



ASIIN Seal

Accreditation Report

Bachelor's Degree Programs

Biology

Biochemistry

Provided by the
IPB University – Indonesia

Version: 22 September 2023

Table of Content

A About the Accreditation Process.....	3
B Characteristics of the Degree Programs	4
C Accreditation Report for the ASIIN Seal	7
1. The Degree Program: Concept, content & implementation.....	7
2. Exams: System, Concept and Organization.....	22
3. Resources	25
4. Transparency and documentation.....	31
5. Quality management: quality assessment and development	33
D Additional Documents	35
E Comment of the Higher Education Institution (14.08.2023)	36
F Summary: Expert recommendations (25.08.2023)	43
G Comment of the Technical Committee 10 – Life Sciences (06.09.2023)	45
H Decision of the Accreditation Commission (xx.xx.20xx).....	46
Appendix: Reform 2020, Study Plan and Curricular Overview	48

A About the Accreditation Process

Name of the degree program (in original language)	(Official) English translation of the names	Labels applied for ¹	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ²
Sarjana Biologi	Bachelor of Biology	ASIIN	AUN-QA Certification (period 2017 - 2022) National Accreditation Body for Higher Education (BAN-PT) Level: A	10
Sarjana Biokimia	Bachelor of Biochemistry	ASIIN	National Accreditation Body for Higher Education (BAN-PT) Level: A	10
<p>Date of the contract: 23.09.2022</p> <p>Submission of the final version of the self-assessment report: 13.02.2023</p> <p>Date of the audit: 14.06. – 15.06.2023</p>				
<p>Expert Panel: Prof. Dr. Thomas Günther-Pomorski, Ruhr University Bochum Prof. Dr. Ronald Ebbert, Technical University Nuernberg Yayang Vionita, Bandung Jihan Wardani, Universitas Lampung, student</p>				
<p>Representative of the ASIIN headquarter: Dr. Emeline Jerez</p>				
<p>Responsible decision-making committee: ASIIN Accreditation Commission</p>				
<p>Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2023 Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28.06.2019</p>				

¹ ASIIN Seal for degree programs

² TC: Technical Committee for the following subject areas: TC 10 – Life Sciences

B Characteristics of the Degree Programs

Name	Areas of Specialisation	Corresponding level of the EQF ³	Mode of Study And duration	Credit points/unit	First time of offer
Bachelor of Biology	-	Level 6	Full time 8 Semesters	144 credits (201.6 ECTS)	1982
Bachelor of Biochemistry	-	Level 6	Full time 8 Semesters	145 credits (203 ECTS)	2005

The experts acknowledge and consider the contextual framework within which the two Bachelor's degree programs currently being assessed are offered:

Institut Pertanian Bogor (IPB) is a public higher education institution situated in Bogor, West Java province. It was established in 1963 through Government Regulation No. 91/1963. With more than 29,000 students and over 1,200 lecturers, IPB is the only agricultural university in Indonesia. It comprises nine faculties, one Business School, 38 undergraduate programs, and also provides 64 magister science programs, 13 professional magister programs, 43 doctoral programs, and one international program. IPB has a selective admission policy based on entrance examinations, which will be elaborated on in the subsequent sections of this report.

The Faculty of Mathematics and Natural Sciences

The Faculty of Mathematics and Natural Sciences offers various degree programs in the fields of statistics, geophysics and meteorology, biology, chemistry, mathematics, computer science, physics, biochemistry, and actuarial studies. Currently, the **Bachelor of Biology** and the **Bachelor of Biochemistry** are being reviewed for ASIIN accreditation.

On offer since 1982, the **Bachelor of Biology** program, which reports 372 active students, is administered by the Department of Biology. The program's vision for 2027 is to become "a leading biological, educational management unit with an emphasis on tropical bioscience that can be a reference for students, researchers, institutions and the wider community at the national and international level." The mission is "1. Conducting undergraduate education program in the field of biology, especially tropical biosciences,

³ EQF = The European Qualifications Framework for lifelong learning

that is accountable, qualified, and recognized nationally and internationally; 2. Conducting research in the field of biology, especially tropical bioscience, to produce knowledge and innovation that will contribute significantly to the development and the welfare of the nation; 3. Cooperating with stakeholders and institutions both at home and abroad to support the provision of qualified and high-competitiveness education and research; 4. Conducting community service activities by utilizing research results.”

In alignment with the above vision and mission, the **Bachelor of Biology** is presented with the following objectives in the self-assessment report:

1. “To create a Bachelor of Science in Biology who has a noble character, professional, and high competitiveness through the creation of a conducive academic atmosphere for the implementation of qualified educational activities.
2. To develop biological knowledge, especially tropical biosciences, which are tested and recognized by national and international scientific communities through research and publication of research results in national and international journals.
3. To utilize research results in the field of biology to improve the welfare of the community through community service activities.”

The **Bachelor of Biochemistry** program has been available since 2005 and is managed by the Department of Biochemistry. With a population of 417 students, the program’s vision is to “become an excellent higher education institution in biochemistry education and research that can contribute to the development of science and technology at the national and international levels”. Its mission is “1. Organizing education and teaching in the field of biochemistry as a basic science for the fields of agriculture, health, environment, and industry to produce excellent biochemistry graduates who meet the needs of society and the development of biochemistry and can compete at the national and international levels; 2. Carry out research and development activities in the field of biochemistry to support the development of science and technology that can contribute to society in the fields of agriculture, health, bioindustry, and the environment; 3. Organizing community service activities to increase productivity and added value to the community through the use of biochemistry; 4. Supporting the implementation of educational, research, and community service activities through strengthening cooperation with domestic and foreign institutions.”

The self-assessment report outlines the objectives for the **Bachelor of Biochemistry** program, which are as follows:

1. "Produce graduates who have superior knowledge and academic abilities in the field of biochemistry, are pious, virtuous, and highly competitive at both national and international levels.
2. Generate science and technology innovation in biochemistry through the implementation of integrated research activities as an effort to strengthen and support learning activities.
3. Support the implementation of educational activities, research, and development of biochemistry through strengthening cooperation with institutions, institutions at home, and abroad.
4. Develop a network of cooperation with various institutions at home and abroad to support the implementation of education, research, and community service activities."

The vision and mission statements and the objectives of both study programs under review are accessible via the corresponding websites.

As discussed with the Rector's Office representatives, IPB University sees international accreditation as a means to enhance its global reputation and foster more collaborations and partnerships. The aim is to ensure that the university meets globally recognised standards and can continue to improve its educational services nationally and internationally.

C Accreditation Report for the ASIIN Seal

1. The Degree Program: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree program (intended qualifications profile)

Evidence:

- Self-Assessment Report
- Webpage Ba Biology: <https://biologi.ipb.ac.id/web/en/program/profile/undergraduate-program-in-biology>
- Webpage Ba Biochemistry: <https://biokimia.ipb.ac.id/bachelors-degree-profile/>
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The objectives and learning outcomes of the respective Bachelor's degree programs were analysed by the experts based on the descriptions in the self-assessment report and several attachments, such as study plans and module handbooks. Program objectives are also presented for the programs in Biology and Biochemistry on the respective websites. Thus, the experts were able to gather all relevant information.

The **Bachelor of Biology** and the **Bachelor of Biochemistry** are full-time programs with a duration of eight semesters and 144 and 145 Indonesian credits (201.6 and 203 ECTS), respectively. In both cases, the program learning outcomes (PLOs) are developed based on the program objectives and a stakeholder process involving teaching staff, alumni, students, and employers. PLOs align with the Indonesian National Qualification Framework (level 6), the Indonesian Biology Study Program Consortium (KOB) for Biology, the University of Missouri's Department of Biochemistry, the American Society for Biochemistry and Molecular Biology (ASBMB) for Biochemistry, the vision and mission of IPB and the mandate of the respective departments.

Based on Government regulation, the PLOs of the programs under review are divided into four categories as follows:

ASPECT/CATEGORY	BIOLOGY	BIOCHEMISTRY
-----------------	---------	--------------

ATTITUDES AND VALUES	Responsible for his own work in the field of Biology and can be given a responsibility in the work of his/her organization (PLO D)	Able to solve biochemical problems through a comprehensive scientific approach for society (PLO 1) Have the will and awareness to follow developments in biochemistry (PLO 2)
COGNITIVE	Master the theoretical concepts of biology in general and in-depth theoretical concepts in the field of biodiversity, environment, and biotechnology and are able to formulate the solution of procedural problems (PLO B)	Master the basic principles and methods of biochemistry and their applications in the fields of health, agriculture, industry, and environment (PLO 3)
SPECIAL SKILLS	Able to apply and utilize biological expertise, science, technology in solving problems in the field of biodiversity, environment, biotechnology and able to adapt to the situation at hand (PLO C)	Have high scientific insight so graduates are able to formulate and apply basic concepts of biochemistry through laboratory research (PLO 4) Understand the principles and procedures used in the biochemical analysis in metabolic processes and biomolecular characterization (PLO 5)
GENERAL SKILLS	Able to make precise decisions based on biological information and data analysis, and able to provide guidance on alternative biological problem solutions related biodiversity, environment, and biotechnology as a person or in a teamwork (PLO A) Able to self-evaluate, manage self-learning, and communicate information/idea effectively in various forms of media as needed (PLO E)	Able to make scientific papers and communicate them both orally and in writing (PLO 6)

Together with this list of graduate attributes, the Faculty of Mathematics and Natural Sciences has used the ASIIN Subject-Specific Criteria (SSC) of the Technical Committee 10 - Life Sciences as a point of reference. These field-specific criteria of ASIIN have been instrumental in providing the below matrix, which lists subject-specific competences and expected learning outcomes for the **Bachelor of Biology** graduates.

RELATION MATRIX	PLOs Bachelor's Degree Program Biology				
	A	B	C	D	E
ASIIN Requirements for Bachelor's Degree programs in Life Science					
SPECIALIST COMPETENCES					
Sound fundamental knowledge of mathematics and the natural sciences with relevance to the life sciences	X				
Knowledge of the fundamentals of molecular, cell and organismic biology		X			

Acquisition of methodological competence in the life sciences, as well as the ability to apply this in other contexts. Capability of carrying out independent scientific work in labs and outdoors, as well as with regard to handling organisms	X	X	X		
Sound knowledge in at least one special area of the degree programme		X	X		
Relevant knowledge of safety and environmental issues as well as the associated legal fundamentals				X	
Capability of recognising and solving subject-relevant problems			X	X	
Capability of solving a scientific problem and presenting the results thereof	X				X
Capability of doing literature research, of engaging in scientific discussion; presentation competence					X
SOCIAL COMPETENCE					
Conceptual, analytical and logical thinking	X			X	
Awareness of possible social, ethical and environment-related effects of actions				X	
Acquisition of communication skills – also in a foreign language – and ability to appropriately communicate scientific information to experts and laypersons					X
Capacity for teamwork, also on an intercultural basis				X	
Acquisition of lifelong learning strategies	X		X		X

Similarly, the Faculty of Mathematics and Natural Sciences matches the PLOs of the **Bachelor of Biochemistry** against the SSC of the Technical Committee 10 -Life Sciences. Accordingly, every graduate of the program is challenged to demonstrate compliance with the following:

RELATION MATRIX	PLOs Bachelor's Degree Program Biochemistry					
	1	2	3	4	5	6
ASIIN Requirements for Bachelor's Degree programs in Life Science						
SPECIALIST COMPETENCES						
Sound fundamental knowledge of mathematics and the natural sciences with relevance to the life sciences			X			
Knowledge of the fundamentals of molecular, cell and organismic biology			X			
Acquisition of methodological competence in the life sciences, as well as the ability to apply this in other contexts. Capability of carrying out independent scientific work in labs and outdoors, as well as with regard to handling organisms				X	X	
Sound knowledge in at least one special area of the degree programme			X	X	X	
Relevant knowledge of safety and environmental issues as well as the associated legal fundamentals			X			
Capability of recognising and solving subject-relevant problems						X
Capability of solving a scientific problem and presenting the results thereof						X
Capability of doing literature research, of engaging in scientific discussion; presentation competence						X
SOCIAL COMPETENCE						
Conceptual, analytical and logical thinking						X
Awareness of possible social, ethical and environment-related effects of actions	X	X				
Acquisition of communication skills – also in a foreign language – and ability to appropriately communicate scientific information to experts and laypersons	X	X				
Capacity for teamwork, also on an intercultural basis	X	X				X
Acquisition of lifelong learning strategies	X	X				X

Finally, the Faculty also presents a matrix, matching the defined program learning outcomes with the individual module learning outcomes.

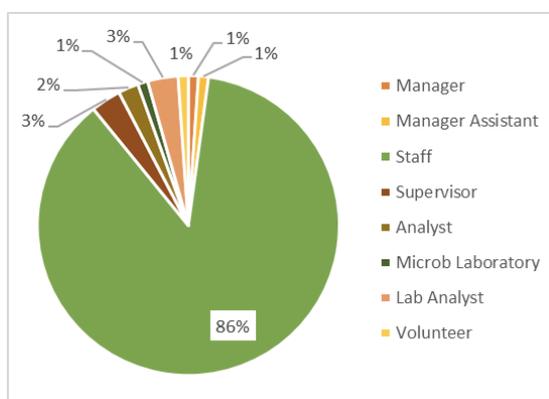
The learning outcomes for the **Bachelor of Biology** and **Bachelor of Biochemistry** are reviewed every five years along with the curriculum. The most recent review took place in 2020. Additionally, PLOs are monitored periodically through user inputs and the labour market requirement based on the alumni's job profile survey.

Employability

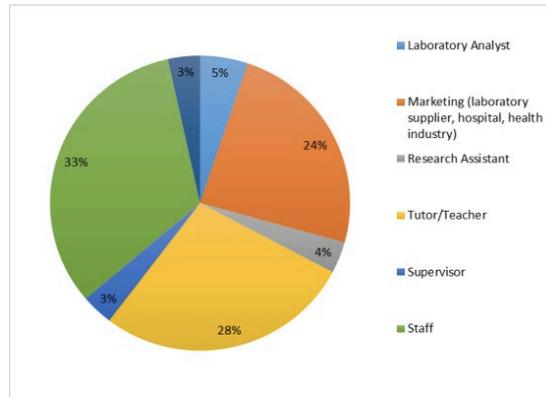
IPB has implemented tracer studies to monitor the employability of the programs' graduates, tracking their achievements and outcomes in the professional field.

The following graduate profiles apply:

Graduates of the **Bachelor of Biology** are expected to be able to find suitable positions as a) research assistants/technicians, b) academicians/teachers, c) practitioners/professionals, d) consultants in the field of biology or environment, e) entrepreneurs, f) government workers/bureaucrats or g) employees in other fields. Tracer study data indicates that 64.0% of graduates find jobs in related fields. As illustrated in the figure, most graduates have reported a role as staff (86%), and the rest as lab analysts, supervisors and managers.



Graduates who have completed the **Bachelor of Biochemistry** program are anticipated to have the ability to secure appropriate positions as a) practitioners/professionals, b) research assistants, c) government workers/bureaucrats, d) entrepreneurs or e) employees in other fields. Based on the data from the tracer study, 72.5% of graduates obtain employment in fields that are closely aligned with their studies. The figure shows that graduates secured positions as staff members (32.8%), tutors/teachers (27.6%), and in marketing (24.1%), while the remaining pursued careers as laboratory analysts, research assistants, supervisors, and entrepreneurs.



In their assessment of this criterion, the ASIIN expert team comes to the following conclusions:

IPB has defined program objectives and program learning outcomes (PLOs) to describe the profile and the goals of the Bachelor's degree programs under review. The program objectives outline general purposes, while the PLOs provide specific details on the competences that students should acquire during their studies. Both programs' PLOs have been designed by considering the Indonesian National Qualification Framework, the provisions of the corresponding Indonesian professional and scientific associations and using the instrument of internal and external benchmarking.

The objectives and program learning outcomes of the assessed programs are considered reasonable and well-founded. PLOs are arranged in line with the programs' objectives and are well described on the programs' website, making them accessible to all stakeholders. The ASIIN expert team finds evidence that relevant stakeholders are regularly involved in the continuous assessment and further development of the objectives and program learning outcomes.

Based on the self-assessment report and the discussions during the on-site visit, the experts see that the graduates of the programs under review acquire the necessary subject-related competences. The ***Bachelor of Biology*** strongly focuses on life science, whereas the ***Bachelor of Biochemistry*** focuses on biomolecules and their metabolisms in organisms.

The programs equip students with sound fundamental life science-relevant knowledge of mathematics and the natural sciences, in-depth knowledge and methodological competence in biological sciences and can apply this in other contexts. They also gain methodological competence in the classical core life sciences, are familiar with the hazards caused by handling chemicals, the manipulation of living and non-living material (pathogenic viruses, bacteria, and parasites), are adequately trained on the necessary safety measures and precautions, can carry out practical work in laboratories and outdoors independently. Moreover, the graduates should be able to handle organisms and have

acquired relevant knowledge of safety and environmental issues as well as the associated legal fundamentals. Furthermore, they are able to solve subject-relevant problems, present the results, have trained their analytical and logical abilities and have an awareness of possible social, ethical and environmental effects of their actions. During their studies, the students have also acquired communicative skills, can work in a team and have developed a strategy for life-long learning.

With respect to social competences, the graduates have trained their conceptual, analytical and logical thinking, are aware of possible social, ethical and environment-related effects of their actions and can adequately communicate scientific information. Finally, they also gain some competences in work methodology, such as the knowledge and skill to work independently on scientific tasks and to present work results.

The experts attest that the learning outcomes of the two programs under review correspond to level 6 of the European Qualification Framework. In their view, the programs satisfy the ASIIN Subject-Specific-Criteria (SSC) requirements of the Technical Committee 10 – Life Sciences.

The experts commend the departments for their innovative approach and commitment to continuously improving the curriculum of their study programs. They acknowledge IPB's dedication to maintaining high standards and ensuring that graduates are well-equipped to succeed in the national job market. As discussed with students and alumni, the programs provide a solid foundation for those who wish to pursue further academic programs, such as a Master's or PhD.

Criterion 1.2 Name of the degree program

Evidence:

- Self-Assessment Report
- Diploma Certificate and Diploma Supplement

Preliminary assessment and analysis of the experts:

The title for the undergraduate degree of *Bachelor of Biology* and *Bachelor of Biochemistry* is Sarjana Sains (S.Si) or Bachelor of Science. The title follows the rules for naming study programs under the Minister of Research, Technology and Higher Education No. 59/2018 regulation concerning Diplomas, Competency Certificates, Professional Certificates, Degrees, and Procedures for Writing Degrees in Universities.

The experts confirm that the English translation and the original Indonesian names correspond to the intended aims and learning outcomes as well as the main course language.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Curricular overview of the study programs under review
- Module handbooks of the study programs under review
- Webpage Ba Biology: <https://biologi.ipb.ac.id/web/en/program/profile/undergraduate-program-in-biology>
- Webpage Ba Biochemistry: <https://biokimia.ipb.ac.id/bachelors-degree-profile/>
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The Bachelor's degree programs under review are designed for eight semesters. Each semester consists of fourteen weeks of lectures and two weeks of exams: mid-term examination on week 8th and final examination on week 16th. Currently, the **Bachelor of Biology** and **Bachelor of Biochemistry** runs two curricula: 2014 and 2020.

The 2014 curriculum, also known as the 'Major-Minor curriculum', is competence-based. It allows students to attend education in one of the minor fields as a complementary area of expertise or choose courses to support their knowledge.

The 2020 curriculum reform enabled the integration of the modules with the Flexibility and Personalized Learning program (MBKM) to ensure a unified and cohesive framework. MBKM is an important initiative from the Minister of Education, Culture and Higher Education regulated by decree No. 03/2020. Through the implementation of this program, students are directed to obtain a minimum of 20 credits outside IPB through enrichment courses in the form of internships, student exchange, community service and entrepreneurship.

Per the 2020 curriculum, the **Bachelor of Biology** requires a minimum of 144 Indonesian credits, with 15 - 20 credits for elective modules. Students can select elective courses based on their areas of interest and after consultation with their academic advisor. In the first and second semesters, students take common core courses such as religion, Bahasa Indonesia, Pancasila education, sports and arts, innovative agriculture, chemistry, mathematics,

physics, English, sociology, economics and statistics. From the third semester to the sixth semester, the courses taken are more subject-specific and designed to achieve the intended learning outcomes. Students must complete 21 credits of enrichment courses, which can be taken during the sixth and seventh semesters. In the seventh semester, they must also complete community service and the internship and, in the eighth semester, the undergraduate thesis.

The ***Bachelor of Biochemistry*** involves a minimum of 145 Indonesian credits, with 15 - 20 credits for elective modules. Students have the option to select elective courses based on their interests, and they can consult with their academic advisor for guidance. Like the Bachelor of Biology, the courses in the first two semesters convey basic knowledge of natural sciences, mathematics, civic education, Bahasa Indonesian and English. Academic core courses and in-depth courses are offered from the third to the sixth semester. Students must complete 20 credits of enrichment courses from other study programs, which can be taken between the third and seventh semesters. In the seventh semester, they must also complete community service and the internship/practice, and in the eighth semester, the undergraduate thesis.

The experts stress the importance of courses focused on ethics or a code of ethics for biologists and biochemists, as well as teaching the principle of good scientific and data management. The program coordinators clarify that these areas are incorporated into specific modules and assignments to give students a thorough understanding.

Upon reviewing the module descriptions and study plans, the experts confirm that both Bachelor's degree programs comprise modules with coherent teaching and learning units. However, they do have some recommendations regarding the size of the modules, which are further elaborated on in Section 1.5. All working practice intervals (community service), internship and Flexibility and Personalized Learning activities (MBKM) appear to be well-integrated into the new curriculum, and the supervision by the Faculty of Mathematics and Natural Sciences guarantees their respective quality in terms of relevance, content, and structure.

In their assessment of the curricular structures of the programs under review, the experts find the Bachelor curriculum to be well-rounded, which in their view, adequately prepares students to achieve the intended learning outcomes.

During the audit, IPB's industry partners confirm that the graduates from both programs have a strong scientific background, are adaptable, and possess a wide range of skills that help them find adequate jobs. Yet, they identified a need to improve communication skills, boost confidence in expressing ideas, encourage better organisation of discussions, and cultivate teamwork abilities. The experts suggest adding soft skills training, such as

presentation, scientific discussion, project management, and feedback techniques, into the existing modules in the curriculum.

Most students and alumni expressed their general satisfaction with the educational experience at IPB. There is, nonetheless, a need to further open and promote the **Bachelor of Biochemistry** profile to the industry and other national organisations, informing about the potential of the graduates. Thus, the experts recommend placing more effort into promoting the study program among prospective employers and institutions.

Aside from these recommendations, the expert group consider that the intended qualifications profiles of both Bachelor's degree programs allow the students to take up an occupation corresponding to their qualification profile.

International Mobility

As part of its self-assessment report, IPB describes a set of measures and instruments to foster international mobility among students enrolled in the reviewed programs, such as student exchange, summer courses, national and international conferences/seminars, training and competency tests, and research/short-term internships.

The experts learn that, in 2022, the Ministry of Research, Technology and Higher Education implemented an international student exchange program for undergraduate students called IISMA. The program aims to encourage more students to participate in international mobility. However, the program coordinators observe that obtaining the mobility grant is highly competitive. Additionally, student mobility may affect the length of their study period, making it challenging to take part in these activities. The programs have MoUs with partners such as research institutions, overseas colleges, private companies, and state-owned companies to address this issue. The programs have also introduced English courses and modules delivered in English, which were highlighted during the audit.

The International Collaboration Office disseminates information about international mobility opportunities, and lectures are called upon to motivate and guide interested applicants, which is further corroborated during the meeting with the students.

In terms of **outgoing mobility**, data from 2019-2021 indicate that 108 **Bachelor of Biology** students took part in academic activities abroad. Of these, the majority (80.6%) assisted the 2020 University of Nottingham's International Conference on Science and Applied Science in the UK. The rest attended conferences, exchange programs or conducted research activities in Thailand, Japan, Malaysia, Croatia, India, Australia, Ecuador, Papua New Guinea, and the US. The **Bachelor of Biology** has a credit-earning program, which offers prospective applicants special clustering modules delivered in English that can be taken as a summer course or research student exchange. The program has also held

module services for Veterinary Medicine School's international students. The 2019-2021 performance reports indicate that **inbound mobility** reached 43 students.

Similarly, students pursuing the **Bachelor of Biochemistry** are encouraged to participate in international mobility programs. According to data from 2019-2021, eight students engaged in academic activities abroad. The students attended competitions, conferences, research symposiums and exchange programs in Turkey, Japan, Thailand and South Korea. The program has organised module services specifically catered to international students enrolled in the Veterinary Medicine School. During the audit, the experts bring up the issue of low participation in international mobility, pointing out the need to increase the number of students attending these events.

The experts highly value IPB's efforts to foster student mobility. However, they believe that there is still room for improvement in this aspect for both programs. Utilising the existing robust collaborations with national and international partners presents a valuable avenue to actively promote domestic and study-abroad opportunities among students.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- Academic guidelines
- IPB web page: <https://ipb.ac.id/>
- IPB admission web page: <https://admisi.ipb.ac.id/>
- IPB academic calendar: <https://simak.ipb.ac.id/Publik/KalenderAkademikNew>
- Statistical data about the progress of studies for the degree programs under review
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Admission and selection of prospective students are clearly regulated at IPB. The admission system is based on the Rector's Regulation No. 5/IT3/PP/2017 about Guidelines for Admission of New Students. The admission requirements, schedule, registration venue, and selection test are announced on IPB's admission webpage and thus accessible to all stakeholders.

Admissions for the undergraduate programs are organised in various ways, as described in the following table:

Scheme	No.	Selection pathway	Selection Mechanism
General System	1	SNMPTN (National Entry Selection of Public Universities)	Based on an academic report in high school.
	2	SBMPTN (Joint Selection for State University Admission)	Written exam selecting students based on academic ability in Biology, Mathematics, Physics and Chemistry.
	3	UTM-BK (Computer Based Institutions Selection)	Written test at institutional selection level.
Based on achievement	4	PIN (International and National Achievement Track)	Awards/competitions winners at international and national levels.
	5	KETUA OSIS (Chairman of the Student Council)	Proven leadership qualities as the Student Council chairman at high school and adequate academic abilities.
	6	BUD (Regional Representatives Scholarship)	Recommendation and scholarship from local Governments.
Mandatory	7	ADIK (Affirmation of Higher Education)	National Selection, provides opportunities to Indonesian citizens who live in Indonesia's border districts at all public universities, fully funded by the Indonesian Government.

Together with applying and passing the requirements of an entry pathway, the applicant should demonstrate to be: (1) physically and mentally healthy; (2) free from drug use; and (3) willing to live in the IPB dormitory during the first year.

In 2021, a total of 1235 students applied for the **Bachelor of Biology** program through the various admission schemes, including SNMPTN (38.9%), SBMPTN (29.3%), UTMBK (28.3%), KETUA OSIS (1.5%), PIN (1.9%), BUD (0.1%), and AFIRMASI DIKT (0.0%). Data from the past three years show that the number of applicants has consistently exceeded the available spots. In 2021, 86 new students were accepted, resulting in an admission rate of 7.0%, with 70% of them being female.

Over the past three years, the **Bachelor in Biochemistry** program has seen a decrease in applicants, going from 1480 in 2019 to 916 in 2021. The majority of applicants in 2021 applied through SNMPTN (50.5%), followed by SBMPTN (21.1%), UTMBK (24.6%), KETUA OSIS (1.6%), PIN (1.4%), BUD (0.7%), and AFIRMASI DIKT (0.1%). The program has a high number of applicants compared to available spots. In the 2021 intake, only 99 out of 916 applicants were accepted, resulting in an admission rate of 10.8%. It's worth noting that 75.8% of the accepted students were female.

During the audit, the question was raised about whether students are permitted to switch between study programs. The program coordinators confirm that it is now possible with the 2020 curriculum reform. This is due to the fact that students take courses from the

other department. Furthermore, IPB offers enrichment courses to students from other universities through the government-promoted program. This occurs simultaneously with IPB students taking courses from other universities.

The programs being reviewed do not have an international class program, but there is an officially regulated credit-earning program available for international students. As mentioned in the previous section, this program offers special clustering modules delivered in English.

The details of the application process at IPB and further information on admissions criteria and deadlines can be found in the academic guidelines, which are also published on the university's webpage.

The experts find that (prospective) students are informed in detail about the requirements and the necessary steps to apply for admission into the programs. The corresponding rules and regulations are binding and transparent and are based on decrees by the Ministry of Research, Technology and Higher Education and on the University's written regulations.

The experts confirm that the admission requirements support the students in achieving the intended learning outcomes. This finding is also supported by the "drop-out" statistics provided by the faculty (three students in Ba Biology and one student in Ba Biochemistry in the last four years), demonstrating that most students graduate, although, as discussed in the following section, slightly exceeding the standard study period.

Criterion 1.5 Workload and Credits

Evidence:

- Self-assessment report
- Student handbooks of the study programs under review
- Module handbooks of the study programs under review
- Discussions during the audit

Preliminary assessment and analysis of the experts:

At IPB, all study programs must follow the Indonesian credit system (SKS) regulations. Drawing on the self-assessment report, one SKS equals 1.4 ECTS. Each credit is distributed between guided and independent learning activities, as well as between face-to-face activities, laboratory activities/practicum, and project and field practice. According to Regulation of the Ministry of Research, Technology and Higher Education No. 44/2015 about National Standards of Higher Education, the learning activities used are lectures,

responses and tutorials, seminars, and practicum. One credit of lecture and practicum is equivalent to 170 minutes per week per semester, with 50 minutes for a face-to-face activity, 60 minutes for structured assignments, and 60 minutes for self-study.

Regarding the **Bachelor of Biology**, the 2020 curriculum stipulates a minimum study load of 144 credits (corresponding to 201.6 ECTS) and a maximum of 149 credits (208.6 ECTS) in line with national requirements (Regulation of the Minister of Education and Culture No. 3/2020 concerning National Standards of Higher Education). The minimum load consists of the following:

The Curriculum of the Biology Undergraduate Program		
Common Core Courses (CC)	33 SKS	46.2 ECTS
Fundamental Course (FC)	3 SKS	4.2 ECTS
Foundational Literacy, Academic Core Courses (ACC)	36 SKS	50.4 ECTS
In-depth Courses (IC)	29 SKS	40.6 ECTS
Enrichment Courses (EC)	21 SKS	29.4 ECTS
Undergraduate Thesis (TA), Capstones (CS), Community service (KKN), Internship (M)	22 SKS	30.8 ECTS
Total	144 SKS	201.6 ECTS

The **Bachelor of Biochemistry** requires students to complete a minimum of 145 credits (equivalent to 203 ECTS) and a maximum of 149 credits (equivalent to 208.6 ECTS) as per the national standards of higher education (outlined in the regulation of the Minister of Education and Culture No. 3/2020). The minimum load includes:

The Curriculum of the Biochemistry Undergraduate Program		
Common Core Courses (CC)	33 SKS	46.2 ECTS
Fundamental Course (FC)	3 SKS	4.2 ECTS
Foundational Literacy, Academic Core Courses (ACC)	36 SKS	50.4 ECTS
In-depth Courses (IC)	29 SKS	40.6 ECTS
Enrichment Courses (EC)	22 SKS	29.4 ECTS
Undergraduate Thesis (TA), Capstones (CS), Community service (KKN), Internship (M)	22 SKS	30.8 ECTS
Total	145 SKS	203 ECTS

As the self-assessment report indicates, **Bachelor of Biology** and **Bachelor of Biochemistry** students are asked about their perceptions of their workload. Reportedly, most students are generally satisfied with the alignment of their course workload and the credit requirements. Furthermore, the university regulates the maximum number of credits students can take based on their GPA from the previous semester. So, they can have a maximum credit load of 25 Indonesian credits if their GPA is ≥ 2.76 , a full credit load of 22

Indonesian credits if their GPA is 2.00 – 2.76, and a maximum credit load of 19 Indonesian credits if their GPA is < 2.00.

The experts notice that the programs provide modules of only 1.4 ECTS. In their view, this may lead to more exams, increasing the load for students.

IPB provided statistical data about the average study length for the programs and the number of dropouts. According to the data, the average time required to complete studies for the **Bachelor of Biology** amounts to 4.25 years and for the **Bachelor of Biochemistry**, 4.35 years. During the audit, the experts discuss ways to increase the number of students who complete their studies within the standard time frame. Program coordinators explain that the main issue is the length of time it takes for students to finish their final project. To tackle this problem, measures include a quality group where departments work together to develop strategies to shorten the study period and strengthen the advisory system.

The figures presented by the university show that almost all students complete the study programs with a low number of dropouts in the past years. These data confirm that both degree programs under review can be successfully completed.

The recognition of credits for incoming and outgoing students is satisfactory and has been discussed in prior parts of this report. The module handbooks for both programs clearly distinguish between credits given for various forms of supervised studies and self-study time. However, from their discussions with students, the experts conclude that the workload distribution between semesters could be improved.

The experts are generally satisfied with the way the system of academic credits is administered by IPB and the Faculty of Mathematics and Natural Sciences for the **Bachelor of Biology** and **Bachelor of Biochemistry** programs. Nonetheless, a recommendation is to ensure that the workload is distributed evenly over the eight semesters of the study programs. The departments should work in collaboration with students to achieve this outcome. Moreover, the expert group sees value in reconsidering the size of the modules and opting for larger modules with just one exam.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-assessment report
- Module handbooks for the programs under review
- Discussion during the audit

Preliminary assessment and analysis of the experts:

In its self-assessment report, IPB records that appropriate didactical instruments and methods are implemented for the Bachelor's degree programs under review and that the variations in learning methods and tools are adjusted to the level of knowledge, skills, and competences set in each module. The teaching staff at IPB are free to choose and use the teaching instruments and methods they believe are most effective, according to the institution's statutes.

The university's approach to learning is student-centred and involves teaching methods that prioritise the student's involvement in the learning process. Government regulations and internal curricula have recently focused on increasing problem-based and project-based learning. This approach helps students collect and analyse data, problem-solve, and present research results in laboratory and field settings. The Flexibility and Personalized Learning program (MBKM) has been integrated into the curriculum to give students more flexibility in achieving their goals. With MBKM, students can learn from different institutions, industries, and communities, allowing for a more student-centred approach to education. Furthermore, the availability of laboratory facilities, including education, research, advanced labs, greenhouses, and field labs, allows students to conduct independent research.

The program coordinators for the programs under review point to the information in the module handbooks, which clearly state the teaching methods applied in each learning unit, with practical instructions for laboratory work, learning resources and the learning plan and assessment. The Lecturer Management System (LMS) has been used by lecturers for learning and teaching processes, especially for supporting the blended learning system.

The experts confirm that a variety of learning methods are used, aligned with the learning objectives. In the discussions with students, the experts learn that they are generally satisfied with the quality of teaching and learning in the programs under review. The student surveys also confirm this finding.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 1:

The experts thank IPB for explain that the curriculum of the Bachelor's degree programme Biology includes four course (BIO1102 Basic Biology, BIO1101 General Biology, BIO1304 Research Methods and Scientific Communications, and BIO1401 Internship in Biological Scope) that treat ethics as well as good scientific practise and data management skills. In the Bachelor's degree programme Biochemistry, there are three courses (BIK452 Clinical Biochemistry, BIK1304 Technique in Scientific Writing, and BIK1301 Biochemical

Research Application) that treat ethics as well as good scientific practise and data management skills.

The experts appreciate that the programme coordinators agree that the Biochemistry programme should be made better known among potential employers. The existing cooperations should be intensified and new cooperations with companies and public institutions in the area of Biochemistry should be initiated. The same recommendation applies to the low academic mobility of the Biochemistry students. Here, more international cooperations should be established and the students should be encouraged to take part at them.

With respect to the small size of some courses and the exam load, the experts appreciate that the programme coordinators will discuss this issue and possibly some smaller courses will be merged.

The experts consider criterion 1 to be mostly fulfilled.

2. Exams: System, Concept and Organization

Criterion 2 Exams: System, concept and organization

Evidence:

- Self-Assessment Report
- Module descriptions
- Academic Guidelines (Standard Operational Procedures -SOP Undergraduate Program Implementation)
- Samples of student's work (projects, exams and thesis)
- IPB academic calendar: <https://simak.ipb.ac.id/Publik/KalenderAkademikNew>

Preliminary assessment and analysis of the experts:

IPB presents the general rules for the examination and assessment systems applicable to the programs under review. Exams in the **Bachelor of Biology** and **Bachelor of Biochemistry** follow the University's rules as stated in the academic guidelines (<https://kmm.ipb.ac.id/standar-mutu-ipb/pob-sarjana/>).

Exams and the corresponding assessment rubrics measure students' learning outcomes (knowledge, skills and attitudes) according to a predefined grading scale reference. The module handbooks for the programs currently under review include the course learning outcomes and specify the types of examinations used to assess the achievement of these

learning objectives. Various assessment methods are used, such as written assignments, quizzes, tests, reports, practical lab assignments, project reports, presentations, and oral exams. The course contract and the lecturer determine whether the examination methods are written, oral, offline or online.

At the first meeting, students are informed of what is required to pass the respective module, including correction and grading. The form and length of each exam are specified in the course descriptions available to the students via the university's integrated information system (SIMAK). The students also learn about mid-term and final exams via the academic calendar. The final grade of each module is a combination of the scores of these individual types of assessment. The exact formula and the final grade required to pass the module are given in the module handbooks. The exam grade is presented in an absolute numeric value with a range of 0-100. The final grade of the course is given as a quality letter and quality score as follows: A = 4.0 (LO Achieved), AB = 3.50 (LO Very good), B = 3.0 (LO Good), BC = 2.50 (LO Fairly good), C = 2.0 (LO Fair), D = 1.0 (LO Conditional pass), and E = 0 (LO Fail).

Students must attend at least 80% of the total course sessions to be able to take the final exam of the course. If students cannot attend an exam due to urgent reasons such as illness, competitions, or performances, they may be eligible to take a follow-up exam at a time determined by the department. A lecturer may also offer a test of improvement after the course's final grade has been announced with the approval of the program coordinator.

Feedback on each student's progress is provided through their exam results. Final grades are available on students' academic accounts in SIMAK within 14 working days after the last exams. When students have objections to their exam results, they have the chance to appeal directly to the concerned lecturer within two days after the time of announcement of the grade.

The experts confirm that there is a form of assessment for each course and that all students are well-informed about the type of evaluation and the details of what is required to pass each module. The rules for re-sits are written down in the academic guidelines and, therefore, transparent to all stakeholders.

As stated in the academic guidelines, the final assignment for the last year of undergraduate programs is an independent project mandatory for graduation. This assignment includes preparing a proposal, conducting the project under the supervision of two lecturers, writing the thesis, and presenting it in the final examination session. For the final assessment of the final project, the learning outcomes are measured and evaluated based on the results of student performance in the undergraduate thesis examination,

which includes a comprehensive assessment of student knowledge in Biology or Biochemistry respectively, the grade of each course, the final GPA, and minimum required credits. If a student fails to pass an undergraduate exam, they can take a re-exam within one month. During the undergraduate exam, students can receive feedback and use it to improve their draft. However, they must submit their improved draft within three months of the initial exam.

At IPB, a Bachelor's degree is awarded to students who collect a minimum of 144 credits with a GPA > 2.00 for each competency group (except the General Competence Education Program) and without an E grade. The maximum study period for undergraduate students is twelve semesters, except for students who get an extension of their studies.

IPB has a policy on academic integrity in all student activity, including examinations and assignments. If students engage in fraudulent, plagiaristic, or academically dishonest behaviour, they will face sanctions that correspond to the severity of their actions. The university and faculty have established an ethics commission to oversee, monitor, and recommend sanctions for such misconduct. To help prevent plagiarism, the university offers teachers and students access to Turnitin, which can be used to check for similarities in written work.

In their assessment of this criterion, the expert group finds that appropriate rules and regulations, which govern the examination systems university-wide, are in place. These rules and regulations are adequately communicated and transparently published. The students also confirm during the audit that they are well-informed about the examination schedule, form, and grading rules. Additionally, they are given sufficient time to prepare for the exams adequately.

The experts also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the pieces. They confirm the high standard of the Bachelor's theses in the sample. To a more significant impact, however, they believe that research groups should be more accessible to students, fellow researchers, and the general public. To achieve this, they recommend increasing the visibility of these groups by presenting them on IPB's website.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 2:

The experts see that their recommendation with respect to making the existing research groups more visible to students, fellow researchers, and the general public is supported by the programme coordinators of both degree programmes. To this end, the experts think that it would be useful to present each research group on IPB's websites.

The experts consider criterion 2 to be mostly fulfilled.

3. Resources

Criterion 3.1 HR Resources, Staff Development and Student Support

Evidence:

- Self-assessment report
- Staff handbooks of the study programs under review
- Discussion during the audit

Preliminary assessment and analysis of the experts:

HR Resources

At IPB, the staff members have different academic positions. There are professors, associate professors, assistant professors and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. In addition, the responsibilities and tasks of a staff member concerning teaching, research, and supervision depend on the academic position.

The **Bachelor of Biology**'s teaching staff comprises 41 full-time lecturers (51% female). Of the total number of lecturers, 37 hold doctoral degrees (90%), while the remaining four hold master's degrees (10%). In terms of academic positions and the evidence provided in the staff handbook, there are 12 full professors (29%), 12 associate professors (29%), 13 assistant professors (32%) and four lecturers (10%).

The **Bachelor of Biochemistry** program has 18 full-time lecturers (50% female). Among these lecturers, 72% hold doctoral degrees, and the remaining 28% hold master's degrees. The academic positions of the teaching staff, as stated in the staff handbook, are as follows: two (11%) are full professors, eight (44%) are associate professors, five (28%) are assistant professors, and three (17%) are lecturers.

The Indonesian government has set specific staff-student ratios for universities, which are outlined in the Ministry of Research, Technology and Higher Education's Regulation No. 105/2015. The ideal ratio of staff to active students is 1:20 - 1:30. Currently, the **Bachelor of Biology** has a ratio of 1:10, while the **Bachelor of Biochemistry** has a ratio of 1:23. The experts learn that for the **Bachelor of Biochemistry**, there is a 2023-2028 recruitment plan

to fulfil the academic requirements across the program's three divisions and improve the staff-student ratio.

Each department conducts a staff requirement analysis to recruit new lecturers, which the Directorate of Human Resources oversees. For government employees, the university must apply for approval from the government, which then determines the university's quota based on the national demand. Since 2020, IPB has also hired non-government employee lecturers, following its defined recruitment process.

Lecturers that are government employees have to follow the promotion, retirement, and pension system regulated by the government. The teaching staff's promotion to a higher academic position is based on several factors, such as achievement in teaching, research, and community service activities (*Tridharma Perguruan Tinggi*). In order to be promoted to the position of a full professor, the applicant must hold a PhD degree.

Additionally, the **Bachelor of Biology** and **Bachelor of Biochemistry** programs frequently host international guest lecturers. In the past four years, the study programs have had 47 and 9 guest lecturers, respectively, coming from Asia, Europe, North America, and Australia. During the discussion with the expert team, the students confirm the availability of these opportunities. However, it would be beneficial to increase these numbers for both programs.

Job Conditions and Performance Review of Staff

IPB has established evaluation methods based on student surveys gathering perceptions of satisfaction with the teaching performance of individual lecturers. Another critical component is staff performance targets in teaching, research and community service. The standard workload set by IPB is 12 credits per semester.

In terms of research, academic staff of the degree programs under review conduct their research projects collaboratively in research groups. Most research projects are supported by grants from the university, the government, private companies, and international institutions. The students are reportedly involved in research activities in order to support the completion of their final projects. Some researchers are also engaged in collaboration with other domestic and overseas universities as well as research centres and other institutions specifically for industry-related research. The academic staff is requested to disseminate research results at national and international conferences and publish them in reputable national and international journals. Staff members who have demonstrated exceptional accomplishments are rewarded. The expert team greatly appreciates both departments' commitment to conducting up-to-date research projects.

HR Development

Regarding staff development, IPB encourages training its academic and technical staff. Each department has divisions that are responsible for the development of scientific competence. The division head suggests the necessary training and growth opportunities for the staff to the department, which will then present these proposals to the Directorate of Human Resources. IPB provides several training programs for its teaching staff to enhance their teaching abilities. These programs include Content and Language Integrated Learning (CLIL) and Problem-Based Learning-Teaching, held annually. Additionally, the division head mentors junior staff members to enhance their didactic performance. They are also given opportunities to learn from senior lecturers by attending their classes.

Financial resources are available for staff members to go abroad for a limited time and to participate in conferences or other events to stay up to date with the scientific development in their area of expertise. In addition, the Faculty of Mathematics and Natural Sciences wants to promote the process of internationalisation at IPB by hosting international scientific events, facilitating sabbatical leaves, and inviting international professors.

The experts discuss with the members of the teaching staff about the opportunities to develop their skills and learn that the teachers are satisfied with the internal qualification program at IPB. This provides them opportunities to improve their didactic abilities, spend time abroad to attend conferences, workshops and seminars, or even participate in a sabbatical leave.

Support and assistance for students

The University and the Faculty of Mathematics and Natural Sciences have implemented a series of mechanisms to support students in their learning process and monitor success in reaching the expected learning outcomes of the programs. A crucial component of the IPB support framework is offering students a comprehensive advisory system. At the start of the first semester, every student is assigned to an academic advisor appointed by the Dean based on the proposal of the department head. Each academic advisor is a member of the academic staff, responsible for a group of students. They become the students' first call for advice or support on study-related or personal matters from their first year until graduation.

The academic advisor's primary responsibility is to assist students in adapting to the university environment, which differs from high school, and promptly address any queries they may have. Students can seek guidance from academic advisors about the curriculum. Academic advisors receive semester reports on students' academic performance, which enables them to track their progress and evaluate their academic abilities. They use this information to provide advice on preparing for the next semester's study plan. They also

offer general academic advice, make suggestions regarding relevant careers and skills development and help if there are problems with other teachers. The students confirm during the discussion with the expert group that they all have an academic advisor, that they meet regularly, and that they can always contact their advisor personally and ask for help or advice.

During the 7th semester, students are allocated to two supervisors to guide and direct them in preparing for their research project. Their academic advisor will still be available and can work with the supervisors to find solutions to any problems.

The faculty also has at their disposal the capabilities of SIMAK to monitor students' academic progress, check academic achievement, including GPA per semester, cumulative GPA and percentage of achievement or approve and change student plans and course programs.

The Directorate of Career Development and Assessment offers job vacancy information and training on drafting CVs, job applications, and interview skills. IPB also regularly hosts job fairs for students. As regards other support services, such as psychological support, health services, sports facilities, financial aid, etc., students are generally satisfied with the level of assistance they receive.

In their appreciation of this criterion, the experts come to the following conclusions:

In the experts' opinion, the teaching staff's composition, scientific orientation and qualification are suitable for successfully implementing and sustaining the programs under review. However, for the *Bachelor of Biochemistry*, they highly recommend finalising the recruitment process for the additional positions in the recruitment plan.

In the discussions with the expert team, the lecturers confirm that a range of professional development options are available. The experts acknowledge that IPB offers sufficient support mechanisms and opportunities for teaching staff members who wish to further develop their professional and teaching skills. They highlight the faculty's academic career development program based on performance. During the interviews, teaching staff expressed satisfaction with their working conditions and professional development chances and exhibited a strong commitment to their students. As regards the students, they are equally satisfied with the approachable, enthusiastic, and motivated teaching staff as well as with their learning environment.

There is a good and trustful relationship between the students and the teaching staff; enough resources are available to provide individual assistance, advice and support for all students. The support system helps students adjust to the university environment, achieve

the intended learning outcomes and complete their studies successfully and without delay. The students are well-informed about the services available to them.

Criterion 3.2 Funds and equipment

Evidence:

- Self-assessment report
- IPB tuition fee web page: <https://admisi.ipb.ac.id/biaya-pendidikan/#1548406898885-357a7f4c-48cb>
- Discussion during the audit

Preliminary assessment and analysis of the experts:

IPB University and the Faculty of Mathematics and Natural Sciences are mainly funded by the Indonesian government through tuition fees as well as grants for research projects. To comply with national regulations, Single Tuition Fees (UKT) are required for students at IPB. This fee is a form of contribution paid by the parents and varies depending on socio-economic status and the single tuition fee for the specific program. The single tuition fee for the **Bachelor of Biology** and **Bachelor in Biochemistry** ranges from 2,400,000 to 11,000,000 Rp/semester (146 to 670 Euro/semester). The IPB website outlines the specific tuition fee rates applicable to different groups.

There is basic funding from the faculty for teaching, research and community service. Additional funds from grants can be applied through government and non-government organisations/institutions for building facilities, research and teaching projects, student and staff exchange, community engagements, and equipment procurement.

During the audit, the expert group visits the following facilities in order to assess the quality of infrastructure and technical equipment:

1. Advanced laboratory;
2. Education laboratory, Biology building;
3. Research laboratory, Biology building;
4. Staff room, Biology building;
5. Academic and teaching rooms;
6. Instrumentation laboratory, Biochemistry building;
7. Staff room and classroom, Biochemistry building;
8. Education Laboratory, Biochemistry building;
9. Reading room and research laboratory, Biochemistry building.

The experts appreciate the professional presentation, particularly of the laboratories. They judge the facilities, including teaching labs, as appropriate and consider that there are sufficient research opportunities. If students require additional resources to conduct their research, the Bachelor of Biology and Bachelor of Biochemistry programs offer various partnerships with both internal and external laboratories and institutions. The investment made in essential instruments and advanced infrastructure indicates the university's strong commitment to enhancing learning experiences and research outcomes. Laboratories are also equipped with technicians to assist students and lecturers in teaching, learning, and research activities in the laboratories.

The experts find no severe bottlenecks due to missing equipment or a lack of infrastructure. During the discussion with the expert group, the students confirm that they are generally satisfied with the available equipment. The basic technical equipment for teaching students at the Bachelor level is available in sufficient numbers. However, the experts suggest that the group size for practical work in the *Bachelor of Biochemistry* program could be reduced. Consequently, they recommend improving the basic equipment of the teaching labs.

Regarding the library, 2016-2021 data reveal that the Biology and Chemistry students are generally satisfied with the library facilities. The library supports teaching, learning and research by offering a wide range of literature and workspaces.

The experts also learn that IPB is actively prioritising the implementation of an inclusion strategy. They commend the university for this commitment and, in line with the inclusive approach, suggest ensuring that laboratories and teaching facilities are accessible to students with limited mobility or other disability.

Besides the abovementioned recommendations, the auditors judge the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms etc.) to comply with the requirements for sustaining the degree programs.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 3:

The experts thank IPB for explaining that regarding the recruitment process for staff positions, the Department of Biochemistry has proposed two persons (1 lecturer and 1 supporting staff) to be starting from 2023/2024 academic year. In addition, the Department of Biochemistry has mapped the status of each staff regarding their working period including the prediction of retirement year in order to fill the vacancies in time. The peers

expect that the Directorate of Human Resources IPB University will follow the recommendations of the Department of Biochemistry.

The experts point out that it important to provide enough instruments and technical equipment so that the laboratory experiments in the Biochemistry programme can be done by groups of not more than two to three students.

The experts consider criterion 3 to be mostly fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-assessment report
- Webpage Ba Biology: <https://biologi.ipb.ac.id/web/en/program/profile/undergraduate-program-in-biology>
- Webpage Ba Biochemistry: <https://biokimia.ipb.ac.id/bachelors-degree-profile/>
- Module handbooks for the programs under review

Preliminary assessment and analysis of the experts:

The module handbooks for the programs under review were available as appendices to the self-assessment report. These module descriptions have also been published on IPB's website (<https://panduan.ipb.ac.id/kurikulum-sarjana/>). They are thus accessible to the students as well as to all stakeholders.

The experts observe that the module handbooks contain all necessary information about the persons responsible for each module, the language, the teaching methods and workload, the credit points awarded, the intended learning outcomes, the examination requirements, the forms of assessment and details explaining how the final grade is calculated.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-assessment report
- Sample Transcript of Records for the degree programs under review
- Sample Diploma/Degree Certificate for the degree programs under review

- Sample Diploma supplements for the degree programs under review

Preliminary assessment and analysis of the experts:

According to the information provided in the self-assessment report, students from the programs under review receive after graduation a Diploma Certificate, accompanied by an Academic Transcript and a Diploma Supplement. The issuance of Diploma certificates is the university's authority and is signed by the Rector and Dean of the Faculty of Mathematics and Natural Sciences, while the Director of Academic Administration and New Student Admission signs the Academic Transcript on behalf of the Rector.

The Diploma Supplement is an official statement letter issued by the Department and validated by the Faculty of Mathematics and Natural Sciences. It contains all necessary information about the degree program, including learning outcomes, acquired soft skills and student achievement in academic, co-curricular, extracurricular, or non-formal education.

The ASIIN experts are provided with samples of these documents. The experts confirm that the students of the Bachelor's degree programs under review are awarded a Diploma Certificate, as well as a Transcript of Records and a Diploma Supplement. The Transcript of Records lists all the courses the graduate has completed, the achieved credits, grades, cumulative GPA, and the seminar and thesis title.

Criterion 4.3 Relevant rules

Evidence:

- Self-assessment report
- All relevant regulations as published on the university's webpage: <https://ipb.ac.id/>

Preliminary assessment and analysis of the experts:

The auditors confirm that the rights and duties of both IPB and the students are clearly defined and binding. All rules and regulations are published on the university's website and hence available to all relevant stakeholders. In addition, the students receive all relevant course material in the language of the degree programs at the beginning of each semester.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 4:

IPB does not comment on this criterion in its statement.

The experts consider criterion 4 to be fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Self-assessment report
- The university's webpage: <https://ipb.ac.id/>
- Quality Assurance Policy at IPB
- Questionnaire and results of the Student Feedback Survey
- Discussion during the audit

Preliminary assessment and analysis of the experts:

IPB and the Faculty of Mathematics and Natural Sciences present a comprehensive system of external and internal QA. This system has been institutionalised since 2004 and is periodically evaluated and updated in line with Government regulations. Quality assurance processes at IPB are led by the Quality Management and Internal Audit Office (KMMAI), supported by the Quality Assurance Group (GPM) at the faculty level and the Quality Control Group (GKM) at the department level.

External Quality Assurance exercises of IPB and the Faculty are related to the legal obligation to submit every degree program for accreditation to the National Indonesian Accreditation Agency (BAN-PT) in addition to the compulsory institutional accreditation. The **Bachelor of Biology** and **Bachelor of Biochemistry** programs have been awarded the "A" level, which is the highest accreditation level according to BAN-PT. In addition to these national procedures, international accreditations/certifications, such as ASIIN, ISO 9001: 2018 and ASEAN University Network Quality Assurance-AUN-QA for the **Bachelor of Biology**, are done in IPB's quest to become nationally and internationally recognised as well as to improve its standing in international rankings.

Furthermore, IPB has established a comprehensive system of Internal QA:

The study programs undergo internal screening processes employing student surveys, lecturer performance assessments and data obtained from external stakeholders through tracer study and labour market observation. Students offer input on the teaching and learning process, lecturers' qualifications and competency, and teaching facilities through the integrated Education Process Evaluation (EPBM) system. The evaluations are conducted at the end of each semester and are compulsory for all students in order to access their final grades. According to the self-assessment report, the evaluation results

are utilised to enhance the learning experience in the programs. Additionally, they serve as a foundation for developing each department's annual activity plan and budget. In addition, student representatives are involved in executive boards at the faculty and university levels and in the Board of Trustees, which makes decisions on regulations and strategic planning.

Apart from surveys, there is an annual evaluation of the study programs' performance. This evaluation is based on the attainment of specific performance indicators accessible through the Performance Study Program Performance System (SIMAKER) (<https://simaker.ipb.ac.id>).

In the discussion with the experts, students are of the opinion that their comments are valued and heard. A suggestion box is located at the academic office's front, where students can provide anonymous feedback to improve educational facilities, services, and processes. The industry representatives confirm in the discussion that the university is eager to receive feedback about new developments and trends and the employability of its graduates.

Overall, the expert panel has a positive impression of the quality assurance system for the programs under review. Quality management has a high priority within the university, and a variety of functioning structures have been created in this regard. They consider IPB and the Faculty of Mathematics and Natural Sciences to conduct a sufficient number of evaluations to survey the opinion of students, stakeholders, and staff on a regular basis. The results of these processes are incorporated into the continuous development of the programs under review.

However, the experts note that there is an opportunity for improvement in terms of how students are informed about the results of the course questionnaires. They recommend that the teachers discuss the course evaluations' results with students and explore potential avenues for implementing changes.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 5:

The experts acknowledge that the course questionnaires for each courses are conducted twice a semester before the mid-exam and before the final exam. As the results are discussed by Head of Study Program and the Dean/Vice Dean with the students, the experts are satisfied with the existing culture of quality assurance.

The experts consider criterion 5 to be fulfilled.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

- none

E Comment of the Higher Education Institution (14.08.2023)

IPB provides the following documents

- Additional Doc 2. Letter of Proposal for Staff Position (Biochemistry)
- Additional Doc 3. List of Working Status (Staff-Biochemistry)
- Appendix 1.3.6a Structure of Biology Courses Curriculum 2014 and Curriculum 2020
- Appendix 1.3.8b Structure of Biochemistry Curriculum 2014 and Curriculum 2020
- Appendix 4.1.1a Module Handbook Curriculum 2020 of Ba Biology
- Appendix 4.1.1b Module Handbook Curriculum 2020 of Ba Biochemistry

and the following statement:

Criterion 1.1: CONFIRMED

Criterion 1.2: CONFIRMED

Criterion 1.3:

The experts stress the importance of courses focused on ethics or a code of ethics for biologists and biochemists, as well as teaching the principle of good scientific and data management. The program coordinators clarify that these areas are incorporated into specific modules and assignments to give students a thorough understanding.

Comment:

Refers to Appendix Curriculum Overview and Module Handbook (Additional Document 1. Structure of New Curriculum 2020 (Page 2) ([Appendix 1.3.6a Structure of Biology Courses Curriculum 2014 and Curriculum 2020.pdf](#)) ([Appendix 1.3.8b Structure of Biochemistry Curriculum 2014 and Curriculum 2020.pdf](#)), in **Ba Biology**, there are 4 courses containing topic of ethics and/or code of ethics as well as good scientific and data management skills: ([Appendix 4.1.1a Module Handbook Curriculum 2020 of Ba Biology.pdf](#))

a. List courses containing aspect of Ethic/Code of ethics:

1. BIO1102 Basic Biology (SAR Appendix 4.1.1.a page 7)
2. BIO1101 General Biology (SAR Appendix 4.1.1.a page 14)
3. BIO1304 Research Methods and Scientific Communications (SAR Appendix 4.1.1.a page 110-111)

4. BIO1401 Internship in Biological Scope (SAR Appendix 4.1.1.a page 163-165)
- b. Course containing aspect of good scientific and data management: BIO1304 Research Methods and Scientific Communications (SAR Appendix 4.1.1.a page 110-111)

In **Ba Biochemistry**, there are 3 courses that focused mostly on ethics and/or code of ethics as well as good scientific and data management skills: ([Appendix 4.1.1b Module Handbook Curriculum 2020 of Ba Biochemistry.pdf](#))

- a. List courses containing aspect of Ethic/Code of Ethics
1. BIK452 Clinical Biochemistry (refers to SAR Appendix 4.1.1b Module Handbook of Curriculum 2020; page 100),
 2. BIK1304 Technique in Scientific Writing (SAR Appendix 4.1.1b Module Handbook of Curriculum 2020; page 63).
- b. List courses containing aspect of good scientific and data management:
1. BIK1304 Technique in Scientific Writing (SAR Appendix 4.1.1b Module Handbook of Curriculum 2020; page 63),
 2. BIK1301 Biochemical Research Application (SAR Appendix 4.1.1b Module Handbook of Curriculum 2020; page 90).

*Most students and alumni expressed their general satisfaction with the educational experience at IPB. There is, nonetheless, a need to further open and promote the **Bachelor of Biochemistry** profile to the industry and other national organisations, informing about the potential of the graduates. Thus, the experts recommend placing more effort into promoting the study program among prospective employers and institutions.*

Comment:

Regarding the promotion of **Ba Biochemistry**, especially to industry and other national organisations, as institutions and program coordinator, we completely agree with the experts. As we mention in the Self-Assessment Report document (page 52), currently the Ba Biochemistry facilitate collaboration between department or staff as a researcher with industry such as: PT Biosains Medika Indonesia, PT Biomagg Sinergi Internasional, Return Legacy Sdn. Bhd., and Phytexence, Inc, Research international collaborations for example High Performance Computing Server (Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen).

Similarly, students pursuing the **Bachelor of Biochemistry** are encouraged to participate in international mobility programs. According to data from 2019-2021, eight students engaged in academic activities abroad. The students attended competitions, conferences, research symposiums and exchange programs in Turkey, Japan, Thailand and South Korea. The program has organised module services specifically catered to international students enrolled in the Veterinary Medicine School. During the audit, the experts bring up the issue of low participation in international mobility, pointing out the need to increase the number of students attending these events.

Comment:

Regarding the issue of low participation in international mobility, specifically in **Ba Biochemistry**, the program coordinator will resume the existing international collaboration which was deferred during the 2019 pandemic. On the other hand, **Ba Biochemistry** currently initiating new collaborations with several universities abroad such as National Chung Cheng University (Taiwan), Chang Gung University (Taiwan), in the form of a student internship program.

Criterion 1.4: CONFIRMED

Criterion 1.5:

As the self-assessment report indicates, **Bachelor of Biology** and **Bachelor of Biochemistry** students are asked about their perceptions of their workload. Reportedly, most students are generally satisfied with the alignment of their course workload and the credit requirements. Furthermore, the university regulates the maximum number of credits students can take based on their GPA from the previous semester. So, they can have a maximum credit load of 25 Indonesian credits if their GPA is ≥ 2.76 , a full credit load of 22 Indonesian credits if their GPA is 2.00 – 2.76, and a maximum credit load of 19 Indonesian credits if their GPA is < 2.00 .

The experts notice that the programs provide modules of only 1.4 ECTS. In their view, this may lead to more exams, increasing the load for students.

Comment:

Study program will evaluate the module ECTS concerning the students load for exams by merging or combining some of modules with related learning outcomes.

Nonetheless, a recommendation is to ensure that the workload is distributed evenly over the eight semesters of the study programs. The departments should work in collaboration with students to achieve this outcome. Moreover, the expert group sees value in reconsidering the size of the modules and opting for larger modules with just one exam.

Comment:

The curriculum structure has been established by the ministry in the form of the MBKM (Flexibility and Personalized Learning) program, which includes *Enrichment Courses* (enrichment subjects). In the First year (semester 1 and 2), courses are provided in packages and predetermined by IPB University based on ministry regulations. The total credit hours in semester 1 and 2 are 38 credit hours. In semester 7, students take an internship program. In semester 8, students only take a seminar and scientific work course (thesis) (7 credit hours), so the remaining credit hours are distributed from semester 3 to 6, with an average of 19-20 credit hours per semester. For **Ba Biology**, in the fifth semester, the displayed courses consist of 19 elective courses, but the students are only required to choose 9 up to 10 courses (\pm 19 credit hours) from the provided options based on their preferences. Thus, the distribution of credit hours from semester 3 to 6 are relatively similar with an average of 19-20 credit hours per semester.

Criterion 1.6: CONFIRMED

Criterion 2:

The experts also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the pieces. They confirm the high standard of the Bachelor's theses in the sample. To a more significant impact, however, they believe that research groups should be more accessible to students, fellow researchers, and the general public. To achieve this, they recommend increasing the visibility of these groups by presenting them on IPB's website.

Comment:

Regarding the impact of lecturer researches, both **Ba Biology and Ba Biochemistry** agree that research groups should be more accessible to students, fellow researchers, and the general public. At IPB university, the clustering of lecturers based on research interest expertise are grouped in one division (not called research group). And one department have

several divisions. Each division in **Ba Biology and Ba Biochemistry** already linked in department website.

In **Ba Biology** there are **6 divisions** i.e.:

Division of Microbiology (<https://biologi.ipb.ac.id/web/en/division/microbiology>), Division of Mycology (<https://biologi.ipb.ac.id/web/en/division/mycology>), Division of Plant Resource and Ecology (<https://biologi.ipb.ac.id/web/en/division/plant-resources-and-ecology>), Division of Plant Physiology and Genetics (<https://biologi.ipb.ac.id/web/en/division/plant-physiology-and-genetics>), Division of Animal Biosystematics and Ecology (<https://biologi.ipb.ac.id/web/en/division/animal-biosystematics-and-ecology>) Division of Animal Physiology and Behaviour (<https://biologi.ipb.ac.id/web/en/division/animal-physiology-and-behavior>). In each website profile of division members of **Ba Biology** are already visible showing their research interest and publications (For example website profile of Prof. Antonius Suwanto (<https://biologi.ipb.ac.id/web/en/faculty/profile/10/antonius-suwanto>)).

In **Ba Biochemistry** there are **3 divisions**: Division of Bioanalysis (<https://biokimia.ipb.ac.id/divisi-bioanalysis/>), Division of Biomolecule (<https://biokimia.ipb.ac.id/divisi-biomolekul/>) and Division of Metabolism (<https://biokimia.ipb.ac.id/divisi-metabolisme/>).

Criterion 3:

*In the experts' opinion, the teaching staff's composition, scientific orientation and qualification are suitable for successfully implementing and sustaining the programs under review. However, for the **Bachelor of Biochemistry**, they highly recommend finalising the recruitment process for the additional positions in the recruitment plan.*

Comment:

Generally, IPB and also Program Coordinator of **Ba Biology and Ba Biochemistry** confirmed the expert's statement for Criterion 3.1. However, there are some additional information for **Ba Biochemistry** based on statement in the draft report. First, regarding the recruitment process for staff position, currently **Ba Biochemistry** has proposed 2 persons (1 lecturer and 1 supporting staff) to be starting from 2023/2024 academic year (Additional Document 2) ([Additional Doc 2. Letter of Proposal for Staff Position \(Biochemistry\).pdf.pdf](#)). For the long-term scheme (5-10 years), **Ba Biochemistry** also has mapped the status of each staff regarding their working period including the prediction of retirement year (Additional Document 3) ([Additional Doc 3. List of Working Status \(Staf-Biochemistry\).pdf](#)) and proposed to the Directorate of Human Resources IPB University.

*The experts find no severe bottlenecks due to missing equipment or a lack of infrastructure. During the discussion with the expert group, the students confirm that they are generally satisfied with the available equipment. The basic technical equipment for teaching students at the Bachelor level is available in sufficient numbers. However, the experts suggest that the group size for practical work in the **Bachelor of Biochemistry** program could be reduced. Consequently, they recommend improving the basic equipment of the teaching labs.*

Comment:

Regarding the group size for practical work, the experts suggest that this could be reduced. It is also become our main concern. At this moment, the practical/laboratory work for students in **Ba Biochemistry** supported by the faculty and IPB University. The support including facility in Integrated Laboratory and Advance Laboratory, and also laboratory in other study program. **Ba Biochemistry** committed to improve the number and the quality of basic equipment in the following years.

Criterion 4.1: CONFIRMED

Criterion 4.2: CONFIRMED

Criterion 4.3: CONFIRMED

Criterion 5:

The expert's note that there is an opportunity for improvement in terms of how students are informed about the results of the course questionnaires. They recommend that the teachers discuss the course evaluations' results with students and explore potential avenues for implementing changes.

Comment:

The course questionnaires for each courses and lecturer routinely held twice per semester, regarding the course content, academic facility/laboratory, and also the teaching method and teaching delivery. The evaluation conducted before the mid-exam and before the final exam of the courses. The course evaluation results are interactively dialogued with the students at the beginning of the course and at the 8th week of the course (the first courses after the mid exam). Additionally, the general course evaluations' results are discussed annually with students by:

- a. Interactive dialogue between students and Head of Study Program.
- b. Interactive dialogue between students and Faculty Members (Dean of Faculty/Vice Dean of Faculty) once every semester, and also with study program's representative.

F Summary: Expert recommendations (25.08.2023)

Taking into account the additional information and the comments given by IPB University the experts summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Program	ASIIN Seal	Maximum duration of accreditation
Ba Biology	Without requirements	30.09.2029
Ba Biochemistry	Without requirements	30.09.2029

Requirements

No requirements

Recommendations

For both programmes:

- E 1. (ASIIN 1.3) It is recommended to incorporate soft-skills development such as presentation, scientific discussion, project management, and feedback techniques in existing modules.
- E 2. (ASIIN 1.3) It is recommended to further promote the students' academic mobility.
- E 3. (ASIIN 1.5) It is recommended to distribute the workload evenly across the eight semesters of the study programmes. The departments should ensure that this is done in dialogue with the students.
- E 4. (ASIIN 1.5) It is recommended to reconsider the size of the modules to have larger modules with just one exam.
- E 5. (ASIIN 2) It is recommended to make research groups more accessible to students, fellow researchers, and the general public. It would be useful to present them on IPB's websites.
- E 6. (ASIIN 3.2) It is recommended that laboratories and teaching facilities are accessible to students with limited mobility or other disability. This action should be in line with the inclusion strategies that IPB is currently promoting.

For Ba Biochemistry

- E 7. (ASIIN 1.3) It is recommended to promote the study programme among prospective employers and institutions.
- E 8. (ASIIN 3.1) It is highly recommended to finalise the recruitment process for the two further positions in the plan of employing new teaching staff.
- E 9. (ASIIN 3.2) It is recommended to improve the basic equipment of the teaching labs in order to reduce the group size during practical work.

G Comment of the Technical Committee 10 – Life Sciences (06.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee sees that the expert group evaluates the two study programmes very positively and does not propose any requirements but only nine recommendations.

The Technical Committee emphasises that the university is one of the best for agricultural sciences in Indonesia and that the technical equipment is very good overall. Therefore, it is not surprising that no requirements should be imposed. The Technical Committee discusses whether recommendations E3 and E9 should be changed into requirements, but finally decides against it, only making a slight correction to recommendation E5.

The Technical Committee 10 - Life Sciences recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	Without requirements	–	30.09.2029
Ba Biochemistry	Without requirements	–	30.09.2029

H Decision of the Accreditation Commission (22.09.2023)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The Accreditation Commission discusses the procedures and agrees with the experts' suggestions and with the small change in recommendation E5 as proposed by TC 10.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	Without requirements	–	30.09.2029
Ba Biochemistry	Without requirements	–	30.09.2029

Requirements

No requirements

Recommendations

For both programmes:

- E 1. (ASIIN 1.3) It is recommended to incorporate soft-skills development such as presentation, scientific discussion, project management, and feedback techniques in existing modules.
- E 2. (ASIIN 1.3) It is recommended to further promote the students' academic mobility.
- E 3. (ASIIN 1.5) It is recommended to distribute the workload evenly across the eight semesters of the study programmes. The departments should ensure that this is done in dialogue with the students.
- E 4. (ASIIN 1.5) It is recommended to reconsider the size of the modules to have larger modules with just one exam.
- E 5. (ASIIN 2) It is recommended to make research groups more visible to students, fellow researchers, and the general public. It would be useful to present them on IPB's websites.

- E 6. (ASIIN 3.2) It is recommended that laboratories and teaching facilities are accessible to students with limited mobility or other disability. This action should be in line with the inclusion strategies that IPB is currently promoting.

For Ba Biochemistry

- E 7. (ASIIN 1.3) It is recommended to promote the study programme among prospective employers and institutions.
- E 8. (ASIIN 3.1) It is highly recommended to finalise the recruitment process for the two further positions in the plan of employing new teaching staff.
- E 9. (ASIIN 3.2) It is recommended to improve the basic equipment of the teaching labs in order to reduce the group size during practical work.

Appendix: Reform 2020, Study Plan and Curricular Overview

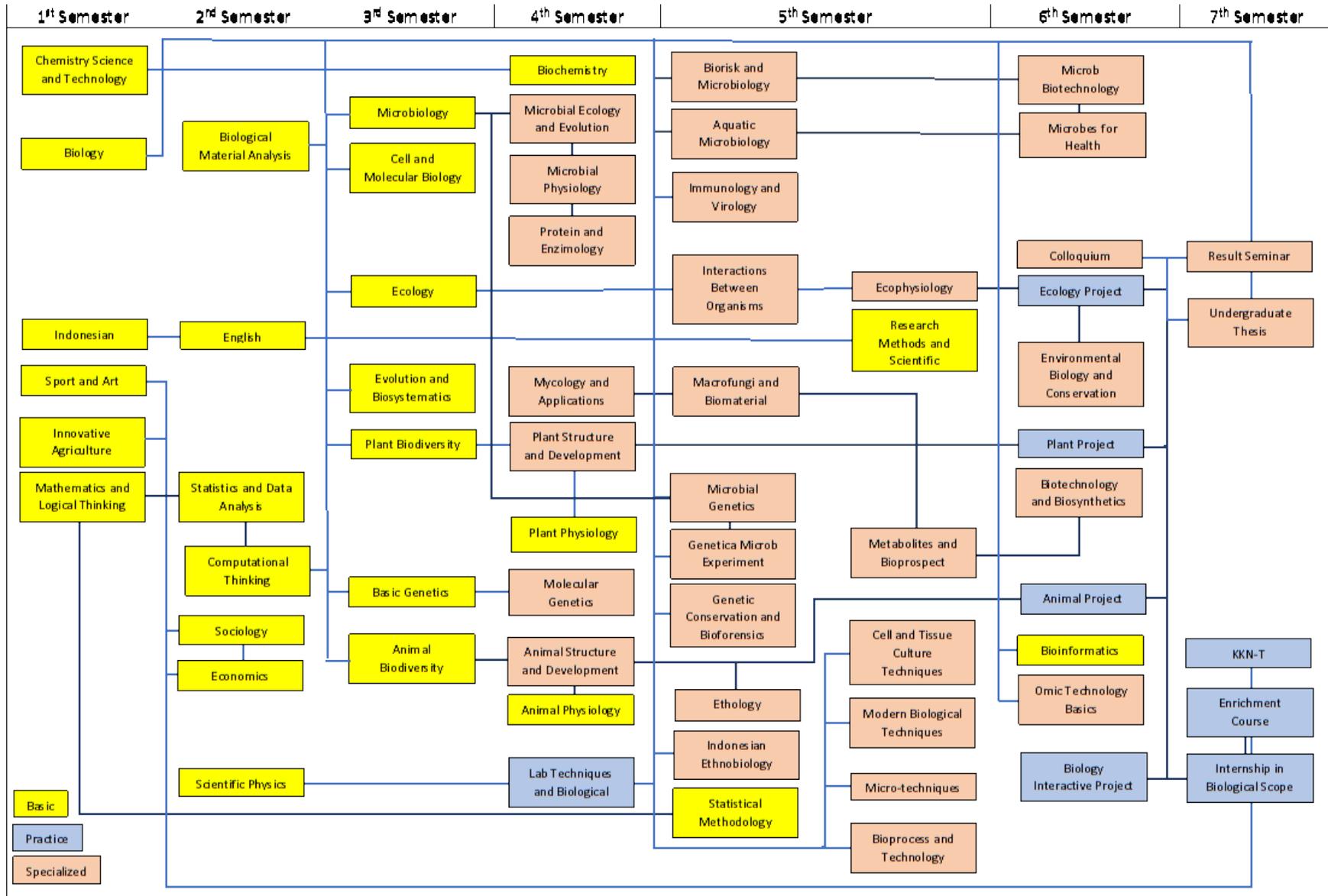
1. Bachelor of Biology

No	Code	Subject Course	Credit Unit (SKS)	Credit Unit (ECTS)	Type
Semester I					
1	IPB 1100	Religion	3(2-1)	4.2	CC
2	IPB 1106	Indonesian	2(1-2)	2.8	CC
3	IPB1111	Pancasila Education	1(1-0)	1.4	CC
4	IPB1112	Sport and Arts	1(0-1)	1.4	CC
5	IPB1113	Innovative Agriculture	2(2-0)	2.8	CC
6	BIO1102	Biology	3(2-1)	4.2	CC
7	KIM1104	Chemistry Science and Technology	3(2-1)	4.2	CC
8	MAT1102	Mathematics and Logical Thinking	3(2-1)	4.2	CC
	Total		18	25.2	
Semester II					
9	IPB1108	English	2(1-1)	2.8	CC
10	IPB1114	Civic Education	1(1-0)	1.4	CC
11	FIS1104	Scientific Physics	3(2-1)	4.2	CC
12	KOM1100	Computational Thinking	2(2-0)	2.8	CC
13	KPM1131	Sociology	2(2-0)	2.8	CC
14	EKO1101	Economics	2(2-0)	2.8	CC
15	STA1111	Statistics and Data Analysis	3(3-0)	4.2	CC
16	BIO1103	Biological Material Analysis	3(2-1)	4.2	FC
	Total		18	25.2	
Semester III					
17	BIO1201	Evolution and Biosystematics	2(2-0)	2.8	ACC
18	BIO1202	Cell and Molecular Biology	3(2-1)	4.2	ACC
19	BIO1211	Microbiology	3(2-1)	4.2	ACC
20	BIO1231	Plant Biodiversity	3(2-1)	4.2	ACC
21	BIO1232	Ecology	2(2-0)	2.8	ACC
22	BIO1241	Basic Genetics	3(2-1)	4.2	ACC
23	BIO1251	Animal Biodiversity	3(2-1)	4.2	ACC
	Total		19	26.6	
Semester IV					
24	BIK1201	Biochemistry	3(2-1)	4.2	ACC
25	BIO1203	Lab Techniques and Biological Instrumentation	1(0-1)	1.4	ACC
26	BIO1212	Microbial Physiology	2(2-0)	2.8	IC
27	BIO1221	Mycology and Applications	3(2-1)	4.2	IC
28	BIO1243	Plant Structure and Development	2(2-0)	2.8	IC
29	BIO1242	Plant Physiology	3(2-1)	4.2	ACC

30	BIO1244	Molecular Genetics	2(2-0)	2.8	IC
31	BIO1262	Animal Structure and Development	2(2-0)	2.8	IC
32	BIO1261	Animal Physiology	2(2-0)	2.8	ACC
33	BIO1213	Microbial Ecology and Evolution	2(2-0)	2.8	IC
Total			20	28	
Semester V					
34	STK1211	Statistical Methodology	3(2-1)	4.2	ACC
35	BIO1304	Ethology	2(1-1)	2.8	IC
36	BIO1305	Ecophysiology	2(2-0)	2.8	IC
37	BIO1306	Micro-techniques	2(1-1)	2.8	IC
38	BIO1302	Interactions between Organisms	2(2-0)	2.8	IC
39	BIO1301	Research Methods and Scientific Communication	2(2-0)	2.8	ACC
40	BIO1303	Cell and Tissue Culture Techniques	2(1-1)	2.8	IC
41	BIO1307	Indonesian Ethnobiology	2(2-0)	2.8	IC
42	BIO1341	Modern Biological Techniques	2(1-1)	2.8	IC
43	BIO1311	Immunology and Virology	2(2-0)	2.8	IC
44	BIO1312	Microbial Genetics	2(2-0)	2.8	IC
45	BIO1313	Aquatic Microbiology	2(2-0)	2.8	IC
46	BIO1321	Macrofungi and Biomaterial	2(1-1)	2.8	IC
47	BIO1314	Genetica Microb Experiment	2(1-1)	2.8	IC
48	BIO1315	Biorisk and Microbiology	2(1-1)	2.8	IC
49	BIO1371	Metabolites and Bioprospect	2(2-0)	2.8	IC
50	BIO1372	Bioprocess Technology	2(2-0)	2.8	IC
51	BIO1373	Genetic Conservation and Bioforensics	2(2-0)	2.8	IC
Total			19	26.6	
Semester VI					
52	BIO1308	Bioinformatics	3(2-1)	4.2	ACC
53	BIO1309	Biology Integrative Project	2	2.8	CS
54	BIO1331	Environmental Biology and Conservation	2(2-0)	2.8	IC
55	BIO1332	Ecology Project	2(0-2)	2.8	CS
56	BIO1343	Plant Project	1(0-1)	1.4	CS
57	BIO1342	Biotechnology and Biosynthetic	2(2-0)	2.8	IC
58	BIO1361	Animal Project	2(0-2)	2.8	CS
59	BIO1391	Colloquium	1	1.4	TA
60		Enrichment Courses	6	8.4	EC
61	BIO1316	Microbes for Health	2(2-0)	2.8	IC
62	BIO1317	Microb Biotechnology and Fermentation	2(2-0)	2.8	IC
63	BIO1374	Omic Technology Basics	2(1-1)	2.8	IC
Total			21	29.4	
Semester VII					
64	IPB400	KKN-T (Community Services)	4	5.6	KKN

65	BIO1401	Internship in Biological Scope	3	4.2	M
66		Enrichment Courses	15	21	EC
		Total	22	30.8	
Semester VIII					
67	BIO1491	Result Seminar	1	1.4	TA
68	BIO1492	Undergraduate Thesis	6	8.4	TA
		Total	7	9.8	

Structure of Curriculum 2020



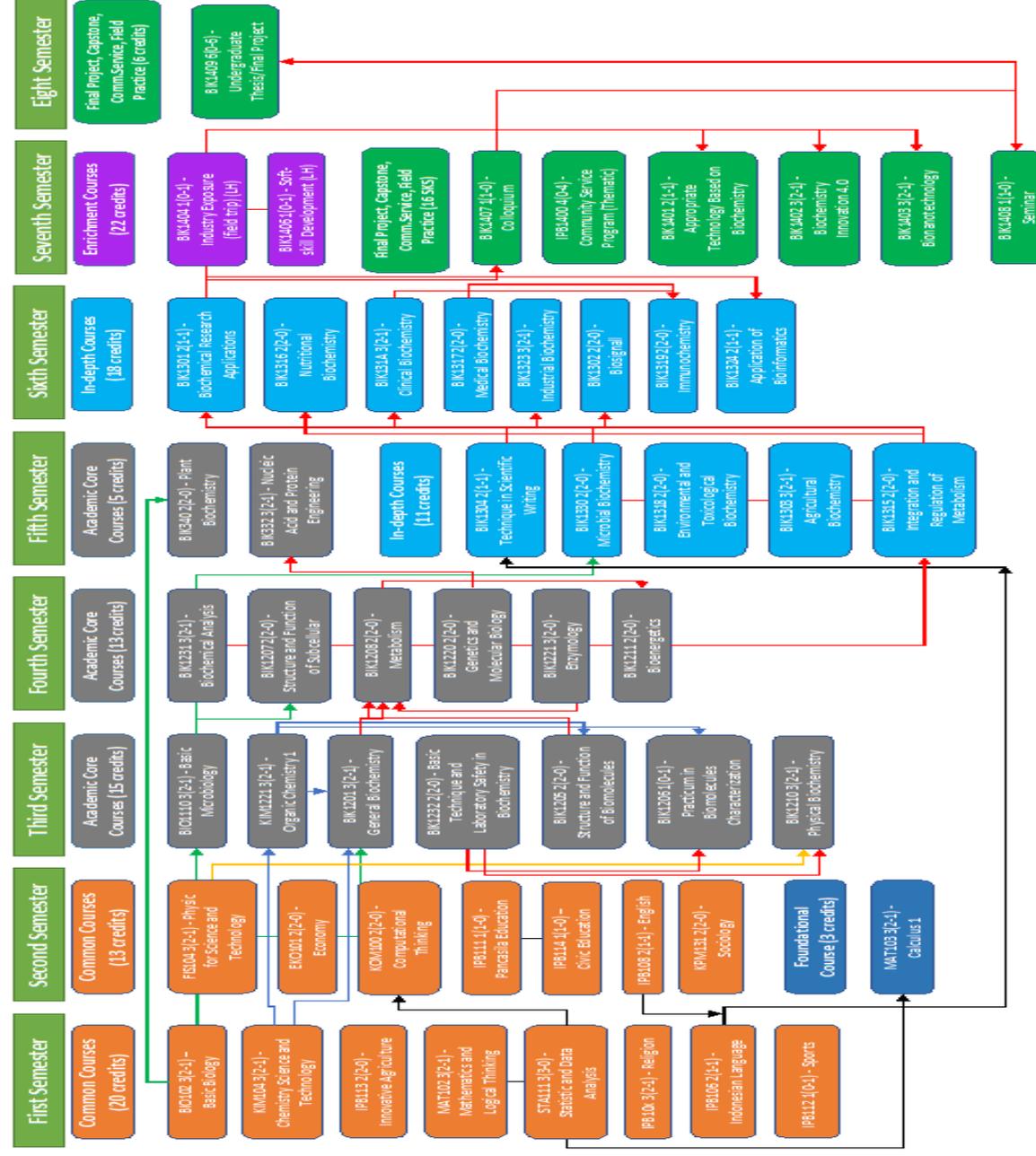
2. Bachelor of Biochemistry

Code	Course Name	Credit	Semester
Common Core Courses (33 SKS)			
BIO102	Basic Biology	3(2-1)	I
KIM104	Chemistry Science and Technology	3(2-1)	I
IPB113	Innovative Agriculture	2(2-0)	I
MAT102	Mathematics and Logical Thinking	3(2-1)	I
STA111	Statistic and Data Analysis	3(3-0)	I
IPB10x	Religion	3(2-1)	I
IPB106	Bahasa Indonesia	2(1-1)	I
IPB112	Sports	1(0-1)	I
FIS104	Physic for Science and Technology	3(2-1)	II
EKO101	Economy	2(2-0)	II
KOM100	Computational Thinking	2(2-0)	II
IPB111	Pancasila Education	1(1-0)	II
IPB114	Civic Education	1(1-0)	II
IPB108	English	2(1-1)	II
KPM131	Sociology	2(2-0)	II
Foundational Courses (3 SKS)			
MAT103	Calculus 1	3(2-1)	II
Academic Core Courses /Foundational Literacies (36 SKS)			
BIO1110	Basic Microbiology	3(2-1)	III
KIM1220	Organic Chemistry 1	3(2-1)	III
BIK1201	General Biochemistry	3(2-1)	III
BIK1232	Basic Technique and Laboratory Safety in Biochemistry	2(2-0)	III

BIK1205	Structure and Function of Biomolecules	2(2-0)	III
BIK1210	Physical Biochemistry	3(2-1)	III
BIK1206	Practicum in Biomolecules Characterization	1(0-1)	III
BIK1231	Biochemical Analysis	3(2-1)	IV
BIK1207	Structure and Function of Subcellular	2(2-0)	IV
BIK1208	Metabolism	2(2-0)	IV
BIK1222	Genetics and Molecular Biology	2(2-0)	IV
BIK1221	Enzymology	3(2-1)	IV
BIK1211	Bioenergetics	2(2-0)	IV
BIK1314	Plant Biochemistry	2(2-0)	V
BIK1320	Nucleic Acid and Protein Engineering	3(2-1)	V
In-depth Courses (29 SKS)			
BIK1304	Technique in Scientific Writing	2(1-1)	V
BIK1322	Microbial Biochemistry	2(2-0)	V
BIK1318	Environmental and Toxicological Biochemistry	2(2-0)	V
BIK1303	Agricultural Biochemistry	3(2-1)	V
BIK1315	Integration and Regulation of Metabolism	2(2-0)	V
BIK1301	Biochemical Research Applications	2(1-1)	VI
BIK1316	Nutritional Biochemistry	2(2-0)	VI
BIK131A	Clinical Biochemistry	3(2-1)	VI
BIK1317	Medical Biochemistry	2(2-0)	VI
BIK1323	Industrial Biochemistry	3(2-1)	VI
BIK1302	Biosignal	2(2-0)	VI
BIK1319	Immunochemistry	2(2-0)	VI
BIK1324	Application of Bioinformatics	2(1-1)	VI
Enrichment Courses (22 sks)			

BIK1404	Industry Exposure (field trip) (LH)	1(0-1)	VII
BIK1406	Soft-skills Development (LH)	1(0-1)	VII
	Enrichment Course from other study programs	20	III-VII
Final Year Project, Capstone, Internship (22 SKS)			
BIK1300	Field Practice	2(0-2)	V
BIK1407	Colloquium	1(1-0)	VII
IPB1400	Community Service Program (thematic)	4(0-4)	VII
BIK1401	Appropriate Technology based on Biochemistry	2(1-1)	VII
BIK1402	Biochemistry Innovation 4.0	3(2-1)	VII
BIK1403	Bionanotechnology	3(2-1)	VII
BIK1408	Seminar	1(1-0)	VII
BIK1409	Undergraduate Thesis/Final Project	6(0-6)	VIII

Structure of 2020 Curriculum (Biochemistry)



20 credits of Enrichment Course from other programs