2 SKS) CPL 1+CPL 2+CPL 3+CPL5+CPL 7	Evolusi (2 SKS) CPL 1+CPL 2+CPL 3+CPL5+CPL 7	Mikrobiologi (2 SKS) CPL 1+CPL 2+CPL 3+CPL5+CPL 7	Ecology (3 SKS) CPL 1+CPL 2+CPL 3+CPL5+CPL 7	Metodologi Penelitian (3 SKS)1+2+3+4 +7)	Inovasi Media Pemb Digital (4 SKS) CPL 1+ CPL CPL 2+CPL 3+ CPL 6+ CPL 8	Hortikultura (2 SKS) CPL1+ CPL 2+ CPL 3+ CPL 5+ CPL 6+ CPL 9																									
IV	19	7	Asesmen Pembelajaran Biologi (3 SKS) CPL 1+ CPL 2+CPL3+CPL 6	Genetika (2 SKS) CPL 1+ CPL 2+CPL 3+ CPL5+ CPL7	Keanekaragaman hewan (2 SKS) CPL 1+CPL 2+CPL3+ CPL 5+ CPL6	Keanekaragaman tumbuhan (2 SKS) CPL 1+CPL 2+CPL3+CPL 5+CPL 6	Anatomi fisiologi manusia kesehatan (3 SKS) CPL 1+CPL 2+ CPL 3+CPL 5+CPL 7	PSB3 (3 SKS) CPL 2+CPL 3+CPL 6+CPL 8																								Kewirausahaan berbasis teknologi (4 SKS) CPL1+CPL 2+CPL 3+CPL 7	
III	15	6	Biokimia (3 SKS) CPL1+ CPL2+ CPL3+ CPL5+CPL7	Fisiologi hewan (3 SKS) CPL1+CPL2+ CPL3+CPL5+ CPL6	Stategi Pembelajaran Biologi (2 SKS) CPL1+CPL2+ CPL3+CPL6	Fisiologi Tumbuhan (3 SKS) CPL1+CPL2+ CPL3+CPL5+ CPL6	Dasar-Dasar Pembelajaran Biologi (2 SKS) CPL1+CPL2+ CPL3+CPL6	Bahasa Inggris Biologi (2 SKS) CPL1+CPL2+ CPL3+CPL7																									
II	20	9	Etika profesi kependidikan (2 SKS) CPL1+CPL2+ CPL3+CPL7	Struktur perkembangan hewan (3 SKS) CPL1+CPL2+ CPL3+CPL5+ CPL6	Struktur Perkembangan Tumbuhan (3 SKS) CPL1+CPL2+ CPL3+CPL5+ CPL6	Psikologi Pendidikan (2 SKS) CPL1+CPL2+ CPL3+CPL6	Manajemen Kelas (2 SKS) CPL1+CPL2+ CPL3+CPL7	Perkembangan Peserta Didik (2 SKS) CPL1+CPL2+ CPL3+CPL7																							Pendidikan agama (2 SKS)	Pendidikan Kewarganegaraan (2 SKS)		Ke-PGRI-an (2 SKS)	
I	19	9	Matematika Biologi (2 SKS) CPL 1+CPL 2+CPL 3+CPL 7	Biologi umum (3 SKS) CPL 1+CPL 2+CPL 3+CPL 5+ CPL 6	Fisika Dasar (2 SKS) CPL 1+CPL 2+CPL 3+CPL 7	Kimia dasar (2 SKS) CPL 1+CPL 2+CPL 3+CPL 7	Landasan kependidikan (2 SKS) CPL 1+CPL 2+CPL 3+CPL 7	Teknik laboratorium (2 SKS) CPL 1+CPL 2+CPL 5																							Pancasila (2 SKS)	Bahasa Indonesia (2 SKS)		Bahasa Inggris (2 SKS)	
	145	63																																	

8 PLO Fulfilment Map within the Course

The PLO development map for the Biology Education Study Programme is described in Figure 8.1 below.

Table 8.1. Map of PLO Fulfilment in Courses

9 Distribution of Courses by Semester and PLO Assessment Scheduling

9.1 Distribution of Courses

Courses in the Biology Education Study Programme are spread across eight semesters, as described in Tables 9.1.1–9.1.8.

Table 9.1.1. List of first-semester courses

No	Course Code	Course	Theory	Practical	Simulation/seminar	Fieldwork	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225121607	Pancasila Education	2	0	0	0	2	
2	3225221610	English	2	0	0	0	2	
3	3225121609	Indonesian Language	2	0	0	0	2	
4	3225321645	Mathematical Biology	2	0	0	0	2	
5	3225331641	General Biology	2	1	0	0	3	
6	3225321643	Basic Physics	2	0	0	0	2	
7	3225321644	Basic Chemistry	2	0	0	0	2	
8	3225321616	Foundations of Education	2	0	0	0	2	
9	3225322651	Laboratory Techniques	1	1	0	0	2	
Total Course Load for Semester I							19	

Table 9.1.2. List of courses for Semester II

No	Course Code	Course	Theory	Practical	Simulation/seminar	Field work	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225121601	Islamic Religious Education	2	0	0	0	2	
2	3225121602	Catholic Religious Education	2	0	0	0	2	
3	3225121603	Christian Religious Education	2	0	0	0		
4	3225121604	Hindu Religious Education	2	0	0	0		

5	3225121605	Buddhist Religious Education	2	0	0	0		
6	3225121606	Confucian Religious Education	2	0	0	0		
7	3225121608	Civics Education	2	0	0	0	2	
8	3225221611	PGRI Studies	2	0	0	0	2	
9	3225321626	Professional Ethics	2	0	0	0	2	
10	3225321617	Educational Psychology	2	0	0	0	2	
11	3225321614	Student development	2	0	0	0	2	
12	3225321615	Classroom Management	2	0	0	0	2	
13	3225332627	Structure and Development of Plants and Fungi	2	1	0	0	3	General Biology
14	3225332630	Structure and Development of Animals	2	1	0	0	3	General Biology
Total Credit Load for Semester II							20	

Table 9.1.3. List of courses for Semester III

No	Course Code	Course	Theory	Practical	Simulation/seminar	Field work	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225332635	Biochemistry	2	1	0	0	3	General Biology
2	3225332632	Animal Physiology	2	1	0	0	3	General Biology, SPH
3	3225332629	Plant Physiology	2	1	0	0	3	General Biology, SPT
4	3225321619	Biology Learning Strategies	2	0	0	0	2	Educational foundations, Learner development, Educational psychology
5	3225321618	Basic of Biology Learning	2	0	0	0	2	Educational foundations, Learner development, Educational psychology
6	3225321647	English for Biology	2	0	0	0	2	English
Total Course Load for Semester III							15	

Table 9.1.4. List of courses for Semester IV

No	Course Code	Course	Theory	Practical	Simulation/seminar	Fieldwork	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225331621	Biology Learning Assessment	3	0	0	0	3	Student development, Educational psychology, Biology Learning Strategies
2	3225321638	Genetics	1	1	0	0	2	General Biology, Biochemistry
3	3225332631	Animal Diversity	1	1	0	0	2	General Biology, SPH
4	3225332628	Plant and Fungal Diversity	1	1	0	0	2	General Biology, SPT
5	3225332633	Human Anatomy, Physiology & Health	2	1	0	0	3	General Biology, SPH, Animal Physiology
6	3225332620	Biology Learning Resources and Material Development	2	1	0	0	3	Student development, Educational psychology, Biology Learning Strategies
7	3225242613	Technology Based Entrepreneurship	2	2	0	0	4	SPT, SPH, Biochemistry, Fishew, Fistum, Kahew (joint), Katumb (joint), Anfismankes (joint), PSB3 (joint)
Total Course Load for Semester IV							19	

Table 9.1.5. List of courses for Semester V

No	Course Code	Course	Theory	Practical	Simulation/seminar	Field work	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225331622	Biology Lesson Planning	3	0	0	0	3	Student development, Educational psychology, Basic of Biology Learning, Biology Learning

								Strategies, Biology learning assessment, PSB3
2	3225321640	Cell and Mollecular Biology	1	1	0	0	2	General Biology, Biochemistry, Genetics
3	3225321639	Evolution	2	0	0	0	2	General Biology, Biochemistry, Genetics
4	3225332636	Microbiology	2	1	0	0	3	General Biology, Biochemistry, Genetics
5	3225331634	Ecology	2	1	0	0	3	General Biology, Animal Diversity, Plant and Fungal Diversity
6	3225331648	Research Methods in Biology Education	3	0	0	0	3	
7	3225322652	Innovations in Digital Learning Media	0	2	0	0	2	PSB3
8	3225332656	Horticulture	0	2	0	0	2	General Biology, SPT, Plant Physiology, Plant and Fungal Diversity
Total Course Load for Semester V							20	

Table 9.1.6. List of courses for Semester VI

No	Course Code	Course	Theory	Practical	Simulation/seminar	Field work	Total credits	Name of Constitutional Court Case
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225331625	Curriculum Review	3	0	0	0	3	Student Development, Educational Psychology, Basic of Biology Learning, Biology Learning Strategies, Biology Assessment, PSB3, Biology Lesson Planning
2	3225322623	Microteaching	0	2	0	0	2	Student Development, Educational Psychology, Basic of Biology Learning, Biology Learning Strategies, Biology Assessment, PSB3, Biology Lesson Planning, Curricullum Review
3	3225321646	Biostatistics	2	0	0	0	2	Research Methods in Biology Education

4	3225331637	Biotechnology	2	0	0	0	2	General Biology, Biochemistry, Genetics, Microbiology, Cell and Molecular Biology
5	3225331642	Environment	2	0	0	0	2	General Biology, Ecology
6	3225332653	Entrepreneurial Product Development and Evaluation	0	3	0	0	3	Technology Based Entrepreneurship
7	3225332654	Plant Tissue Culture	1	2	0	0	3	Biochemistry, SPT, Plant Physiology, Genetics, Cell and Molecular Biology
8	3225322655	Orchid Cultivation	1	1	0	0	2	SPT, Plant Physiology, Horticulture
Total Course Load for Semester VI							19	

Table 9.1.7. List of courses for Semester VII

No	Course Code	Course	Theory	Practical Total	Simulation simulation/semi Field	Field Practical	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225321649	Scientific Publications	0	1	1	0	2	Research Methods in Biology Education, Biostatistics
	Teaching Placement (for Education Programmes)							
2	3225424657	Internship - Curriculum Analysis	0	0	0	2	2	Microteaching
3	3225424658	Internship - Development of Lesson Plans	0	0	0	2	2	Microteaching
4	3225424659	Internship - Development of Learning Materials	0	0	0	2	2	Microteaching
5	3225344624	Internship - Teaching Practice	0	0	0	4	4	Microteaching
			Total credits				10	
	CoE Elective Course: Management of Multimedia Learning Materials (10 credits)							
6	3225432660	Innovation in Digital Biology	1	2	0	0	3	Innovations in Digital Learning Media

		Learning Resources and Materials						
7	3225422661	Learning Media Research	2	0	0	0	2	Innovations in Digital Learning Media
8	3225422662	Web design	1	1	0	0	2	Innovations in Digital Learning Media
9	3225432663	Multimedia Technology	1	2	0	0	3	Innovations in Digital Learning Media
10	3225421664	Multimedia Project Management	2	0	0	0	2	Innovations in Digital Learning Media
			Total Credits				12	
	CoE Elective Course: Orchid Cultivation (10 credits)							
6	3225422665	Plant Propagation	1	1	0	0	2	Orchid Cultivation, Plant Tissue Culture, Horticulture
7	3225421666	Plant Protection	2	0	0	0	2	Orchid Cultivation, Plant Tissue Culture, Horticulture
8	3225421667	Environmental Engineering and Crop Cultivation	2	0	0	0	2	Orchid Cultivation, Plant Tissue Culture, Horticulture
9	3225421668	Digital Agribusiness Entrepreneurship	2	0	0	0	2	Technology Based Entrepreneurship, Development and Evaluation of Entrepreneurial Products, Horticulture, Orchid Cultivation, Plant Tissue Culture
10	3225422669	Post-Harvest Technology	2	0	0	0	2	Orchid Cultivation, Horticulture
			Total credits				10	
	CoE Plant Tissue Culture Elective Course (10 credits)							
6	3225422665	Plant Propagation	1	1	0	0	2	Orchid Cultivation, Tissue Culture, Horticulture
7	3225421666	Plant Protection	2	0	0	0	2	Orchid Cultivation, Plant Tissue Culture, Horticulture
8	3225421667	Environmental Engineering and Crop Cultivation	2	0	0	0	2	Orchid Cultivation, Plant Tissue Culture, Horticulture, Environment
9	3225421668	Digital Agribusiness Entrepreneurship	2	0	0	0	2	Technology Based Entrepreneurship, Development and Evaluation of

								Entrepreneurial Products, Horticulture, Orchid Cultivation, Plant Tissue Culture
10	3225421670	Soil Biology	2	0	0	0	2	Plant Physiology, Horticulture, Plant Tissue Culture, Environment
			Total credits				10	
	Elective Courses taken within the Programme (if CoE1 and CoE2 are not passed)							
6	3225432660	Digital-based Innovation in Biology Learning Resources and Materials	1	2	0	0	3	Innovations in Digital Learning Media
7	3225432663	Multimedia Technology	1	2	0	0	3	Innovations in Digital Learning Media
8	3225421668	Digital Agribusiness Entrepreneurship	2	0	0	0	2	Technology Based Entrepreneurship, Development and Evaluation of Entrepreneurial Products, Horticulture, Orchid Cultivation, Plant Tissue Culture
9	3225421667	Environmental Engineering in Plant Cultivation Systems	2	0	0	0	2	Orchid cultivation, Plant Tissue Culture, Horticulture
10	3225421670	Soil Biology	2	0	0	0	2	Plant Physiology, Horticulture, Plant Plant Tissue Culture
			Total credits				12	
Total Course Load for Semester VII							22	

Table 9.1.8. List of courses for Semester VIII

No	Course Code	Course	Theory	Practical	Simulation/seminar	Field work	Number of credits	Course Name Prerequisites
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	3225765650	Final Project		6			6	
2	3225244612	Community Service Programme				4	4	
Total Course Load for Semester I							10	

9.2 PLO Assessment Schedule

Table 9.2 PLO assessment schedule table for Programmes outside the field of engineering

NO	Course Code	Course Name	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10
1	322512 1 601	Islamic Religious Education	2	2								2
2	322512 1 602	Catholic Religious Education	2	2								2
3	322512 1 603	Christian Religious Education	2	2								2
4	322512 1 604	Hindu Religious Education	2	2								2
5	322512 1 605	Buddhist Religious Education	2	2								2
6	322512 1 606	Confucian Religious Education	2	2								2
7	322512 1 607	Pancasila Education	1	1								1
8	322512 1 608	Civics Education	2	2								2
9	322512 1 609	Indonesian Language	1	1								1
10	322522 1 610	English	1	1								1
11	322522 1 611	PGRI Studies	2	2								2
12	322524 4 612	Community Service Programme	8	8								8
13	322524 2 613	Technology Based Entrepreneurship	4	4	4				4			4
14	322532 1 614	Student Development	2	2	2			2				

NO	Course Code	Course Name	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10
15	322532 1 615	Classroom Management	2	2	2			2				
16	322532 1 616	Educational Foundations	1	1	1			1				
17	322532 1 617	Educational Psychology	2	2	2			2				
18	322532 1 618	Basic of Biology Learning	3	3	3			3				
19	322532 1 619	Biology Learning Strategies	3	3	3			3				
20	322533 2 620	Biology Learning Resources and Material Development	4	4	4			4		4		
21	322533 1 621	Biology Learning Assessment	4	4	4			4				
22	322533 1 622	Biology Lesson Planning	5	5	5			5				
23	322532 2 623	Microteaching	6	6	6			6	6			
24	322534 4 624	Internship	7	7	7			7	7			
25	322533 1 625	Curriculum Review	6	6	6				6			
26	322532 1 626	Professional Ethics	2	2	2				2			
27	322533 2 627	Structure and Development of Plants and Fungi	2	2	2		2	2				
28	322533 2 628	Plant and Fungal Diversity	4	4	4		4	4				
29	322533 2 629	Plant Physiology	3	3	3		3	3				

NO	Course Code	Course Name	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10
30	322533 2 630	Structure and Development of Animals	2	2	2		2	2				
31	322533 2 631	Animal Diversity	4	4	4		4	4				
32	322533 2 632	Animal Physiology	3	3	3		3	3				
33	322533 2 633	Human Anatomy, Physiology & Health	4	4	4		4		4			
34	322533 1 634	Ecology	5	5	5		5	5				
35	322533 2 635	Biochemistry	3	3	3		3		3			
36	322533 2 636	Microbiology	5	5	5		5	5				
37	322533 1 637	Biotechnology	6	6	6		6	6				
38	322532 1 638	Genetics	4	4	4		4		4			
39	322532 1 639	Evolution	5	5	5		5		5			
40	322532 1 640	Cell and Mollecular Biology	5	5	5		5		5			
41	322533 1 641	General Biology	1	1	1		1	1				
42	322533 1 642	Environment	6	6	6		6	6				
43	322532 1 643	Basic Physics	1	1	1				1			
44	322532 1 644	Basic Chemistry	1	1	1				1			
45	322532 1 645	Mathematical Biology	1	1	1				1			
46	322532 1 646	Biostatistics	6	6	6			6				
47	322532 1 647	English for Biology	3	3	3				3			

NO	Course Code	Course Name	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10
48	322533 1 648	Research Methods in Biology Education	5	5	5	5			5			
49	322532 1 649	Scientific Publications	7	7	7	7			7			
50	322576 5 650	Final Project	8	8	8	8	8	8	8			
51	322532 2 651	Laboratory Techniques	1	1			1					
52	322532 2 652	Innovations in Digital Learning Media	5	5	5			5		5		
53	322533 2 653	PEPW	6	6	6			6		6		
54	322533 2 654	Plant Tissue Culture	6		6		6	6			6	
55	322532 2 655	Orchid Cultivation	6	6	6		6	6			6	
56	322533 2 656	Horticulture	5	5	5		5	5			5	
57	322542 4 657	Internship -Curriculum Development	7	7	7			7				
58	322542 4 658	Internship - Lesson Plan Development	7	7	7			7				
59	322542 4 659	Internship - Development of Teaching Materials and Resources	7	7	7			7				
60	322543 2 660	Innovation in Digital Biology Learning Resources and Materials	7	7	7			7		7		
61	322542 2 661	Learning Media Research	7	7	7			7		7		
62	322542 2 662	Web design	7	7	7				7	7		

NO	Course Code	Course Name	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10
63	322543 2 663	Multimedia Technology	7	7	7			7		7		
64	322542 1 664	Multimedia Project Management	7	7	7			7		7		
65	322542 2 665	Plant Nursery	7	7	7		7	7			7	
66	322542 1 666	Plant Protection	7	7	7		7		7		7	
67	322542 1 667	Environmental Engineering in Plant Cultivation Systems	7	7	7		7	7			7	
68	322542 1 668	Digital Agribusiness Entrepreneurship	7	7	7		7	7			7	
69	322542 2 669	Post-Harvest Technology	7	7	7		7	7			7	
70	322542 1 670	Soil Biology	7	7	7		7		7		7	

10 Learning Assessment

10.1 Rubric

A rubric is an assessment guide or framework that outlines the criteria used to evaluate or grade students' learning outcomes. A rubric comprises the dimensions or aspects being assessed, as well as the criteria for students' learning outcomes or indicators of their learning achievements.

The purpose of using a rubric:

a. to clarify the dimensions or aspects and levels of assessment of students' learning outcomes;
b. to serve as a driver or motivator for students to achieve their learning outcomes.

A rubric may be comprehensive or general in nature, or it may be specific, applying only to a particular topic or a specific learning outcome.

10.2 Portfolio of Learning Outcomes

A portfolio is an instrument/document for assessing learning outcomes based on a collection of information demonstrating the development of students' PLO achievements over a specific period. This information may consist of students' work from the learning process deemed to be their best, or work demonstrating the development of their ability to achieve learning outcomes.

11 Implementation of Students' Right to Learn (Maximum 3 Semesters)

Activities to Fulfil the Learning Load Outside the Study Programme are learning processes carried out outside the Study Programme, whether within the University of the Indonesian Teachers' Union, Semarang, or outside the University of the Indonesian Teachers' Union, Semarang, comprising:

1. learning within other study Programmes within the University PGRI , Semarang;
2. learning within the same study Programme at higher education institutions outside the University of the Indonesian Teachers' Union, Semarang;
3. learning within other degree Programs at higher education institutions outside the University of the Indonesian Teachers' Union, Semarang; and
4. learning at non-higher education institutions

The scope of activities for fulfilling the study load outside the study Programme comprises 8 (eight) learning activities, including:

1. Internships/Work Placements;
2. Village Development/Thematic Community Service;
3. Student Exchange;
4. Humanitarian Projects;
5. Research;
6. Entrepreneurship Activities;
7. Independent Studies/Projects; and
8. Teaching Assistance in Educational Institutions
9. National defence

11.1 Implementation Model for Forms of Learning Outside the Study Programme

Table 11.1. Implementation Model for Learning Activities Outside the Degree Programme

Learning Activities for Undergraduate / Applied Undergraduate Students, 144 credits								
	Semester 1	**Semester 2**	**Semester 3**	**Semester 4**	**Semester 5**	**Semester 6**	**Semester 7**	**Semester 8**
	2 credits	0 credits	0 credits	0 credits	0 credits	0 credits	20 credits	10 credits
1	Program-Specific Courses Outside the Program at the same university (Basic Physics)						Off-campus learning activities: Work placement (DUDI)	Courses outside the Program & Final Year Project (Community Service)
2								

11.2 Courses (MK) that MUST be taken within the Programme itself

Table 11.2. Compulsory Courses

No	Course Code	Course Name	Credit	Description
1	322512 1 607	Pancasila Education	2	
2	322522 1 610	English	2	
3	322512 1 609	Indonesian Language	2	
4	322532 1 645	Mathematical Biology	2	
5	322533 1 641	General Biology	3	
6	322532 1 644	Basic Chemistry	2	

No	Course Code	Course Name	Credit	Description
7	322532 1 616	Foundations of Education	2	
8	322532 2 651	Laboratory Techniques	2	
9	322512 1 601	Islamic Religious Education	2	
	322512 1 602	Catholic Religious Education		
	322512 1 603	Christian Religious Education		
	322512 1 604	Hindu Religious Education		
	322512 1 605	Buddhist Religious Education		
	322512 1 606	Confucian Religious Education		
10	322512 1 608	Civics Education	2	
11	322522 1 611	PGRI Studies	2	
12	322532 1 626	Professional Ethics	2	
13	322532 1 617	Educational Psychology	2	
14	322532 1 614	Student development	2	
15	322533 2 627	Structure and Development of Plants and Fungi	3	
16	322533 2 630	Structure and Development of Animals	3	
17	322533 2 635	Biochemistry	3	
18	322533 2 632	Animal Physiology	3	
19	322533 2 629	Plant Physiology	3	
20	322532 1 619	Biology Learning Strategies	2	
21	322532 1 618	Basic of Biology Learning	2	
22	322532 1 647	English for Biology	2	
23	322533 1 621	Biology Learning Assessment	3	
24	322532 1 638	Genetics	2	
25	322533 2 631	Animal Diversity	2	
26	322533 2 628	Plant and Fungal Diversity	2	
27	322533 2 633	Human Anatomy, Physiology & Health	3	
28	322533 2 620	Biology Learning Resources and Material Development	3	
29	322524 2 613	Technology Based Entrepreneurship	4	
30	322533 1 622	Biology Lesson Planning	3	
31	322532 1 640	Cell and Mollecular Biology	2	
32	322532 1 639	Evolution	2	

No	Course Code	Course Name	Credit	Description
33	322533 2 636	Microbiology	3	
34	322533 1 634	Ecology	3	
35	322533 1 648	Research Methods in Biology Education	3	
36	322532 2 652	Innovations in Digital Learning Media	2	
37	322533 2 656	Horticulture	2	
38	322533 1 625	Curriculum Review	3	
39	322532 2 623	Microteaching	2	
40	322532 1 646	Biostatistics	2	
41	322533 1 637	Biotechnology	2	
42	322533 1 642	Environment	2	
43	322533 2 653	Development and Evaluation of Entrepreneurial Products	3	
44	322533 2 654	Tissue Culture	3	
45	322532 2 655	Orchid Cultivation	2	
46	322532 1 649	Scientific Publications	2	
47	322542 4 657	Internship - Curriculum Analysis	2	
48	322542 4 658	Internship -Development of Lesson Plans	2	
49	322542 4 659	Internship -Development of Learning Materials	2	
50	322534 4 624	Internship -Teaching Practice	2	
51	322543 2 660	Innovations in Digital Biology Learning Resources and Materials	3	
52	322542 2 661	Learning Media Research	2	
53	322542 2 662	Web design	2	
54	322543 2 663	Multimedia Technology	3	
55	322542 1 664	Multimedia Project Management	2	
56	322542 2 665	Plant Propagation	2	
57	322542 1 666	Plant Protection	2	
58	322542 1 667	Environmental Engineering in Plant Cultivation Systems	2	
59	322542 1 668	Digital Agribusiness Entrepreneurship	2	
60	322542 2 669	Post-Harvest Technology	2	
61	322542 1 670	Soil Biology	2	
62	322576 5 650	Final Project	6	
		Total credit points	**129**	

11.3 Course learning outside the study Programme

Table 11.3. Course Study Outside the Study Programme

No	Courses taken	Maximum credit weight	Remarks
1	Outside the Program, on/off campus	2	Basic physics course
2	In the same Program outside the campus	-	-
3	Off-campus (DUDI, etc.)	20	Conversion courses for educational placements and conversion courses for industrial placements
Maximum total credit points		22	

11.4 Forms of learning activities outside the university

Learning activities to fulfil the study load outside the study Programme, to be carried out in accordance with the Program's PLOs in order to support the achievement of the Program's educational objectives, are outlined in Table 11.4 below.

Table 11.4. Forms of Learning Activities Outside the Study Programme

No	Form of Learning Activity	Can be carried out with credit weight		Notes
		Regular	Fulfilment of Study Load Outside the Study Programme	
1	Internship/Work Placement	-	≤20	Internship activities fulfilling the study load outside the degree Programme may be converted into several modules that have corresponding PLOs and a duration of study activities commensurate with the credit weight of those modules.
2	KKN/KKNT	-	≤10	KKNT activities fulfilling the study load outside the degree Programme, which constitute an extension of the regular KKN, may be converted into several courses that align with the PLO and have a duration of study commensurate with the course's credit weight.

11.5 Curriculum Structure for Learning Activities Outside the Degree Programme

The curriculum structure for learning outside the Biology Education Programme can be seen in Table 11.5.

Table 11.5 Curriculum Structure for Learning Activities Outside the Degree Programme

SMT	PROGRAM PEMBELAJARAN DALAM PRODI															PROGRAM BPLK		
SKS																DALAM PT	PT LAIN	NON-PT
VIII	Tugas Akhir	KKN																
10																		
VII	Publikasi Ilmiah	PLP-Analisis Kurikulum	PLP-Pengembangan Rencana Pembelajaran	PLP-Pengembangan Media Pembelajaran	PLP-Praktik Mengajar	Inovasi Sumber dan Bahan Belajar Biologi berbasis digital	Riset Media Pembelajaran	Desain web	Teknologi Multimedia	Pembibitan Tanaman	Proteksi Tanaman	Rekayasa Lingkungan Budidaya Tanaman	Kewirausahaan Agribisnis Digital	Teknologi Pasca Panen	Biologi Tanah			Magang
22	CPL 1,2,3,4,7	1, 2, 3, 6, 7	1, 2, 3, 6, 7	1, 2, 3, 6, 7	1, 2, 3, 6, 7	1, 2, 3, 6, 8	1, 2, 3, 6, 8	1, 2, 3, 7, 8	1, 2, 3, 7, 8	1,2,3,5,6,9	1,2,3,5,7,9	1,2,3,5,6,9	1,2,3,5,6,9	1,2,3,5,6,9	1,2,3,5,7,9			1,2,3,6,5,7,8,9
VI	Telaah Kurikulum	Microteaching	Biostatistika	Bioteknologi	Lingkungan	Pengembangan dan Evaluasi Produk Wirausaha	Kultur Jaringan	Budidaya Anggrek										
19	1,2,3,7	1,2,3,6,7	1,2,3,6	1,2,3,5,6	1,2,3,5,6	1,2,3,6,8	1,2,3,5,6	1,2,3,5,6										
V	Perencanaan Pembelajaran Biologi	Biologi Sel & Molekuler	Evolusi	Mikrobiologi	Ekologi	Metodologi Penelitian	Inovasi Media Pembelajaran	Hortikultura										
20	1,2,3,6	1,2,3,5,7	1,2,3,4,7	1,2,3,5,7	1,2,3,5,7	1,2,3,4,7	1,2,3,6,8	1,2,3,5,6,9										
IV	Asesmen Pembelajaran Biologi	Genetika	Keanekaragaman Hewan	Keanekaragaman Tumbuhan	Anatomi Fisiologi Manusia & Kesehatan	Pengembangan Sumber dan Bahan Belajar Biologi	Kewirausahaan berbasis teknologi											
19	1,2,3,6	1,2,3,5,7	1,2,3,5,6	1,2,3,5,6	1,2,3,5,7	1,2,3,6,8	1,2,3,7											
III	Biokimia	Fisiologi Hewan	Fisiologi Tumbuhan	Strategi Pembelajaran Biologi	Dasar-Dasar Pembelajaran Biologi	Bahasa Inggris Biologi												
15	1,2,3,5,7	1,2,3,5,6	1,2,3,5,6	1,2,3,6	1,2,3,6	1,2,3,6												
II	Agama	Kewarganegaraan	Ke--PGRI-an	Etika Profesi	Psikologi Pendidikan	Perkembangan Peserta Didik	Struktur Perkembangan Tumbuhan	Struktur Perkembangan Hewan										
18	1	1	1	1,2,3,7	1,2,3,6	1,2,3,7	1,2,3,5,6	1,2,3,5,6										
I	Pendidikan Pancasila	Bahasa Inggris	Bahasa Indonesia	Matematika Biologi	Biologi Umum	Fisika Dasar	Kimia Dasar	Landasan Kependidikan	Teknik Laboratorium									
17	1	1	1	1,2,3,7	1,2,3,5,6	1,2,3,7	1,2,3,7	1,2,3,7	1,2,5									

11.6 PLOs for Learning Activities Outside the Degree Programme

Table 11.6 PLOs Achieved through Learning Modes Outside the Degree Programme

No	Semester	Course Code	Course Name	Credit	PLO assigned to the course										Form of Fulfilment of Study Load Outside the Designated Study Programme	Notes
(1)	(2)	(3)	(4)	(5)	(6)										(7)	(8)
					PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10		
1	VII	3225424657	Internship - Curriculum Analysis	2	√	√	√			√					Educational Internship	Outside the company
2	VII	3225424658	Internship - Curriculum Development	2	√	√	√			√					Educational Internship	Outside the company
3	VII	3225424659	Internship -Learning Media Development	2	√	√	√			√					Educational Internship	Outside the company
4	VII	3225344624	Internship -Teaching Practice	2	√	√	√			√					Educational Internship	Outside the company
5	VII	3225432660	Digital-based Innovation in Biology Learning Resources and Materials	3	√	√	√			√		√			Work placement	Outside the company
6	VII	3225422661	Learning Media Research	2	√	√	√			√		√			Work placement	Outside the company
7	VII	3225422662	Web design	2	√	√	√				√	√			Work placement	Outside the company
8	VII	3225432663	Multimedia Technology	3	√	√	√			√	√	√			Work placement	Outside the company
9	VII	3225421664	Multimedia Project Management	2	√	√	√			√		√			Work placement	Outside the company

No	Semester	Course Code	Course Name	Credit	PLO assigned to the course										Form of Fulfilment of Study Load Outside the Designated Study Programme	Notes
(1)	(2)	(3)	(4)	(5)	(6)										(7)	(8)
					PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10		
10	VII	3225422665	Plant Nursery	2	√	√	√		√	√			√		Work placement	Outside the company
11	VII	3225421666	Plant Protection	2	√	√	√		√		√		√		Work placement	Outside the company
12	VII	3225421667	Environmental Engineering and Crop Cultivation	2	√	√	√		√	√			√		Work placement	Outside the company
13	VII	3225421668	Digital Agribusiness Entrepreneurship	2	√	√	√			√			√		Work placement	Outside the company
14	VII	3225422669	Post-Harvest Technology	2	√	√	√		√	√			√		Work placement	Outside the company
15	VII	3225421670	Soil Biology	2	√	√	√		√		√		√		Work placement	Outside the company
16	VIII	3225244612	Community Service - Problem Solving in the Community	4	√					√				√		Outside the University
17	VIII		Community Service Programme-Digital Literacy	2	√					√				√		Outside the university
18	VIII		Community Service Programme – Inclusive and Exclusive Leadership	2	√					√				√		Outside the University
19	VIII		Community Service Programme – Non-Formal Education	2	√					√				√		Outside the University
			Total credits	42												

11.7 Quality Assurance for Activities Outside the Study Programme

To ensure that the implementation of the policy on fulfilling the study load outside the study Programme, specifically the "right to study for three semesters outside the study Programme", proceeds with guaranteed quality, the following quality standards must be established, including:

1. Quality of participants' competencies.
2. Quality of implementation.
3. The quality of internal and external supervision processes.
4. Quality of facilities and equipment for implementation.
5. Quality of reporting and presentation of results.
6. Quality of assessment

Table 11.7 Quality Assurance of Learning Delivery Outside the Study Programme

No	Forms of Fulfilment of Study Load Outside the Study Programme	Requirements	Notes
(1)	(2)	(3)	(4)
1	Teaching Placement	1. 1. Currently enrolled as an undergraduate student in the Education Programme at the University of the Indonesian Teachers' Union, Semarang, and has accumulated a minimum of 108 credits with a minimum GPA of 2.75	1. Students must register as participants in the teaching placement via https://magang.upgris.ac.id/
		1.2. Have completed the Study Plan Form for Fulfilling Study Requirements Outside the Degree Program	2. Complete the Course Registration Form for Study Load Fulfilment Outside the Study Program via https://simekar.upgris.ac.id/
		1.3. Have passed the courses: Instructional Design, Learning Strategies, Learning Media, Assessment of Learning Outcomes and Processes, and Microteaching.	3. Students must complete daily activity journals, logbooks, critical analyses, self-reflections, individual reports, videos, and partner testimonials via https://simekar.upgris.ac.id/
		1.4. Attend the pre-placement induction	4. Monitoring of students' tasks is carried out via https://simekar.upgris.ac.id/
2	Industrial Work Placement	1. 1. Be an active student on the Bachelor of Education Programme at the University of the Indonesian Teachers' Union, Semarang, and have accumulated a minimum of 108 credits with a minimum GPA of 2.75	1. Students must register as internship participants through the Study Programme
		1.2. Have completed the Study Plan Form for Coursework Outside the Programme	2. Complete the Course Registration Form for Study Load Fulfilment Outside the Study Program via https://simekar.upgris.ac.id/

No	Forms of Fulfilment of Study Load Outside the Study Programme	Requirements	Notes
(1)	(2)	(3)	(4)
		1.3. Have passed the courses SPT, Plant Physiology, and Plant Tissue Culture.	3. Students must complete daily activity journals, logbooks, critical analyses, self-reflections, individual reports, videos, and partner testimonials via https://simekar.upgris.ac.id/
		1.4. Attend the work placement induction	4. Monitoring of student tasks is carried out via https://simekar.upgris.ac.id/
3	Courses outside the Programme within the university	Active as an undergraduate student in the Education Programme at the University of the Indonesian Teachers' Union, Semarang	1. Students activate their enrolment by paying the course administration fee
		Have completed the Study Plan Form for Course Load Fulfilment Outside the Program	2. Students must complete the Course Registration Form for Course Load Fulfilment Outside the Program of Study via https://simekar.upgris.ac.id/

12 Quality Assurance

12.1 Quality Control Course

The quality of both the learning process and its outcomes must be ensured through control over various aspects of implementation, including specific stages or steps within the learning process. Consequently, minimum learning outcomes are established for the delivery of lectures through courses within the group known as Quality Control Courses for each Study Programme. The minimum results that students must achieve for their participation in the aforementioned course must be equal to or higher than a B grade. Study Programmes may list Quality Control Courses in Table 12.1.

Table 12.1. Quality Control Courses

Quality Control Course for All Students in the Biology Education Study Programme

No	Course Code	Course	Credit
1	322512 1 607	Pancasila Education	2
2	322522 1 610	English	2
3	322512 1 609	Indonesian Language	2
4	322532 1 645	Mathematical Biology	2
5	322533 1 641	General Biology	3

No	Course Code	Course	Credit
6	322532 1 616	Foundations of Education	2
7	322532 2 651	Laboratory Techniques	2
8	322532 1 643	Basic Physics	2
9	322532 1 644	Basic Chemistry	2
10	322512 1 601	Islamic Religious Education	2
11	322512 1 602	Catholic Religious Education	
12	322512 1 603	Christian Religious Education	
13	322512 1 604	Hindu Religious Education	
14	322512 1 605	Buddhist Religious Education	
15	322512 1 606	Confucian Religious Education	
16	322512 1 608	Civics Education	2
17	322522 1 611	PGRI Studies	2
18	322532 1 626	Professional Ethics	2
19	322532 1 617	Educational Psychology	2
20	322532 1 614	Learner Development	2
21	322533 2 627	Structure and Development of Plants and Fungi	3
22	322533 2 630	Structure and Development of Animals	3
23	322533 2 635	Biochemistry	3
24	322533 2 632	Animal Physiology	3
25	322533 2 629	Plant Physiology	3
26	322532 1 619	Biology Learning Strategies	2
27	322532 1 618	Basic of Biology Learning	2
28	322532 1 647	English for Biology	2
29	322533 1 621	Biology Learning Assessment	3
30	322532 1 638	Genetics	2
31	322533 2 631	Animal Diversity	2
32	322533 2 628	Plant and Fungal Diversity	2
33	322533 2 633	Human Anatomy, Physiology & Health	3
34	322533 2 620	Biology Learning Resources and Material Development	3
35	322524 2 613	Technology Based Entrepreneurship	4
36	322533 1 622	Biology Lesson Planning	3
37	322532 1 640	Cell and Mollecular Biology	2
38	322532 1 639	Evolution	2
39	322533 2 636	Microbiology	2
40	322533 1 634	Ecology	3
41	322533 1 648	Research Methods in Biology Education	3
42	322532 2 652	Innovations in Digital Learning Media	2
43	322533 2 656	Horticulture	2
44	322533 1 625	Curriculum Review	3

No	Course Code	Course	Credit
45	322532 2 623	Microteaching	2
46	322532 1 646	Biostatistics	2
47	322533 1 637	Biotechnology	2
48	322533 1 642	Environment	2
49	322533 2 653	Entrepreneurial Product Development and Evaluation	3
50	322533 2 654	Plant Tissue Culture	3
51	322532 2 655	Orchid Cultivation	2
52	322532 1 649	Scientific Publications	2
53	322534 4 624	Internship -Teaching Practice	4
54	322576 5 650	Final Project	6
55	322524 4 612	Community Service Programme - Problem Solving in the Community	4
		Total credits	**125**

Quality Control Course for the Field of Study/Competency/Pedagogical Knowledge Cluster

No	Course Code	Course	Credit
1	322532 1 614	Student Development	2
2	322532 1 615	Classroom Management	2
3	322532 1 616	Foundations of Education	2
4	322532 1 617	Educational Psychology	2
5	322532 1 618	Basic of Biology Learning	2
6	322532 1 619	Biology Learning Strategies	2
7	322533 2 620	PSB3	3
8	322533 1 621	Biology Learning Assessment	3
9	322533 1 622	Biology Lesson Planning	3
10	322532 2 623	Microteaching	2
11	322534 4 624	Internship	4
12	322533 1 625	Curriculum Review	3
13	322532 1 626	Professional Ethics	2
		Total Credits	**32**

Quality Control Course for the Field of Study/Competency/Knowledge Cluster in Biology

No	Course Code	Course	Credit
1	322533 2 627	Plant Developmental Structure	3
2	322533 2 628	Plant and Fungal Diversity	2
3	322533 2 629	Plant Physiology	3
4	322533 2 630	Structure and Development of Animals	3
5	322533 2 631	Animal Diversity	2
6	322533 2 632	Animal Physiology	3
7	322533 2 633	Human Anatomy, Physiology & Health	3

8	322533 1 634	Ecology	3
9	322533 2 635	Biochemistry	3
10	322533 2 636	Microbiology	3
11	322533 1 637	Biotechnology	2
12	322532 1 638	Genetics	2
13	322532 1 639	Evolution	2
14	322532 1 640	Cell and Mollecular Biology	2
15	322533 1 641	General Biology	3
16	322533 1 642	Environment	2
		Total credits	**41**

Quality Control Course for the Field of Study/Competency/Science Knowledge Cluster

No	Course Code	Course	Credit
1	322532 1 643	Basic Physics	2
2	322532 1 644	Basic Chemistry	2
		Total credits	**4**

Quality Control Course for Field of Study/Competency/Cluster of Basic Supporting Knowledge

No	Course Code	Course	Credit
1	322532 1 645	Biological Mathematics	2
2	322532 1 646	Biostatistics	2
3	322532 1 647	English for Biology	2
		Total credits	**6**

Quality Control Course for Field of Study/Competency/Research and Publication Cluster

No	Course Code	Course	Credit
1	322533 1 648	Research Methods in Biology Education	3
2	322576 5 650	Final Project	6
3	322532 1 649	Scientific Publications	2
		Total Credits	**11**

Quality Control Course for the Field of Study/Competency/Cluster of Occupational Safety and Health

No	Course Code	Course	Credit
1	322532 2 651	Laboratory Techniques	2
		Total credits	**2**

Quality Control Course for the Bioethics Field of Study/Competency/Cluster

No	Course Code	Course	Credit
1	322533 1 637	Biotechnology	2
		Total credits	**2**

Quality Control Course for the Field of Study/Competency/Cluster: Personal Development

No	Course Code	Course	Credit
1	322532 1 614	Student Development	2
2	322532 1 615	Classroom Management	2
3	322532 1 616	Foundations of Education	2
4	322532 1 617	Educational Psychology	2
5	322532 1 618	Basic of Biology Learning	2
6	322532 1 619	Strategies for Teaching Biology	2
7	322533 2 620	PSB3	3
8	322533 1 621	Biology Learning Assessment	3
9	322533 1 622	Biology Lesson Planning	3
10	322532 2 623	Microteaching	2
11	322534 4 624	Internship	4
12	322533 2 627	Structure and Development of Plants and Fungi	3
13	322533 2 628	Plant and Fungal Diversity	2
14	322533 2 629	Plant Physiology	3
15	322533 2 630	Structure and Development of Animals	3
16	322533 2 631	Animal Diversity	2
17	322533 2 632	Animal Physiology	3
18	322533 2 636	Microbiology	3
19	322533 1 637	Biotechnology	2
20	322533 1 642	Environment	2
21	322533 1 625	Curriculum Review	3
22	322532 1 626	Professional Ethics	2
23	322533 2 633	Human Anatomy, Physiology & Health	3
24	322533 1 634	Ecology	3
25	322533 2 635	Biochemistry	3
26	322532 1 638	Genetics	2
27	322532 1 639	Evolution	2
28	322532 1 640	Cell and Mollecular Biology	2
29	322533 1 641	General Biology	3
		Total credits	**73**

Quality Control Course for the Programme's Field of Study/Competency/Characteristic Cluster

No	Course Code	Course	Credit
1	322533 2 620	PSB3	3
2	322532 2 652	Innovations in Digital Learning Media	2
3	322533 2 653	PEPW	3
4	322533 2 654	Plant Tissue Culture	3
5	322532 2 655	Orchid Cultivation	2
		Total credits	**13**

12.2 Prerequisite Courses

The Programme must map courses based on their interrelationships so that students can more easily plan their studies. By viewing this course structure, students are encouraged to take each course seriously as they are linked to subsequent courses. The Programme may enter Prerequisite Courses in Table 12.2.

Table 11.2. Prerequisite Courses

No	Code	Course Name	Prerequisite for			
			Prerequisites	Semester	Code	Course Title
1	322532 1 616	Foundations of Education	PT	2	3225321626	Professional Ethics
			PT	2	3225321617	Educational Psychology
			PT	2	3225321614	Learner Development
			PT	2	3225321619	Biology Learning Strategies
			PT	2	3225321618	Basic of Biology Learning
2	322532 1 617	Educational Psychology	B	2	3225321614	Learner Development
			PT	2	3225321619	Biology Learning Strategies
			PT	3	3225331621	Biology Learning Assessment
			PT	3	3225332620	Biology Learning Resources and Material Development
			PT	3	3225331622	Biology Lesson Planning
			PT	3	3225331625	Curricullum Review
			L	2	3225322623	Microteaching
3	322532 1 614	Student development	PT	2	3225321619	Biology Learning Strategies
			PT	3	3225332620	Biology Learning Resources and Material Development
			PT	3	3225331625	Curricullum Review
			PT	3	3225331622	Biology Lesson Planning
			PT	3	3225331621	Biology Learning Assessment
			L	2	3225322623	Microteaching
4	322532 1 619	Biology Learning Strategies	PT	3	3225331621	Biology Learning Assessment
			PT	3	3225332620	Biology Learning Resources and Material Development
			PT	3	3225331622	Biology Lesson Planning
			PT	3	3225331625	Curricullum Review
			L	2	3225322623	Microteaching
5	3225321618	Basic of Biology Learning	PT	3	3225331622	Biology Lesson Planning
			PT	3	3225331625	Curricullum Review
			L	2	3225322623	Microteaching
6	3225331621		PT	3	3225331622	Biology Lesson Planning

No	Code	Course Name	Prerequisite for			
			Prerequisites	Semester	Code	Course Title
		Biology Learning Assessment	PT	3	3225331625	Curricullum Review
			L	2	3225322623	Microteaching
7	3225332620	Biology Learning Resources and Material Development	PT	3	3225331622	Biology Lesson Planning
			PT	2	3225322652	Innovation in Digital Learning Media
			PT	3	3225331625	Curriculum Review
			L	2	3225322623	Microteaching
			B	4	3225242613	Technology Based Entrepreneurship
8	3225331622	Biology Lesson Planning	PT	3	3225331625	Curricullum Review
			L	2	3225322623	Microteaching
9	3225322652	Innovation in Digital Learning Media	PT	2	3225432660	Digital-based Innovation in Biology Learning Resources and Materials
			PT	2	3225422661	Learning Media Research
			PT	2	3225422662	Web design
			PT	2	3225432663	Multimedia Technology
			PT	2	3225421664	Multimedia Project Management
10	3225331625	Curriculum Review	L	2	3225322623	Microteaching
11	3225344624	Internship -Teaching Practice	L	2	3225322623	Microteaching
			L	2	3225321616	Foundations of Education
			L	2	3225321626	Professional Ethics
			L	2	3225321617	Educational Psychology
			L	2	3225321614	Learner Development
			L	2	3225321619	Biology Learning Strategies
			L	2	3225321618	Basic of Biology Learning
			L	3	3225331621	Assessment in Biology
			L	3	3225332620	Biology Learning Resources and Material Development
			L	2	3225331622	Biology Lesson Planning
			L	2	3225322652	Innovation in Digital Learning Media
			L	3	3225331625	Curricullum Review
12	3225331641	General Biology	L	2	3225332627	Plant Developmental Structure
			L	2	3225332630	Structure and Development of Animals
			L	3	3225332635	Biochemistry
			L	2	3225321638	Genetics
			L	2	3225332631	Animal Diversity
			L	2	3225321640	Cell and Mollecular Biology

No	Code	Course Name	Prerequisite for			
			Prerequisites	Semester	Code	Course Title
			L	2	3225321639	Evolution
			L	3	3225331634	Ecology
			L	2	3225332656	Horticulture
			L	3	3225332636	Microbiology
			L	2	3225331637	Biotechnology
			L	2	3225331642	Environment
13	3225321644	Basic Chemistry	PT	3	3225332635	Biochemistry
14	3225322651	Laboratory Engineering	PT	2	3225332627	Plant Developmental Structure
			PT	2	3225332630	Structure and Development of Animals
			PT	2	3225332635	Biochemistry
			PT	2	3225332632	Animal Physiology
			PT	2	3225332629	Plant Physiology
			PT	2	3225321638	Genetics
			PT	3	3225332633	Human Anatomy, Physiology & Health
			PT	3	3225332636	Microbiology
			PT	3	3225331634	Ecology
			PT	2	3225332656	Horticulture
			PT	3	3225332654	Plant Tissue Culture
			PT	2	3225322655	Orchid Cultivation
15	3225332627	Structure and Development of Plants and Fungi	L	3	3225332629	Plant Physiology
			L	2	3225332628	Plant and Fungal Diversity
			L	2	3225332656	Horticulture
			L	3	3225332654	Plant Tissue Culture
			L	2	3225322655	Orchid Cultivation
			PT	4	3225242613	Technology Based Entrepreneurship
16	3225332630	Structure and Development of Animals	PT	3	3225332632	Animal Physiology
			PT	3	3225332631	Animal Diversity
			PT	3	3225332633	Human Anatomy, Physiology & Health
			PT	4	3225242613	Technology Based Entrepreneurship
17	3225332635	Biochemistry	PT	2	3225321638	Genetics
			PT	2	3225321640	Cell and Mollecular Biology
			PT	2	3225321639	Evolution
			PT	3	3225332636	Microbiology
			PT	4	3225242613	Technology Based Entrepreneurship

No	Code	Course Name	Prerequisite for			
			Prerequisites	Semester	Code	Course Title
18	3225332632	Animal Physiology	PT	3	3225332633	Human Anatomy, Physiology & Health
			PT	4	3225242613	Technology Based Entrepreneurship
19	3225332629	Plant Physiology	L	2	3225332656	Horticulture
			L	3	3225332654	Plant Tissue Culture
			L	2	3225322655	Orchid Cultivation
			PT	4	3225242613	Technology Based Entrepreneurship
20	3225321638	Genetics	PT	2	3225321640	Cell and Mollecular Biology
			PT	2	3225321639	Evolution
			PT	3	3225332636	Microbiology
				3	3225332654	Plant Tissue Culture
21	3225332631	Animal Diversity	PT	3	3225331634	Ecology
			B	4	3225242613	Technology Based Entrepreneurship
22	3225332628	Plant and Fungal Diversity	PT	3	3225331634	Ecology
			PT	2	3225332656	Horticulture
			B	4	3225242613	Technology Based Entrepreneurship
23	3225321640	Cell and Molecular Biology	PT	2	3225331637	Biotechnology
24	3225332636	Microbiology	PT	2	3225331637	Biotechnology
			PT	2	3225421670	Soil Biology
25	3225331634	Ecology	PT	2	3225331642	Environment
26	3225332656	Horticulture	PT	2	3225322655	Orchid Cultivation
			PT	2	3225422665	Plant Nursery
			PT	2	3225421666	Plant Protection
			PT	2	3225421667	Environmental Engineering in Plant Cultivation Systems
			PT	2	3225421668	Digital Agribusiness Entrepreneurship
			PT	2	3225422669	Post-Harvest Technology
			PT	2	3225421670	Soil Biology
27	3225331637	Biotechnology	B	3	3225332654	Plant Tissue Culture
			PT	2	3225422669	Post-Harvest Technology
28	3225331642	Environment	PT	2	3225421667	Environmental Engineering and Crop Cultivation
			PT	2	3225421670	Soil Biology
29	3225332654	Plant Tissue Culture	PT	2	3225422665	Plant Nursery
			PT	2	3225421666	Plant Protection

No	Code	Course Name	Prerequisite for			
			Prerequisites	Semester	Code	Course Title
			PT	2	3225421667	Environmental Engineering in Plant Cultivation Systems
			PT	2	3225421668	Digital Agribusiness Entrepreneurship
			PT	2	3225421670	Soil Biology
30	3225322655	Orchid Cultivation	PT	2	3225422665	Plant Nursery
			PT	2	3225421666	Plant Protection
			PT	2	3225421667	Environmental Engineering in Plant Cultivation Systems
			PT	2	3225421668	Digital Agribusiness Entrepreneurship
			PT	2	3225422669	Post-Harvest Technology
31	3225221610	English	L	2	3225321647	English for Biology
32	3225242613	Technology Based Entrepreneurship	L	3	3225332653	Development and Evaluation of Entrepreneurial Products
			L	2	3225421668	Digital Agribusiness Entrepreneurship
33	3225332653	Development and Evaluation of Entrepreneurial Products	L	2	3225421668	Digital Agribusiness Entrepreneurship
34	3225332633	Human Anatomy, Physiology and Health	PT	4	3225242613	Technology Based Entrepreneurship

Notes: L = Passed, PT = Previously Taken, B = Concurrent, meaning taken concurrently with a prerequisite course, L(B) = Passed with a minimum grade of B with a specified field of study.

13 Learning Management

The management of curriculum and learning implementation refers to the management standards set out in Articles 40–41 of Ministry of Education and Culture Regulation No. 3 of 2020 and is aligned with the UPPS Organisational Structure. A full overview of learning management within the Biology Education Study Programme can be found in Table 13.1.

Table 13.1 Learning management in the Study Programme

No	Activity	Officer
1	Person responsible for curriculum development	Head of the Study Program

No	Activity	Officer
2	Person in Charge of Course Materials (RPS, RAE and RT) for Courses in the Curriculum	Program Secretary
3	Responsible for monitoring and evaluating curriculum implementation (referring to the learning materials) ● Checking the alignment of questions with CPMK and/or PLO ● Verification of assessment duration against course credit weighting	Program Secretary
4	PIC for monitoring and evaluation of the implementation of the fulfilment of study load outside the study Program ● Verification of the duration of activities for the Fulfilment of Study Load Outside the Study Program ● Verification of the alignment of acquired competencies with PLO ● Verification of the alignment of assessment formats and techniques with PLO ● Review of guidelines for students, field supervisors, and Program supervisors	Coordinator for the Fulfilment of Learning Load Outside the Study Program
5	Person in Charge (PIC) for monitoring and evaluating PLO achievement, as well as reporting on PLO achievement	SUPMPS

14 Procedures for Student Admission at Various Stages of the Curriculum

Procedures for the admission of new students at the University of the Indonesian Teachers' Union, Semarang (UPGRIS) in accordance with UPGRIS Rector's Regulation No. 005a/PR/UPGRIS/X/2023. The process can be carried out online via pmb.upgris.ac.id or offline at the campus admissions office.

A. Selection Process and Choice of Study Programs (Chapter IV)

There are 5 main selection pathways:

1. Achievement Pathway
2. Regular Pathway
3. Indonesia Smart Card (KIP) Track
4. Employee Pathway
5. Prior Learning Recognition (RPL) Pathway

Prospective students may choose 1 to 3 study Programs, whether in education or non-education fields.

B. Selection Fee (Chapter V)

1. The registration fee for all pathways is Rp 250,000.

2. Specifically for the KIP Kuliah Pathway, the registration fee will be refunded if the applicant is accepted. If not accepted, the prospective student will be transferred to the regular pathway without additional fees.

C. Registration Requirements by Pathway (Chapter VI, Article 8)

1. Achievement Pathway:
   a) High school graduates or equivalent (2022, 2023, 2024)
   b) Ranked 1st–10th or with an average report card grade of 7.5 in Years 10 & 11.
   c) Must have achieved at least district/city-level achievements.
   d) Exempt from academic tests; only required to take a personality test.
   e) Health/special skills test for Physical Education and Health Education (PJKR).
   f) No colour blindness for certain Programs (PJKR, Biology Education, Physics Education, and all Programs in the Faculty of Engineering & Informatics)

2. Regular Pathway:
   a) High school graduates or equivalent (2022, 2023, 2024).
   b) Must take a Computer-Based Test (CBT) comprising: Scholastic Aptitude Test (TPS) and Literacy Test (Indonesian, English, Mathematics)
   c) Take a personality test.
   d) Health/special skills test for Physical Education and Health (PJKR).
   e) No colour blindness restrictions for certain degree Programs.

3. KIP Kuliah Scheme:
   a) High school graduates or equivalent (2022, 2023, 2024).
   b) Must sit the UTBK (Science/Social Sciences/Mixed) as per the standard pathway.
   c) Submit ID card/NIK, photo, and supporting documents (KIP, KKS, etc.).
   d) Take a personality test, a health test (if required), and be free from colour blindness for certain Programs.

4. Employee Pathway:
   a) High school graduates or equivalent.
   b) Submit a letter of employment (if available).

5. RPL (Recognition of Prior Learning) Pathway:
   a) Divided into Type A1 (Formal to Formal) and Type A2 (Non-formal/Informal to Formal).
   b) Requirements include a diploma, academic transcript, employment certificate, or training certificate, which will be converted into credit points.

c) Duration of study: 1.5 to 3.5 years.

D. Registration Procedures by Pathway (Chapter VII, Article 10)

1. Merit & Regular Pathways:
   a) Complete the form and print it from the PMB website.
   b) Pay the registration fee at a bank (BRI, Mandiri, Bank Jateng).
   c) Print the registration card.
   d) Take the entrance test/exam.
   e) Check the results on the website (within 3 days of payment).

2. KIP Kuliah Scheme:
   a) Register online at pmb.upgris.ac.id and select the regular pathway – KIP group.
   b) Pay the registration fee (this will be refunded if you are accepted).
   c) Synchronise your data by bringing the original documents.
   d) Take the CBT test and attend the interview on campus.
   e) Wait for the home visit schedule from the UPGRIS team.
   f) Check the announcements on the website.

3. Employee & RPL Pathway:
   a) Visit the PMB Counter in person at the Central Building, 2nd Floor, Jl. Sidodadi Timur No. 24, Semarang.
   b) For employees, if the quota is not yet full, prospective students will be placed on a waiting list.

E. Re-registration and Withdrawal (Chapter IX)

1. Re-registration:
   Once accepted, new students must:
   a) Pay the re-registration fee.
   b) Submit the required documents (bank receipt, photograph, certified diploma, SKL, certificate of colour vision/health, photocopy of ID card, PGRI membership card (if applicable), stamped declaration letter, and re-registration form).
   c) Following re-registration, students will receive their kit (jacket, T-shirt, student ID card) and officially become UPGRIS students.

2. Withdrawal:
   a) 100% refund: If the student has not passed their secondary school leaving certificate (or equivalent) (excluding the registration fee).

b) 85% refund: If withdrawing because accepted into a state university via SNPMB-SNBT (subject to certain conditions, such as submitting the request within a maximum of 12 working days and presenting original proof).
c) No Refund: If the reason for withdrawal is other than the two points above.

15 Conclusion

The curriculum for the Biology Education Study Programme at UPGRIS, as developed, is expected to serve as a strategic guide in delivering a learning process that is relevant, adaptive, and competitive. This curriculum is designed to support the achievement of the academic vision of the Biology Education Study Programne in producing graduates who are professional, of good character, and ready to face the dynamics of the workplace.

The implementation of the curriculum will be carried out gradually and continuously, involving various stakeholders, including lecturers, students, industry partners, and the internal quality assurance body. Every element of the curriculum, ranging from learning outcomes, course structure, teaching methods, to the assessment system, is aligned with national standards and current policies, such as Ministry of Education, Culture, Research and Technology Regulation No. 53 of 2023, Ministerial Regulation No. 39 of 2025, and the LAMDIK IAPS 4.0 accreditation instrument.

Moving forward, efforts to improve the quality of curriculum implementation will focus on strengthening project-based and collaborative learning, expanding the 'Impactful Campus' Programme, enhancing lecturers' competencies, and optimising the use of digital technology. With a spirit of collaboration and innovation, this curriculum is expected to guide students to become lifelong learners who excel academically and make a tangible contribution to society.

APPENDIX

Academic Vision of the Study Programme	Developing Digital-Based and Local Wisdom-Oriented Biology Education with a Bioedupreneurship Focus to produce outstanding graduates with a distinct identity

No	**Programme Educational Objective Code**	**Description of Programme Educational Objectives**
1	PEO-1	Outstanding graduates with a strong sense of identity who are capable of educating, designing, teaching and evaluating the learning processes and outcomes of students in biology-oriented subjects, with a focus on digital bio-entrepreneurship and local wisdom
2	PEO-2	Outstanding graduates capable of integrating entrepreneurship into biology education and biology education oriented towards digital bioedupreneurship and local wisdom
3	PEO-3	Outstanding graduates capable of resolving issues related to digital bioedupreneurship and local wisdom through research

No	**GP Code**	**Graduate Profile (GP)**	**Description**	**Profession**
1	GP-1	A Bachelor of Education in Biology capable of teaching biology at upper secondary school level or equivalent, science at lower secondary school level or equivalent, and capable of teaching science and biology at various levels in private tuition centres	1) Able to plan science and biology lessons by applying innovative models, methods and teaching materials; 2) able to deliver science and biology lessons professionally; 3) able to develop assessment tools and conduct learning assessments; 4) able to communicate and collaborate effectively; 5) possesses character and conduct grounded in the values of Pancasila; 6) applies health and safety (K3) skills	Biology and Science Educators

No	GP Code	Graduate Profile (GP)	Description	Profession
2	GP-2	A Bachelor of Education in Biology who possesses bio-entrepreneurship skills and is capable of engaging in entrepreneurship within the fields of biology education and biology based on local wisdom	1) Able to apply knowledge and understanding of educational science and biology to innovate entrepreneurial products; 2) able to develop business plans; 3) able to run a business	Entrepreneurs in the fields of education and biology
3	GP-3	Bachelor of Biology Education capable of addressing issues related to biology education and biology through research based on local wisdom	1) Able to analyse problems encountered in the environment and within the community relating to education and biology; 2) able to design and conduct research by applying research methods appropriate to the problem; 3) able to compile research reports; 4) able to apply health and safety skills	Researcher in the fields of education and biology

Overview

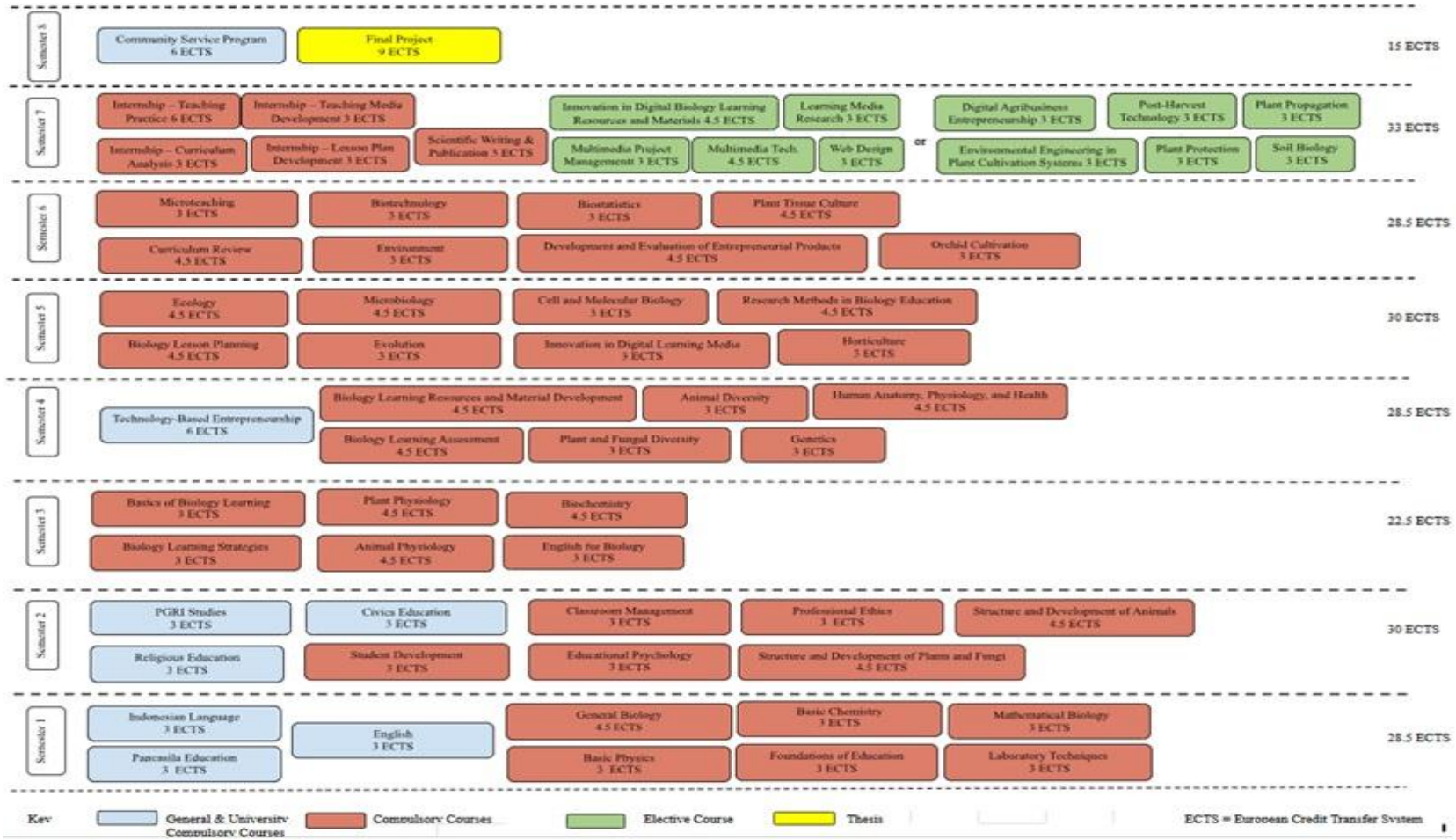
Course Type	Credit Points	Semester								TOTAL
		1	2	3	4	5	6	7	8	
University	30.00	9	9	0	6	0	0	0	6	**30**
Compulsory	162.00	19.5	21	22.5	22.5	30	28.5	18	0	**162**
Elective	15.00	0	0	0	0	0	0	15	0	**15**
Final Project, Intership, Thesis	9.00	0	0	0	0	0	0	0	9	**9**
Total ECTS Credit Points	**216.00**	**28.50**	**30.00**	**22.50**	**28.50**	**30.00**	**28.50**	**33.00**	**15.00**	**216.00**
Total SKS Credit Points	**144.00**									

Legends											
Type	C = Compulsory;	**Type**	**Semester**	**Credit Points**	**Academic Hours**	**Learning Activities**					**Weight for GPA**
	E = Elective										
Credit Points	ECTS Credit Points										
Academic Hours	Academic Hours per Semester										
Learning Activities	L = Lecture (Discussion, Presentation, Quiz, Case Method, Project Base Learning, Exam)										
	A = Assignment										
	E = Exercise										
	FP= Final Project										
	La= Laboratory Activity										
	In=Intership										
University				**30**	**900**						
3225121607	Pancasila Education		c	1	3	90	L = 27	A = 31.5	E = 31.5		0.013888889
3225221610	English		c	1	3	90	L = 27	A = 31.5	E = 31.5		0.013888889
3225121609	Indonesian Language		c	1	3	90	L = 27	A = 31.5	E = 31.5		0.013888889
3225221611	PGRI Studies		c	2	3	90	L = 27	A = 31.5	E = 31.5		0.013888889
3225121601	Religious Education		c	2	3	90	L = 27	A = 31.5	E = 31.5		0.013888889
3225121608	Civics Education		c	2	3	90	L = 27	A = 31.5	E = 31.5		0.013888889
3225242613	Technology-Based Enterprenership		c	4	6	180	L = 14	A = 15.5	E = 15.5	LA =90	Fw = 45	0.027777778
3225244612	Community Service Programme		c	8	6	180	L = 14	A = 15.5	E = 15.5		Fw = 135	0.027777778
Compulsory				**162**	**855**						
3225321645	Mathematical Biology		C	1	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225331641	General Biology		C	1	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**

3225321643	Basic Physics		C	1	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225321644	Basic Chemistry		C	1	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225321616	Foundations of Education		C	1	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225322651	Laboratory Techniques		C	1	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225321626	Professional Ethics		C	2	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225321617	Educational Psychology		C	2	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225321614	Student Development		C	2	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225321615	Classroom Management		C	2	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225332627	Structure and Development of Plants and Fungi		C	2	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225332630	Structure and Development of Animals		C	2	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225332635	Biochemistry		C	3	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225332632	Animal Physiology		C	3	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225332629	Plant Physiology		C	3	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225321618	Basic of Biology Learning		C	3	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225321619	Biology Learning Strategies		C	3	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225321647	English for Biology		C	3	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225331621	Biology Learning Assessment		C	4	4.5	135	L = 40	A = 47.5	E = 47.5			**0.02083333**
3225321638	Genetics		C	4	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225332631	Animal Diversity		C	4	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225332628	Plant and Fungal Diversity		C	4	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225332633	Human Anatomy, Physiology, and Health		C	4	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225332620	Biology Learning Resources and Material Development		C	4	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225331622	Biology Lesson Planning		C	5	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**

3225321640	Cell and Mollecular Biology		C	5	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225321639	Evolution		C	5	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225332636	Microbiology		C	5	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225331634	Ecology		C	5	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225331648	Research Methods in Biology Education		C	5	4.5	135	L = 40	A = 47.5	E = 47.5			**0.02083333**
3225322652	Innovation in Digital Learning Media		C	5	3	90	L = 0	A = 0	E = 0	La = 90		**0.01388889**
3225332656	Horticulture		C	5	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225331625	Curricullum Review		C	6	4.5	135	L = 40	A = 47.3	E = 47.3			**0.02083333**
3225322623	Microteaching		C	6	3	90	L = 0	A = 0	E = 0	La = 90		**0.01388889**
3225321646	Biostatistics		C	6	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225331637	Biotechnology		C	6	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225331642	Environment		C	6	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225332653	Development and Evaluation of Entrepreneurial Products		C	6	4.5	135	L = 0	A = 0	E = 0	La = 135		**0.02083333**
3225332654	Plant Tissue Culture		C	6	4.5	135	L = 27	A = 31.5	A = 31.5	La = 45		**0.02083333**
3225322655	Orchid Cultivation		C	6	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225321649	Scientific Publications		C	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225424657	Internship - Curriculum Analysis		C	7	3	90	L = 27	A = 31.5	E = 31.5	In = 45		**0.01388889**
3225424658	Internship - Lesson Plan Development		C	7	3	90	L = 27	A = 31.5	E = 31.5	In = 45		**0.01388889**
3225424659	Internship - Learning Media Development		C	7	3	90	L = 27	A = 31.5	E = 31.5	In = 45		**0.01388889**
3225344624	Internship - Teaching practice		C	7	6	180	L = 13	A = 16	E = 16	In = 135		**0.02777778**
Final Project, Intership, Thesis					**9**	**270**						
3225765650	Final Project		C	8	9	270	FP = 272					**0.04166667**
Elective					**15**							

3225422665	Plant Propagation		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225421666	Plant Protection		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225422669	Post-Harvest Technology		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225422661	Learning Media Research		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225422662	Web Design		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225432660	Innovation in Digital Biology Learning Resources and Materials		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225432663	Multimedia Technology		E	7	3	90	L = 14	A = 15.5	A = 15.5	LA = 45		**0.01388889**
3225421664	Multimedia Project Management		E	7	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225421668	Digital Agribusiness Entrepreneurship		E	7	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225421667	Environmental Engineering in Plant Cultivation Systems		E	7	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
3225421670	Soil Biology		E	7	3	90	L = 27	A = 31.5	E = 31.5			**0.01388889**
												1.00000000


Semester 8
Community Service Program 6 ECTS
Final Project 9 ECTS
15 ECTS
Semester 7
Internship – Teaching Practice 6 ECTS
Internship – Teaching Media Development 3 ECTS
Internship – Curriculum Analysis 3 ECTS
Internship – Lesson Plan Development 3 ECTS
Scientific Writing & Publication 3 ECTS
Innovation in Digital Biology Learning Resources and Materials 4.5 ECTS
Learning Media Research 3 ECTS
Multimedia Project Management 3 ECTS
Multimedia Tech. 4.5 ECTS
Web Design 3 ECTS
or
Digital Agribusiness Entrepreneurship 3 ECTS
Post-Harvest Technology 3 ECTS
Plant Propagation 3 ECTS
Environmental Engineering in Plant Cultivation Systems 3 ECTS
Plant Protection 3 ECTS
Soil Biology 3 ECTS
33 ECTS
Semester 6
Microteaching 3 ECTS
Biotechnology 3 ECTS
Biostatistics 3 ECTS
Plant Tissue Culture 4.5 ECTS
Curriculum Review 4.5 ECTS
Environment 3 ECTS
Development and Evaluation of Entrepreneurial Products 4.5 ECTS
Orchid Cultivation 3 ECTS
28.5 ECTS
Semester 5
Ecology 4.5 ECTS
Microbiology 4.5 ECTS
Cell and Molecular Biology 3 ECTS
Research Methods in Biology Education 4.5 ECTS
Biology Lesson Planning 4.5 ECTS
Evolution 3 ECTS
Innovation in Digital Learning Media 3 ECTS
Horticulture 3 ECTS
30 ECTS
Semester 4
Technology-Based Entrepreneurship 6 ECTS
Biology Learning Resources and Material Development 4.5 ECTS
Animal Diversity 3 ECTS
Human Anatomy, Physiology, and Health 4.5 ECTS
Biology Learning Assessment 4.5 ECTS
Plant and Fungal Diversity 3 ECTS
Genetics 3 ECTS
28.5 ECTS
Semester 3
Basics of Biology Learning 3 ECTS
Plant Physiology 4.5 ECTS
Biochemistry 4.5 ECTS
Biology Learning Strategies 3 ECTS
Animal Physiology 4.5 ECTS
English for Biology 3 ECTS
22.5 ECTS
Semester 2
PGRI Studies 3 ECTS
Civics Education 3 ECTS
Classroom Management 3 ECTS
Professional Ethics 3 ECTS
Structure and Development of Animals 4.5 ECTS
Religious Education 3 ECTS
Student Development 3 ECTS
Educational Psychology 3 ECTS
Structure and Development of Plants and Fungi 4.5 ECTS
30 ECTS
Semester 1
Indonesian Language 3 ECTS
English 3 ECTS
General Biology 4.5 ECTS
Basic Chemistry 3 ECTS
Mathematical Biology 3 ECTS
Pancasila Education 3 ECTS
Basic Physics 3 ECTS
Foundations of Education 3 ECTS
Laboratory Techniques 3 ECTS
28.5 ECTS
Key
General & University Compulsory Courses
Compulsory Courses
Elective Course
Thesis
ECTS = European Credit Transfer System