ASIIN Seal & EUR-ACE® Label, Euro-Inf® Label

Accreditation Report

Bachelor's Degree Programmes
Informatics Engineering
Electrical Engineering
Agricultural Engineering

Provided by
Universitas Mataram, Indonesia

Version: 27 June 2025

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
Sarjana Teknik Informatika	Bachelor of Informatics Engineering	ASIIN, Euro-Inf®	LAM INFOKOM [3]: "excellent" 2024 - 2029	02, 04
Sarjana Teknik Elektro	Bachelor of Electrical Engineering	ASIIN, EUR-ACE®	BAN-PT [4]:: "Very good" 2024 - 2030	02
Sarjana Teknik Pertanian	Bachelor of Agricultural Engineering	ASIIN, EUR-ACE®	BAN-PT: "Very good" 2021 - 2026	01, 08
Date of the contract: 15.07.2022 **Submission of the final version of the self-assessment report:** 01.08.2024 **Date of the audit (online):** 18.02. – 20.02.2024				
Expert panel: Prof. Dr. Dieter Baums, Technical University Mittelhessen Prof. Dr. Inge Broer, University Rostock Assoc. Prof. Dr. Riska Rian Fauziah, Universitas Jember Dr. Harry Schilling, BavarianOptics GmbH, Schwabach Joanna Darmawan, Institut Teknologi Sepuluh Nopember, Student				

[1] ASIIN Seal for degree programmes;
[2] TC: Technical Committee for the following subject areas: TC 01 – Mechanical Engineering/Process Engineering, TC 02 – Electrical Engineering/Information Technology, TC 04 – Informatics/Computer Science, TC 08 - Agriculture, Forestry and Food Sciences
[3] Lembaga Akreditasi Mandiri Informatika dan Kompute (LAM INFOKOM)
[4] National Accreditation Board of Higher Education / Badan Akreditasi Nasional Perguruan Tinggi (BAN-PT)

Representative of the ASIIN headquarter: Rainer Arnold	
Responsible decision-making committee: Accreditation Commission	
Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering/Process Engineering as of 16.03.2021 Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering/Information Technology as of 23.09.2022 Subject-Specific Criteria of Technical Committee 04 – Informatics/Computer Science as of March 29, 2018	

B Characteristics of the Degree Programmes

a) Name	Final degree (original)	b) Areas of Specialization /concentration	c) Corresponding level of the EQF[5]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Bachelor of Informatics Engineering	Sarjana Komputer (S.Kom.)	Artificial Intelligence, Embedded Systems, Information Systems	6	Full time	no	8 Semester	144 SCU/ 230,4 ECTS	Once a year (August)
Bachelor of Electrical Engineering	Sarjana Teknik (S.T.)	Electric Power System Engineering, Electronics Engineering, Telecommunication Engineering, Computer Engineering	6	Full time	no	8 Semester	146 SCU/ 233,6 ECTS	Once a year (August)
Bachelor of Agricultural Engineering	Sarjana Teknologi Pertanian (S.TP.)	Agricultural Power and Machinery Bioprocess Engineering Agricultural Engineering and Environmental Conversation	6	Full time	no	8 Semester	144 SCU/ 230.4 ECTS	Once a year (August)

[5] EQF = The European Qualifications Framework for lifelong learning

For the Bachelor's degree programme Informatics Engineering, Universitas Mataram (UNRAM) has presented the following profile on its webpage:

Vision

To become an institution that fosters top-tier research and development in the domains of informatics and communication technology at the national level while garnering international recognition.

Scientific Vision

To cultivate computer science graduates with the proficiency to implement intelligent systems, distributed systems, IoT, and enterprise information systems for analysing and resolving IT issues in the local resource sector, coupled with an entrepreneurial mindset.

Mission

Providing nationally standardized education to produce competitive, morally upright computer science graduates who are entrepreneurial, professional, and proficient in the latest information technology.

Developing a high-quality, cutting-edge national and international research center in computer science and interdisciplinary fields that has widespread utility in society.

Engaging in community service based on research outcomes to enhance the quality of the community.

Fostering collaboration with various institutions both domestically and internationally.

Strengthening human resources and institutional effectiveness.

For the Bachelor's degree programme Electrical Engineering, Universitas Mataram (UNRAM) has presented the following profile on its webpage:

Vision

Our vision is to become an international and competitive electrical engineering study program in teaching, research and innovations by 2025.

Mission

Carry out education with religious character, good attitude, and creative thinking in the development of sustainable innovation.

Provide a conducive research atmosphere for the development of sustainable innovation.

Carry out community services that harmonize innovation with the needs of community and industries.

Develop cooperation at the national, regional, and international levels to support the development of sustainable innovation.

To achieve the four missions as stated above, the EEUM study program has related targets and strategies, as the following:

1st Mission: (i) develop an integrated curriculum that refers to national and international standards, (ii) actualize integrations between religious- and social attitudes as well as soft- and hard-skills, and (iii) implement the 4.0 learning system and long life learning.

2nd Mission: (i) establish an excellent research roadmap, (ii) provide good research infrastructures, and (iii) create a synergized academic community in a conducive, effective, and productive research climate.

3rd Mission: (i) develop technology and business incubators, (ii) initiate community services based on research and innovation, and (iii) increase quantity and quality of community services.

4th Mission: (i) intensify collaboration with national and international universities/institutions, (ii) expand collaboration with corporates and industries, and (iii) increasing revenue generating.

For the Bachelor's degree programme Agricultural Engineering, Universitas Mataram (UNRAM) has presented the following profile on its webpage:

Vision

To become a leading study programme in the archipelagic agroindustry sector by implementing the basics of agricultural and biosystems engineering recognised at the international level

Mission

1. Organizing education and teaching to produce quality graduates who can independently master, apply, and develop the fundamentals of Agricultural Engineering and Biosystems in the field of island agroindustry that are internationally competitive and capable of meeting the demands of the community of users of Agricultural Engineering and Biosystems graduates.

2. Conducting research in the field of Agricultural Engineering, Biosystems, and Island Agroindustry with an environmental perspective that contributes to solving problems in community, national, and state life and advancing science.
3. Carrying out community service by assisting the community in agricultural engineering, biosystems, and environmentally aware agro-industry, particularly in engineering aspects based on study results and existing information to enhance knowledge and welfare.
4. Forming an academic community with integrity, character, competitiveness, and insight by developing, controlling, and maintaining the quality and sustainability of biological and environmental processes related to agriculture, food, natural resources, energy, and rural development through the Tri Dharma of higher education.
5. Managing the study program in a professional and accountable manner by implementing the Tri Dharma of higher education and applying the principles of quality assurance.

C Expert Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

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

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Homepage UNRAM: https://unram.ac.id
- Homepage Ba Informatics Engineering: https://if.unram.ac.id/
- Homepage Ba Electrical Engineering: https://te.unram.ac.id/jte2/en/home/
- Homepage Ba Agricultural Engineering: https://fatepa.unram.ac.id/tep/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
The experts base their assessment of the learning outcomes on the information provided on the websites and in the Self-Assessment Report of the Bachelor's degree programme Informatics Engineering, the Bachelor's degree programme Electrical Engineering and the Bachelor's degree programme Agricultural Engineering.

For all three programmes, Universitas Mataram (UNRAM) has described and published vison and mission as well as Programme Learning Outcomes (PLO). While the vision and mission are rather general, the PLO cover a number of specific competences students should acquire in their respective degree programme. Both, vision and mission as well as the PLO of each degree programme are published on the programme's website.

The experts note that the relationship between the PLO and the courses has been established in a comprehensible and logical manner. The development of PLOs of the study programmes involves both internal and external stakeholders so that the curricula can be adapted and modified according to the needs of the industry and the graduates on a regular

basis. For example, UNRAM regularly conducts surveys, through which the different stakeholders get the chance to assess the programs and their main objectives and adapt them if necessary. Internal stakeholders include students, teaching staff, and non-academic employees, while the external stakeholders include representatives from private companies, public institutions, alumni, and the government.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 04 - Informatics/Computer Science as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Informatics Engineering as defined by UNRAM correspond with the competences as outlined by the SSC. They come to the following conclusions:

At the end of their studies, graduates of the BIE programme should have acquired basic knowledge in natural sciences and engineering and advanced knowledge in informatics engineering. They should be able to analyse the problems related to applications of informatics engineering and to recommend solutions based on knowledge and understanding in this field. They should know how to design and develop hardware and software and have gained extensive problem solving skills. Moreover, they have gained a solid understanding of project management methods and business practice. The goal of the BIE programme is to have graduate with competitive professional competencies, high moral values, an entrepreneurial spirit, and proficiency in the latest information technology.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 02 - Electrical Engineering/Information Technology as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Electrical Engineering as defined by UNRAM correspond with the competences as outlined by the SSC.

Graduates of the BEE programme should know about the basic principles of natural sciences and mathematics and should be able to apply this knowledge to solve electrical engineering problems. This includes having a solid knowledge of electrical technology, information technology and/or materials technology to gain a thorough understanding of the main principles in the field of electrical engineering. In addition, BEE graduates should be able to design and carry out experiments using basic and modern technical tools and analyze and interpret data based on the correct methodology to strengthen engineering assessments. Moreover, they should be able to choose methods, make literature reviews, design experiments with simulations, and analyse results to reach the right conclusions, as well as develop guidelines for using tools. Finally, they should have learned to interact and express ideas effectively both orally and in writing within the engineering environment and the general public in the national and international scope.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 01 – Mechanical Engineering/Process Engineering as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Agricultural Engineering as defined by UNRAM correspond with the competences as outlined by the SSC.

The BAE programme is designed to prepare the graduates for working in the agricultural sector, focusing on the development of mechanisation and technology in agriculture and bio systems. As UNRAM emphasises, the existence of the BAE programme is very important for supporting the industrialisation and development of small and medium agricultural enterprises. To this end, BAE students should receive a scientific, professional, and entrepreneurship-oriented education in agricultural engineering and learn how to develop and apply sustainable agricultural technologies. In addition, graduates should be familiar with the principles of mechanics, soil science, hydrology, irrigation, and environmental management so that they can develop and apply engineering solutions that enhance sustainability, efficiency, and productivity in agriculture. Furthermore, the BAE programme should foster responsible management of natural resources, renewable energy, and eco-friendly agricultural practices. Finally, BAE graduates should be well-prepared to contribute to the modernisation and sustainability of agriculture through engineering and technology-driven solutions. This includes conducting research activities to advance knowledge in food science, agro-industry, and biosystems.

Supplementing the subject-related qualification objectives, the students of all three undergraduate programmes are supposed to acquire personal and social skills such as critical and creative thinking, communication skills, adaptability, the capacity to work in (international) teams, and leadership skills. In addition, they should be able to solve engineering problems through research and the application of different concepts and methods. Finally, students should acquire language skills and should develop a strategy for life-long learning.

In the Bachelor's programmes, students can choose a field of specialisation for their third and fourth year of studies (see Criterion 1.3). This is certainly useful, as the students can better follow their individual interests this way. However, the experts point out that no separate intended learning outcomes for any of the specialisations exist. This deficit needs to be solved and UNRAM needs to draft specific learning outcomes for each specialisation in the respective Bachelor's degree programme and to publish them on the programme's homepage. In addition, the Diploma Supplement should make transparent what specialisation the student has chosen and also the additional specific learning outcomes should be mentioned there.

The programme's educational objectives and learning outcomes are expected to equip the graduates with life skills required to develop and adapt to the wide spectrum of possible

occupations. Engineering graduates from the three programmes have manifold job opportunities, which include teachers/lecturers, entrepreneurs, consultants and they can find a suitable occupation as engineers in companies, academia, or public institutions. Most of the Bachelor's graduates enter the job market directly, only few continue with a Master's degree.

The experts gain the impression that the graduates of all three degree programmes under review are well prepared for entering the labour market and can find adequate jobs in Indonesia. In general, all graduates have good and manyfold job perspectives. The representatives of the industry underline the high quality of the engineering graduates and are in general satisfied with their qualification profile.

The experts can deduce the correlation of the programmes' competence profile with the SSC and see how each course contributes to achieving the intended learning outcomes from the provided Objectives-Module-Matrix for each programme.

In order to verify that the BEE and BAE programmes are aligned with the EUR-ACE® Framework Standards and Guidelines (EAFSG) for engineering programmes, the experts analyse the submitted study plan, intended learning outcomes, and module descriptions (see Appendix). The EUR-ACE® Framework Standards and Guidelines require that engineering programmes cover the following seven competence areas: Knowledge and Understanding, Engineering Analysis, Engineering Design, Investigations, Engineering Practice, Making Judgements Communication and Team-working, and Lifelong Learning. As can been seen from the provided documents, the degree programmes under review cover all the required competence areas and the experts perceive during the audit discussions with teachers and students that the mentioned competences are conveyed in the respective courses.

With respect to the BIE programme, the experts are satisfied with the programme learning outcomes as outlined in the official curriculum documents. They conclude that, in formulating the intended learning outcomes, UNRAM has followed the Euro-Inf Framework and the Subject-Specific Criteria of the ASIIN Technical Committee 04 for Informatics.

In summary, the experts are convinced that the intended qualification profiles of all programmes under review allow graduates to take up an occupation, which corresponds to their qualification. The degree programmes are designed in such a way that they meet the goals set for them. The objectives and intended learning outcomes of all degree programmes under review are reasonable and well founded.

The experts conclude that the objectives and intended learning outcomes of all three Bachelor's degree programmes adequately reflect the intended level of academic qualification

(EQF 6) and correspond sufficiently with the ASIIN Subject-Specific-Criteria (SSC) of the respective Technical Committee.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the experts:
The names of the three degree programmes under review are determined based on the Decree of the Minister of Research, Technology, and Higher Education of the Republic of Indonesia number 33/2018, which has been revised by Decree number 32/2021. The names are accepted by the relevant scientific communities and professional associations and organisations.

UNRAM awards the degree of Sarjana Komputer (S.Kom.) to the graduates of the BIE programme, the degree of Sarjana Teknik (S.T.) to the graduates of the BEE programme, and the degree of Sarjana Teknologi Pertanian (S.TP.) to the graduates of the BAE programme. The experts suggest to adjust the English translation of the awarded degrees. Currently, UNRAM awards a Bachelor of Computer Science to the graduates of the BIE programme, a Bachelor of Engineering to the graduates of the BEE programme, and a Bachelor of Agricultural Technology to the graduates of the BAE programme. The experts point out that a Bachelor of Engineering is recognized worldwide as a standard qualification for engineers. It provides credibility and legitimacy to graduates in the engineering profession. In order to align the names of the degree programmes and the names of the awarded degrees, the experts suggest to award a Bachelor of Engineering for all three degree programmes and not only to the graduates of the BEE programme. However, this only concerns the English translation and not the original Indonesian names, as they are determined by the Ministry and cannot be changed by UNRAM.

Additionally, the experts point out that it would be useful to use the same English names for the degree programmes in all documents. Otherwise, the experts confirm that the English translation and the original Indonesian names of all three degree programmes correspond with the intended aims and learning outcomes as well as the main course language (Bahasa Indonesia).

Criterion 1.3 Curriculum

Evidence:

- Study plans of the degree programmes
- Module descriptions
- Homepage UNRAM: https://unram.ac.id
- Homepage Ba Informatics Engineering: https://if.unram.ac.id/
- Homepage Ba Electrical Engineering: https://te.unram.ac.id/jte2/en/home/
- Homepage Ba Agricultural Engineering: https://fatepa.unram.ac.id/tep/
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The Bachelor's programmes Informatics Engineering and Electrical Engineering are both offered by the Faculty of Engineering (FT) of Universitas Mataram (UNRAM), while the Bachelor's programme Agricultural Engineering is offered by the Faculty of Food Technology and Agroindustry (FATEPA) of Universitas Mataram.

Each semester is equivalent to 14 weeks of learning activities. Besides these learning activities, there is one week for midterm exams and one week for final exams. The odd semester starts in August and ends in January of the following year, while the even semester last from February to July. A systematic university-wide review of the curriculum is conducted every five years but minor changes may be implemented every year after endorsement by UNRAM.

It is possible for excellent students to complete the degree in only seven semesters. Students cannot cover more than 24 SCU per semester. All students have to complete the undergraduate programme within seven years. The students' individual study plans are different from each other, but have to be approved by their academic advisors.

The curriculum of the undergraduate programmes consists of university requirements, compulsory and elective courses as determined by UNRAM and the respective departments. University requirements are courses that need to be attended by all undergraduate students at UNARAM. There are five university requirements: English, Religion, Pancasila, Civic Education, and Technopreneurship. These courses are almost all offered in the first two semesters of studies.

Courses on the different engineering subjects are offered from the third to the eighth semester. Elective courses can be taken from the third year of study. Students usually choose elective courses that relate to their thesis and/or their individual interests. During the eight

semesters, students must also complete the undergraduate thesis (4 to 6 SCU) and the community service (2 SCU).

The Bachelor's degree programme Informatics Engineering is designed for four years and offered as a full-time programme. The curriculum encompasses 144 semester credit units (SCU), this is equivalent to 230.40 ECTS points.

There are three majors that BIE students can choose to determine their elective courses: Artificial Intelligence, Embedded Systems, and Information Systems.

The general structure of the BIE programme is shown in the following table:

Course Type	SCU	ECTS	Percentage (%)
M	91	145.6	63
CE	42	67.2	29
FE	11	17.6	8
Total	144	230,4	100%

Table 1: Structure BIE programme, Source: SAR UNRAM

The students suggest during the discussion with the experts to move the course "Object Oriented Programming" from the fifth into the fourth semester and maybe to switch it with the course "Numerical Methods", which is currently offered in the fourth semester.

The Bachelor's degree programme Electrical Engineering is designed for four years and offered as a full-time programme. The curriculum encompasses 146 semester credit units (SCU), this is equivalent to 233.60 ECTS points

To have a strong basic knowledge and skills, all BEE students take compulsory courses (class lectures and laboratory works) in parallel during semester one to four. In order to gain specific engineering competencies, starting from the 5th semester, students take elective courses in one of four fields of concentration, namely: Electrical Power System Engineering, Electronics Engineering, Telecommunication Engineering, and Computer Engineering.

The general structure of the BEE programme is shown in the following table:

Course Type	SCU	ECTS	Percentage (%)
Compulsory	105	168	72
Concentration-Elective	33	52.8	22.6
Free-Elective	8	12.8	5.4
Total	146	233.6	100%

Table 2: Structure BEE programme, Source: SAR UNRAM

Inputs for curriculum evaluation were gained from annual focus group discussion with FORTEI (Indonesian Electrical Engineering Higher Education Forum) and with relevant stakeholders, including industries (PT. PLN, PT. Telkom, PT. Indosat, ASTRA Motor, ITEC Education), government (BPS Prov. NTB, BLK Mataram, Bappeda Prov. NTB, Dinas ESDM Prov. NTB, Kominfo, BMKG Stageof Mataram), professional association (PII), and alumni.

The BEE programme has a focus on the field of electromagnetics, for example, there is the Center for Geomagnetic Excellence (in cooperation with Germany). In addition, the development of BEE is directed towards the application and development of IoT and renewable energy.

The Bachelor's degree programme Agricultural Engineering is designed for four years and offered as a full-time programme. The curriculum encompasses 144 semester credit units (SCU), this is equivalent to 230.40 ECTS points. . In order to gain specific engineering competencies, starting from the 5th semester, students take elective courses in one of four fields of specialisation, namely: Agricultural Power and Machinery, Bioprocess Engineering, as well as Agricultural Engineering and Environmental Conversation.

The general structure of the BAE programme is shown in the following table:

Course Type	SCU	ECTS	Percentage (%)
M	95	152	66%
CE	38	60,8	26%
FE	11	17,6	8%
Total	144	230,4	100%

Table 3: Structure BAE programme, Source: SAR UNRAM

The experts point out that it would be very useful to make transparent, in which courses of the BAE programme the different aspects of sustainability are treated. This is part of the programmes' mission and therefore it should be clear how this is reflected in the courses. Clearly identifying where and how the different aspects of sustainability are addressed in the curriculum ensures students gain a well-rounded understanding and helps to show how different courses contribute to the overall sustainability perspective from ecological farming techniques to economic viability.

Usually during the last year of studies, students must complete the community service. The experts discuss with the programme coordinators about the content and goal of this course. The programme coordinators explain that community service is compulsory for all Indonesian students. It has a minimum length of four weeks and often takes place in villages or rural areas where students stay and live together with the local people. The course is designed "to allow students to apply their knowledge based on their field in order to empower society". Since the community service usually takes place in remote areas, the students cannot attend any classes during this time. The students work in interdisciplinary teams during the community service in order to advance the society and bring further development about. This course was introduced at all Indonesian Universities in 1971. The assessment of the community service consists of a work plan, programme implementation, and activity report. The experts understand that students should work for the benefit of the community and the Indonesian society during the community service and support this concept. In addition, it offers insight into the practical application of their subject.

UNRAM requires undergraduate students to conduct a compulsory internship (PKL, 3.2 ECTS) to guarantee that students gain work experiences and skills to fulfil industrial requirements. Student will be supervised by one of the lecturers and a field supervisor, who is assigned by the hosting internship institution.

The members of the teaching staff explain on demand of the experts that they offer possible topics for the final projects according to their own research projects. All members of the teaching staff supervise theses. Bachelor's students have to design a research proposal (this proposal is developed in the "Research Proposal Seminar", which usually takes place in the sixth semester) with a time schedule for the project, which is discussed with the academic advisor. If they agree, students apply formally for being allowed to work on the suggested topic. Students can also develop their own concepts for their Bachelor's thesis and it is possible to conduct the Bachelor's thesis outside UNRAM.

After analysing the module descriptions and the study plans, the experts confirm that all three degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. All practical lab work and internships are

well integrated into the curriculum and the supervision by UNRAM guarantees for their respective quality in terms of relevance, content, and structure.

In general, UNRAM's partners from the industry and public institutions are very satisfied with the qualification profile of the graduates of all three programmes. However, during the discussion with the experts they point out that it would be useful to further improve students' soft skills such as English proficiency, communication skills, and the ability to work in a team. The experts support this suggestion because strong English and communication skills as well as the ability to work successfully in a group help students to articulate their thoughts, participate in discussions, and collaborate on projects, leading to better academic performance and enhanced job perspectives.

In summary, the experts confirm that the choice of modules and the structure of the curriculum ensure that the intended learning outcomes of the respective degree programme can be achieved.

International Mobility

UNRAM provides some opportunities for students to conduct internships and exchange programmes abroad. Students who take part in student exchanges through cooperation programmes can gain recognition of the acquired credits after obtaining approval from their undergraduate programme.

The International Office of UNRAM is responsible for managing and coordinating the international activities such as coordinating and managing student mobility programmes, developing and maintaining relationships with partner institutions and organisations around the world, recruiting and admitting international students, providing support and assistance to international students during their time at UNRAM, such as helping with housing, visa issues, and other practical matters.

Students' international academic mobility is supported by UNRAM. For example, through scholarships from UNRAM and International Students Mobility Awards (IISMA), a scholarship programme from the Ministry of Education and Culture starting from 2021. In addition, lecturers are encouraged to carry out joint research activities with international partners and to involve students in their projects. Around two or three students from UNRAM receive a scholarship via IISMA every year.

The three study programmes carry out several activities to further promote the internationalisation. This includes inviting guest lecturers both from domestic and overseas, providing opportunities for students to choose and study at other universities (outbond) as well as receiving international students (inbound) through student exchange activities. In

additions, some students are involved in scientific activities such as workshops and conferences held by UNRAM and other universities. The existing international cooperations are the following:

Bachelor	International Cooperation
BIE	• Kumamoto University, Japan • Seoul National University, South Korea
BEE	• GeoForschungsZentrum (GFZ) Potsdam, Germany • Eindhoven University of Technology (TU/e), The Netherland • University of Illinois Chicago (UIC), USA • Chiba University, Japan
BAE	• Seameo Recfon • Seameo Biotrop • Inclusive Energy

Table 4: International Cooperations, Source: SAR UNRAM

UNRAM also offers scholarships for foreign students and a guest house for visiting lecturers, last year 41 international research collaborations were funded by UNRAM. Approximately, 1 % of the students at UNRAM will spend some time abroad during their studies. The experts learn during the audit that there are around 15 incoming students (for a couple of weeks) from Seoul National University in the BIE programme, in addition, there is a cooperation with Universiti Teknologi MARA (UiTM), Malaysia.

In partnership with Universitas Nasional Jakarta (UNAS) and Seoul National University Social Responsibility (SNU-SR), UNRAM regularly organises international summer schools, which aim to improve sustainability in the business, technology, and educational sectors.

The new policy of the Indonesian government actively supports any activities outside of the university by releasing a regulation on the Merdeka Belajar-Kampus Merdeka (MBKM), which requires the university to promote students who want to spent part of their Bachelor's programme outside UNRAM (Minister of Education and Culture Regulation Number 3, Year 2020). It is important to note that students have the right to take internship through MBKM activity in which the rules are outlined in the Rector Regulation no. 3/2020, article 29. The students can take credits outside the study programme of a maximum three semesters or 60 SCU. These credits are supposed to be taken from the 5th to the 8th semester. UNRAM recognizes the courses taken by the students outside UNRAM, based on the comparability of the intended learning outcomes. The experts consider this regulation sufficient. However, according to the opinion of the expert group, the academic mobility of the students should be further promoted.

The number of Indonesian students who participate in international exchange programmes is still low. For example, starting from 2015, every year, students joined an internship at Kumamoto University funded by JICA foundation for two semesters, but skipped during Covid-19 pandemic in 2020 and 2021. In addition, in 2022, an engineering student joined the IISMA programme to study for one year at the University of Warwick, England.

In addition to the regular staff members, there are currently 50 guest lecturers from 21 countries and 292 international students (Myanmar, Bangladesh, Philippines, China) at UNRAM. The total number of international students is still low, but has increased significantly within the last three years.

The students confirm during the discussion with the experts that some opportunities for international academic mobility exist and that the credits acquired abroad are recognised at UNRAM. However, they also point out that they wish for more places and better endowed scholarships for long- and short-term stays abroad. The number of available places in the exchange programmes is still limited and there are restrictions due to a lack of sufficient financial support. UNRAM can provide only limited travel grants, while the demand from students is rising. The lack of financial support hinders students from joining the outbound programmes. National scholarships are available, but they are highly competitive, so only a few students receive them.

The experts understand these problems; however, they recommend increasing the effort to further internationalising UNRAM by offering more places in international exchange programmes and more scholarships. The experts emphasise that it is very useful for students to spend some time abroad already during their Bachelor's studies to improve their English proficiency, to get to know other educational systems, and to enhance their job opportunities. Furthermore, URAM should invite more visiting lecturers, initiate more international exchange programmes, and provide more scholarships for students.

A good starting point for initiating more international cooperations are the numerous personal international contacts of the faculty members and the guest lecturers. It is also possible for students and teachers to apply to international organisations like ERASMUS or the German Academic Exchange Council (DAAD) for receiving funds for stays abroad. In addition, UNRAM should make its degree programmes internationally more visible and make transparent, for example by better advertising the programmes and emphasising that there are English taught classes in the three degree programmes.

In summary, the experts appreciate the effort to foster international mobility and support UNRAM to further pursuing this path. However, with respect to academic mobility there is still room for improvement.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- Homepage UNRAM: https://unram.ac.id
- Homepage Ba Informatics Engineering: https://if.unram.ac.id/
- Homepage Ba Electrical Engineering: https://te.unram.ac.id/jte2/en/home/
- Homepage Ba Agricultural Engineering: https://fatepa.unram.ac.id/tep/
- Discussions during the audit

Preliminary assessment and analysis of the experts:
According to the Self-Assessment Report, admission procedures and policies for new students follow the national regulations in Indonesia. The requirements, schedule, registration venue, and selection test are announced on UNRAM's webpage and thus accessible for all stakeholders. The admission procedures and policies for new students follow the National Regulation 48/2022.

There are three different ways by which students can be admitted to a Bachelor's programme at UNRAM:

1. National Entrance Selection of State Universities (SNBP), a national admission system, which is based on the academic performance during the high school (40 % of the students at UNRAM are admitted through this selection system).

2. Joint Entrance Selection of State Universities (SNBT): This national selection test is held every year for university candidates. It is a nationwide computer based test (subjects: mathematics, Bahasa Indonesia, English, physics, chemistry, biology, economics, history, sociology, and geography). It accounts for 30 % of the admitted students at UNRAM.

3. Independent Entrance Selection (SM): Students are either selected based on a computer based test (similar to SNBT) specifically held by UNRAM or on merits/social reasons. (30 % of the undergraduate students at UNRAM are admitted this way).

The entrance requirements are prepared by the universities and then forwarded to the National Testing Agency for State Universities to be accessible to all SNBP and SNBT applicants.

The experts point out that UNRAM's webpage for the admission of international students in only in Bahasa Indonesia. However, this information should also be available in English.

The number of applications and admitted as well as of newly enrolled students for all three undergraduate programmes is shown in the following table.

SP	Number of Students in UNRAM Admission per Year (2019 – 2023)														
	2019			2020			2021			2022			2023		
	Ap	Ad	En	Ap	Ad	En	Ap	Ad	En	Ap	Ad	En	Ap	Ad	En
BIE	2817	110	106	2790	111	103	2907	155	144	3008	177	166	4219	166	148
BEE	891	208	164	556	171	149	530	175	157	694	174	155	780	171	157
BAE	395	145	116	403	127	98	404	122	102	530	160	141	709	183	146

*Abbreviation: SP (Study Programme), Ap (Applicants), Ad (Admitted), En (Enrolled).

Table 5: Number of application, admitted and newly enrolled students, Source: SAR UNRAM

The experts see that all three undergraduate programmes receive many applications and that the demand is higher than the number of available study places. Especially the BIE programme is in high demand. Here the number of applications rises constantly and the acceptance quota in 2023 was only 3.9 %. In the BEE programme the number of applications has varied between 891 (in 2019) and 530 (in 2021). The respective acceptance quota was between 23.3 % (in 2019) and 33.3 % (in 2021). The numbers are similar in the BAE programme. Here the number of applications also rises constantly and the acceptance quota in 2023 was 25.8 % in comparison to 36.7 % in 2019.

The number of available study places is around 150 students per year in all three Bachelor's degree programmes. The quota is based on the number of teachers and the capacity of the available facilities. According to government regulations the students to teacher ratio should be not more than 30:1 for Bachelor's degree programmes.

The following table shows the students to teacher ratio for all three undergraduate programmes:

Study Programme	Students/Teachers Ratio per Year					
	2018	2019	2020	2021	2022	2023
BIE	35.79	38.36	32.07	22.79	29.00	17.55
BEE	21.20	21.90	21.81	23.06	24.97	20.71
BAE	24.07	23.76	24.65	20.82	19.78	11.93

Table 6: students to teacher ratio, Source: SAR UNRAM

Undergraduate students at UNRAM have to pay tuition fees. The fees for each student are different and are based on the financial ability of their parents. At UNRAM, there are six different levels of tuition fees for the three undergraduate programmes under review. The lowest was IDR 500 000 (EUR 32) and the highest IDR 6 850 000 (EUR 428) per semester.

In summary, the auditors find the terms of admission to be binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Criterion 1.5 Work load and credits

Evidence:

- Self-Assessment Report
- Module Handbooks
- Study Plans
- Academic Guidelines
- Discussions during the audit.

Preliminary assessment and analysis of the experts:

Based on the National Standards for Higher Education of Indonesia (SNPT), all three programmes under review use a credit point system called SCU.

For regular classes, 1 SCU of academic load for the undergraduate programme is equivalent to 3 academic hours, which equals 170 minutes. This includes:

- 50 minutes of scheduled contact with the teaching staff in learning activities,
- 60 minutes of structured activities related to lectures, such as doing the assignments, writing papers, or studying literature,

- 60 minutes of independent activities outside the class room to obtain a better understanding of the subject matters and to prepare academic assignments such as reading references.

Bachelor's students with high academic achievement (GPA ≥ 3.5) can take more courses (up to 24 SCU) to speed up their studies; the academic advisor must approve this.

Most courses are assigned with 2-4 SCU. The students' total workload is calculated for all compulsory and elective courses, based on students' classroom activities, laboratory work, assignments and/or projects, and self-study time.

According to the Self-Assessment Report, UNRAM calculates 25 hours of students' total workload and uses a conversion factor of 1.6 between SCU and ECTS points. The reasoning behind this calculation is that one SCU equals 170 minutes (2.833 hours). As the semester lasts for 14 weeks 2.833 x 14 = 39.7 hours per semester. This total workload is then divided by 25 to get the conversion factor: 39.7 / 25 = 1.6.

The experts point out that there can be no fixed conversion rate between SCU and ECTS points. Therefore, the ECTS points need to be calculated separately for each course. This is necessary, because the time students need for self-studies is different for each course. Especially the Bachelor theses show, that the students spend much more time on their final projects than is currently reflected in the awarded ECTS points. For example, for the Final Project (Bachelor's thesis) in the BAE programme 5 SCU (7.55 ECTS) are awarded. However, students work at least eight weeks full time on their final project which would be equivalent to a workload of 8 x 40 = 320 h. As a result, 12.8 ECTS points should be awarded. In addition, the different courses require different proportions of practical work and seminars. This should be reflected in the module descriptions. Currently, the proportions are the same in all of the courses.

UNRAM should follow the ECTS Users' Guide to determine the students' total workload. As described in the ECTS Users' Guide, the estimation of students' workload should include all learning activities. This is the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations). In other words, a seminar and a lecture may require the same number of contact hours, but one may require significantly greater workload than the other because of differing amounts of independent preparation by students.

As workload is an estimation of the average time spent by students to achieve the expected learning outcomes, the actual time spent by an individual student may differ from this estimate. Individual students differ: some progress more quickly, while others progress more

slowly. Therefore, the workload estimate should be based on the time an "average student" spends on self-studies and preparation for classes and exams. The initial estimation should then be verified via students' satisfaction questionnaires.

Since the workload of the students was only estimated by the programme coordinators, the experts expect UNRAM to re-evaluate the calculation of ECTS points and asking the students about their actual workload, especially the time they need for self-studies, for each course.

In any case, UNRAM needs to verify the students' total workload and make sure that the actual workload and the awarded ECTS points correspond with each other. This information should be made transparent in the module descriptions and the study plans.

The experts confirm that all three undergraduate programmes have a high but manageable workload. Students can give their feedback on the courses and comment if they think that the workload is too high. However, there should be a regular and institutionalised survey on students' workload in every course. For example, this could be done by including a respective question in the course questionnaires that students have to fill out each semester.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Academic Guidelines
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The learning method applied in the three programmes under review is a combination of teacher-centred learning (TCL) such as classroom teaching/tutorials, demonstrations, and laboratory sessions, and student-centred learning (SCL) such as group discussions, case studies, cooperative and project-based learning, field studies, and laboratory work. Each course can use one or a combination of several teaching and learning methods.

The most common method of learning in the undergraduate programmes is class session, with several courses having integrated laboratory work. Lecturers generally prepare presentations to support the teaching process. In addition, several courses include teaching practice sessions (i.e., students presenting teaching practice trials in front of their experts).

With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre- or post-tests, laboratory exercises, reports, discussions, and presentations. In addition, practical activities should enable students to be acquainted with academic research methods.

Learning activities are carried out face-to-face in classrooms, laboratories, or during field trips. Assignments are submitted directly to the lecturer during a face-to-face meeting or via e-mail and other digital media systems. Online learning was applied intensively during the COVID-19 pandemic. Restrictions on practical activities during the pandemic have constrained the laboratory work. There were no lab sessions for some time during the COVID-19 pandemic. After teachers and students were vaccinated, the labs were open again, but the student groups for the practical sessions were reduced in numbers.

In all three Bachelor's programmes (BIE, BEE, BAE) courses are delivered in English for students who have high TOEFL scores. Usually, these courses cover around 20% of the parallel-classes available. For example, if there is a course X that has 4 parallel classes, then 1 of the classes will be delivered in English. Currently, there is no dedicated-international class in BIE, BEE, or BAE. However, these three programmes are prepared for any international students who want to join the programme by offering courses delivered in English. In addition, English is usually used in lecture materials (PowerPoint slides) and references in most courses of the regular classes.

In summary, the expert group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concept of all three undergraduate programmes comprises a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

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

The experts confirm that UNRAM has developed detailed and specific intended learning outcomes for each specialisation within the respective Bachelor's degree programme. The intended learning outcomes have been published on the programmes' websites and have been included in the Diploma Supplement. Consequently, this deficit has been solved.

The experts appreciate that UNRAM has revised the English translations of the study programmes and now uses them uniformly across all relevant documents. In a similar way, the

degree "Bachelor of Engineering" has been adopted as the English designation across the relevant programmes, aligning with international standards.

The experts acknowledge that in the Bachelor of Informatics Engineering curriculum the course "Object Oriented Programming" has been rescheduled to the fourth semester, while "Numerical Methods" will now be offered in the fifth semester.

The experts see that UNRAM is actively expanding its international partnerships to create more opportunities for academic mobility. However, the efforts should be increased and students should be encourage to spend some time abroad during their studies.

With respect to the admission information, the experts confirm that UNRAM has launched an English-language webpage for international student admissions, accessible via the university's international portal. This webpage includes detailed information on academic programmes, application requirements, key deadlines, visa and immigration procedures, and available scholarships. Furthermore, programme-specific pages for BAE, BEE, and BIE have been reviewed and updated to include bilingual content aligned with the central admissions portal.

The experts appreciate that UNRAM has recalculated ECTS points separately for each course based on updated workload estimations, following the ECTS Users' Guide. All forms of learning activities, including classroom sessions, laboratory work, independent study, group work, and examination preparation, have been systematically incorporated into the credit allocation process. Additionally, training sessions for programme coordinators and academic staff were conducted to familiarize them with the new methodology. Finally, UNRAM has initiated a structured workload survey that is administered to students at the end of each semester. The collected feedback is analysed annually by the academic quality assurance office and reported to the respective faculties. The experts are satisfied with this process and see no need to issue a requirement to this respect.

The experts consider criterion 1 to be mostly fulfilled.

2. Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- Academic Guidelines
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to the Self-Assessment Report, the students' academic performance is evaluated based on written exams (e.g., multiple choice, essays, quizzes, and calculations), oral exams, presentations, practical work, papers, and reports. The exams can be divided into two types: formative and summative assessments. The formative assessments provide feedback to the students about their achievement during the semester. Students who have not achieved a minimum competency may have a remedy to re-evaluate themselves. The summative assessments are intended to measure students' performance in the middle and the end of the semester. These exams are set following the academic calendar issued by UNRAM and are managed by each study programme through a prearranged exams committee. Faculties or study programmes have the flexibility to arrange midterm and final exams for courses that have different exams mechanisms, such as case-based and project-based learning and as like. For those courses, lecturers schedule and implement the exams based on their evaluation scenarios presented in the module handbooks. In addition, the lectures may perform the exams using various media such as papers, presentation, and/or digital media.

The form of each exam is mentioned in the module descriptions that are available to the students via UNRAM's homepage and the learning management system. Usually, there are two written exams in each course (besides the assignments, homework, and presentations); the mid-term exam is conducted in 8th week of the semester and the final exam in 16th week.

As stipulated in the academic regulations, students at UNRAM need to attend at least 75 % of the lectures and 100 % of the practical classes, otherwise, they may not be admitted to take part at the courses' final exam. Make-up exams are offered for students that could not participate, for example in cases of illness or other eligible reasons.

The most common type of evaluation used are written examinations; however, quizzes, laboratory work, assignments (small projects, reports, etc.), presentations, seminars, and

discussions may contribute to the final grade. Written examinations, either closed-book or open-book, typically include short answers, essays, problem-solving or case-based questions, and calculation problems. Some lecturers also give multiple choice or true-false questions in examinations or quizzes. The grade from laboratory work usually consists of laboratory skills, discussions, reports, and oral exams. The grading system is different for the internship, the community service, and the final project. The details, which assessment forms are used in these courses and how they contribute to the final grade, are described in the respective module descriptions. Students are informed about mid-term and final exams via the Academic Calendar. Students can access their results via UNRAM's digital platform.

The grades for the exams range from A to E, and/or between 4.00 and 0.00.

Final Score Range	Quality letters (alphabetical grades)	Quality Score on GPA
85 - 100	A	4,0
80 - <85	B+	3,5
75 - <80	B	3,0
70 - <75	C+	2,5
65 - <70	C	2,0
55 - <65	D+	1,5
45 - <55	D	1
0 - 45	E	0

Table 7: Grading Scheme, Source: SAR UNRAM

Students with low grades will be given remedial exams, in order to give them the opportunity to improve their academic performance. Undergraduate students need a GPA of at least 2.00 to graduate, while master's students need am minimum GPA of 3.00. If students fail a course - even after remedial – they need to re-sit the course again in the following semester or in the short semester, which is offered during the summer break. Students who object to the final grade of their courses are allowed to make a complaint. The details of the procedure are described in the academic regulations.

If a student fails, she or he usually has to repeat the entire module in the following semester; it is usually not possible to retake just parts of the course or to just retake the final exam. However, mid-term exams can be repeated (remedy) but if a student fails the final exam, she or he has to retake the whole course in the next semester or in the short semester, which is offered during the summer break. The absence of students in the midterms and finals due to illness or otherwise is remediable by taking the exam later. Students, who cannot attend practical courses for acceptable reasons, can repeat the practicum later; the lecturers are responsible for the arrangement. Students with special needs are provided

with support to enable them to participate in the academic activities and exams. There is a fixed period after the announcement of the final grades, during which students can ask for explanations and can appeal their grades.

Every student in the undergraduate programmes is required to do a final project (Bachelor's or Master's thesis). The Bachelor's thesis is a scientific work report written by students in the Bachelor's programme that focuses on a specific and usually consists of literature study, practical research, data analysis and presentation in figures or tables, and writing the thesis under the supervision of a teacher. Both the student and his /her supervisors might decide the topic and content of the project. In many cases, the lecturers offer particular topics connected to their research. To propose thesis topics, students have to submit a proposal that has been approved by their two prospective supervisors. The students have to present their results and defend them in front of the Thesis Examiner Team. To apply for the thesis exam, students need a TOEFL certificate with a minimum score of 400. In the thesis exam, students should shows that they understand their research results and can defended them.

The students appreciate that there are several short exams instead of one big exam and confirm that the exam load is appropriate and they are well informed about the examination schedule, the examination form, and the rules for grading.

The experts also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples.

In summary, the experts confirm that the different forms of examination used are competence-oriented and are suitable overall for verifying the achievement of the intended learning outcomes as specified in the respective module descriptions. The form of examination is determined individually for each course and published in the respective module description. The forms of examination are based on the main content of the modules and the level is appropriate for the respective degree programme.

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

UNRAM agrees with the experts' findings and appreciates that their thorough review of the examination papers and final theses samples, the experts come to a positive assessment of the samples overall quality. UNRAM is also pleased that the competence-oriented and varied assessment methods are recognized as appropriate for verifying the intended learning outcomes.

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report
- Staff Handbook
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
At UNRAM, 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. For example, a full or an associate professor needs to hold a PhD degree. In addition, the responsibilities and tasks of a staff member with respect to teaching, research, and supervision depend on the academic position.

According to the Self-Assessment Report, the teaching staff in BIE programme includes 34 persons with various functional positions and academic degrees. Currently there are four full professors, five associate professors, 16 assistant professors, and 9 lecturers. The numbers are similar for the BEE programme, which has 37 academic staff members with three full professors, 13 associate professors, 19 assistant professors, and two lecturers. There are more teachers in the BAE programme in comparison to the two other programmes. The teachings staff consists of 44 persons, which includes six full professors, five associate professors, 27 assistant professors, and six lecturers.

In the BIE programme 44.8% of the teachers have a doctoral qualification and 55.2% have a Master's degree. In the BEE programme 40.5% of the teachers have a doctoral qualifications and 59.5% have a Master's degree, while in the BAE programme, the share is 41.5% (doctoral) and 58.5% (Master's).

The experts see that the degree programmes fulfil the national standards that the share of teaches with a doctoral qualification should be at least 40%. If UNRAM want to achieve its strategic goal to become an internationally recognised research university a higher percentage of teachers should have a PhD. By international standards, all university teachers, no matter if the teach in an undergraduate or graduate programme should have a PhD (see also *Staff Development*).

As the share of female professors is much smaller than the share of male professors, UNRAM should implement a strategy, including facilities to provide for families and children, to promote promising female students to become lectures and consequently professors. This way the compatibility of family and work could be better supported.

The teacher to student ratio for each of the three study programmes is BIE: 1 to 17.55, BEE: 1 to 20.71, BAE 1 to 11.93, respectively (the national requirement is a teacher to student ratio of 1 to 30). The experts appreciate that the teaching staff is dedicated to UNRAM and the degree programmes and that so many academic staff is teaching in the three programmes.

Through the Institute of Research and Community Services (Lembaga Penelitian dan Pengabdian pada Masyarakat, LPPM), UNRAM awards doctoral research grants for staff members that enrol in PhD programmes outside UNRAM so that they can finance their living expenses. Aside from taking advantage of full grants provided by the university, the staff members can seek additional funding from the Indonesian government as well as from institutions abroad.

Details of the academic qualifications of the teachers are described in the staff handbooks, which are accessible via the respective department's webpage. All fulltime members of the teaching staff are obliged to be involved in (1) teaching/advising, (2) research, and (3) community service. However, the workload can be distributed differently between the three areas from teacher to teacher. In addition, there are non-academic staff members consisting of librarians, lab technicians, and administrative staff.

The experts discuss with UNRAM's management how new staff members are recruited. They learn that every year the faculties and departments announce their vacancies to UNRAM's management, which subsequently announces the vacancies on UNRAM's webpage. One way to recruit new teachers is to send promising Master's students from UNRAM abroad to complete their PhD and then to hire them as teachers when they are finished. Nevertheless, UNRAM also hires graduates from other universities. Vacancies are announced nationally, so UNRAM gets applications from other universities.

During the audit, the experts inquire how high the teaching load is and if enough opportunities are offered to the academic staff members to conduct research activities. They learn that teachers in three assessed study programmes have a teaching load of around 18 hours per week and a total workload of 12 to 16 credits; the national maximum is 16 credits. One credit is equivalent to 170 minutes of work per week with about one hour contact time. How much time staff members actually devote to research is different from teacher to teacher, because working hours are spent flexibly for teaching, research, and community service.

In summary, the experts confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining all three degree programmes.

Staff Development

UNRAM encourages training of its academic and technical staff for improving the educational abilities and teaching methods. As described in the Self-Assessment Report, faculty members attend courses in English language training, Information and Communications Technology (ICT), laboratory safety and instrumentation, writing publications, and e-learning. Furthermore, Applied Approach (PEKERTI-AA) is a compulsory training for all staff members that focuses on advancing pedagogical knowledge. It is designed particularly for junior faculty members to introduce various teaching methods, learning strategies, preparation of assessments, class management, as well as syllabus and course content development. All teachers at UNRAM are obligated to attend the lecturer certification programme held by the Directorate General of Higher Education (Direktorat Jenderal Pendidikan Tinggi Ditjen, DIKTI). An official teaching certificate is issued after the faculty member has completed the certification process. In addition, the study programmes organise trainings to upgrade lecturers' pedagogical content knowledge on a regular basis.

Young staff members with a Master's degree are encouraged to pursue doctoral studies (usually abroad). To support this policy, UNRAM provides foreign language training and organises seminars presenting scholarships from various sources.

At UNARAM, the Institute for Research and Community Service (Lembaga Penelitian dan Pengabdian kepada Masyarakat, LPPM) conducts mentoring for lecturers in the fields of research and community service. Moreover, the Institute of Quality Assurance and Learning Development (Lembaga Penjaminan Mutu dan Pengembangan Pembelajaran, LPMPP) is responsible for improving the teachers' pedagogical and didactic skills by providing training programmes.

During the audit, the experts inquire if the teaching staff has the opportunity to spend time abroad and to participate in international projects. They learn that UNRAM provide funds for joining international conferences. Moreover, teachers have the opportunity to receive funding from the Ministry of Research, Technology and Higher Education. The funding covers conference and publication fees, and expenses for accommodation and traveling. The teachers are satisfied with the existing opportunities and the available financial support.

The experts discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme at UNRAM their opportunities to further improve their didactic abilities and to

spend some time abroad to attend conferences, workshops or seminars; even a sabbatical leave is possible.

In summary, the auditors confirm that UNRAM offers sufficient support mechanisms and opportunities for members of the teaching staff who wish for further developing their professional and teaching skills.

Student Support

UNRAM offers a comprehensive advisory system for all undergraduate students. At the start of the first semester, every student is assigned to an academic advisor. Each academic advisor is a member of the academic staff and is responsible for several students from her/his classes. He/she is the student's first port of call for advice or support on academic or personal matters.

The role of the academic advisor is to help the students with the process of orientation during the first semesters, the introduction to academic life and the university's community, and to respond promptly to any questions. They also offer general academic advice, make suggestions regarding relevant careers and skills development and help if there are problems with other teachers. During the semester, counselling activities are usually offered three times, namely at the beginning of the semester (before the courses start), mid-semester, and at the end of the semester. The students confirm during the discussion with the experts that they all have an academic advisor, whom they can approach if guidance is needed.

In general, students stress that the teachers are open-minded, communicate well with them, take their opinions and suggestions into account, and changes are implemented if necessary.

Students who prepare their theses have one or more supervisors, who are selected based on the topic of the final project. One supervisor could be an external supervisor, if the student performs the final project outside UNRAM. The role of the final project supervisor is to guide students in accomplishing their final project, e.g., to finish their research and complete their final project report.

All students at UNRAM have access to the online learning management system (LMS) and the Academic Information System (SIA). The students' profiles (student history, study plan, academic transcript and grade point average/GPA, lecturer evaluation, course list) are available via this digital platform.

Furthermore, there is the Career Development Centre at UNRAM, which offers help to find suitable internships, announces job vacancies, organises job fairs, and offers courses to develop soft skills. Finally, there are several supporting facilities such as Mosque, University Hospital, Student Dormitory, Cafeteria, Sport Facilities, Convention Center, Language Center, and Guest House.

Finally, there are several student organizations at UNRAM; they include student's activity clubs, which are divided into arts, sports, religious and other non-curricular activities.

During the audit the experts learn that some teachers advise significantly more students than other teachers. Theoretically, teachers should have a maximum of eight students for final projects and an average of eight to ten undergraduate students to advice. From the experts point of view there is an imbalance and it would be better to have a similar number of students assigned to each teacher. This ensures a fair distribution of resources and recognises teachers' limited time and energy.

The experts notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and to 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
- Visitation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Basic funding of the undergraduate programmes and the facilities is provided by UNRAM and the Faculty of Engineering and the Faculty of Food Technology and Agroindustry. The financial sources are government funding which contribute to around 43% to the total budget for the salaries of all state employees and approximately 17% for operational costs. The rest of UNRAM's funds (40%) are derived from students' tuition fees and business ventures. Additional funds for research activities can be provided by UNRAM or the Indonesian government (Bantuan Pendanaan Perguruan Tinggi Nasional, BPPTN), but the teachers have to apply for them.

The annual budget of the departments is determined at university level. Every year, UNRAM's management will ask the departments to prepare an activity plan and a budget for the next period. The activity and budget planning is presented and discussed during the management meetings at faculty level, and subsequently forwarded to UNRAM's management.

All teachers have also the opportunity to apply for research funds through the Directorate General of Higher Education of Education Department of Republic Indonesia (DIKTI). Additional funds are also available from several other foundations and institutions from Indonesia and abroad and also from joint collaborations with third parties.

The provided budget allows the departments to conduct the study programmes as well as some specific activities, including student exchange programmes, student financial assistance for research, and participation in international conferences. The academic staff members emphasise that from their point of view, all undergraduate programmes under review receive sufficient funding for teaching and learning activities.

The Faculty of Engineering has 30 classrooms that are shared with all study programmes in faculty. To support practical work, the BIE programme has four computer laboratories and one server room. In addition, the study programme can use seven laboratories which are managed by the Center of Communication and Information Technology (PUSTIK) if needed.

With respect to the available software in the computer labs, the experts see that UNRAM is currently using open source software. However, it would better support the learning experience if students and teachers would have access to some licensed software such as Proteus (for electronics simulations), Eagle Autodesk (for PCB designing), MATLAB, AutoCAD (3D designing), Autodesk Inventor (3D designing), and Autodesk Fusion (3D designing).

The BEE programme manages six main laboratories that support the four existing areas of expertise in electrical engineering. In addition to the six laboratories, learning and research activities are also supported by a geomagnetic observatory (Lombok Geomagnetic Observatory) owned by UNRAM that is located outside the campus. The six laboratories are: Digital Electronics Laboratory, Power System Laboratory, Basic Electrical Laboratory, Control System Laboratory, Telecommunication Laboratory, and Computer and Network Laboratory.

The BAE programme has 12 classrooms; one big classroom can accommodate around 50-60 students. For each practical course, students are divided into several groups and each group consists of 5 people. BAE manages four laboratories: bioprocess laboratory, energy and agricultural machinery laboratory, environmental conservation engineering and sys-

tems laboratory, and computer analysis laboratory. In addition, basic laboratories for physics, chemistry, and biology courses are shared with the Faculty of Sciences. The number of available laboratories are shown in the following table:

Study program	Classroom*	Laboratories managed by	
		Study program	University**
BIE	30	4	7
BEE		6	
BAE	12	4	

**resource sharing in faculty*

***resource sharing in University*

Table 8: Number of laboratories, Source: SAR UNRAM

During the audit, the expert group visits the laboratories and facilities at the Faculty of Engineering and the Faculty of Food Technology and Agroindustry. They notice that there are some bottlenecks due to a lacking infrastructure and the technical equipment in the laboratories needs to be updated and increased in numbers. Additionally, more modern instruments for conducting research activities should be available.

With respect to the technical equipment in the laboratories of the BEE-programme, the experts see that there need to purchase additional instruments such as Oscilloscopes, Multimeters/Avometers, LCR Meter, Function Generators, Spectrum Analysers, Logic Analysers, 3D Printers and Filaments, Hand Drills (for PCB drilling), Breadboards or Electronic modules, PLC (Programmable Logic Controller) modules, PID Control modules, Sensor modules, Soldering station (consisting of tools like: soldering irons, soldering stand, flux, desoldering pump, tweezers, helping hand/clamps, solder wick, wire cutters, clamping and cutting pliers, crimping tools, screw drivers etc.) and a stock of electronics components with different values (resistors, capacitors, inductors, transistors, diodes, various integrated circuits, LEDs, LDRs, transformator, wires, BJT, FET, MOSFET, switch, jumper cables, pin headers, potentiometers, batteries, etc.).

Each group workstation should have an oscilloscope and a network analyser in addition to a desktop multimeter and power supply for multiple voltages. These must be suitable for the experiments. Simple models that do not have their own display but are shown on a computer are sufficient. By organising the experiments accordingly, it may be sufficient to equip only two or three workstations.

Currently, BEE students are only introduced to Arduino programming (basic microcontroller). However, students should also know how to access and use more advanced microcon-

trollers. To this end, it would be useful to provide advanced microcontrollers in the laboratories. Additionally, a Basic Electrical Laboratory that only covers measuring voltage and currents in series and parallel circuits is very elementary. To support more advanced experiments, the lab should incorporate a range of instruments and techniques. For example, using oscilloscopes and function generators to create Lissajous curves, employing wattmeters alongside ammeters and voltmeters for direct power measurements, and teaching students to distinguish between different voltage measurements. Additionally, the experiments could include exploring phase differences in AC circuits, comparing single-phase and three-phase systems, phasors, impedance, capacitance, inductance, and power dissipation, as well as measurement techniques like the Wheatstone bridge for resistance and AC bridges for impedance analysis, etc.

Moreover, the experts suggest to offer opportunities for students to practice and apply programming modern motor control, to use of modern power electronics, for example with IGPTs, to purchase devices for frequency and power measurement as well as for characteristics of the motors.

With respect to the technical equipment in the laboratories of the BAE programme, the experts see that the programme's goal is to develop, control, and maintain the quality and sustainability of biological and environmental processes in relation to agriculture, food, natural resources, energy, and rural development. To achieve theses aims, it would be necessary for students to gain knowledge of plants, their ingredients and growth conditions. The experts have not seen any equipment for soil analysis, no greenhouse and it would be good if there were always two identical test apparatus to carry out the correct controls. Additional instruments that should be available are pH meter, drying oven, muffle furnace, photometer, fume cupboard, scales, shaker, and Atterberg separator.

This need for improvement is confirmed by both the students and the teachers, who, in conversation with the experts, assess some of the technical material equipment of the teaching laboratories as worthy of improvement.

Moreover, the experts critically remark that several of the devices are "out of order" because they need to be repaired. This obviously takes several months and in the meantime, the respective experiments cannot be carried out because there are no replacement instruments available. To this end, the experts suggest to provide the faculties with a budget for running the devices in the laboratories, for maintenance and spare parts, so that all the experiments can be carried out.

In addition, the experts notice that in most visited laboratories (with the exception of the computer labs) there are too few working places available to carry out the experiments. For example, most laboratories can only accommodate between 10 and 15 students at the

same time. As one batch of students has around 150 students, they need to be divided into 10 to 15 different groups and the same lab courses have to be offered as many times per week. This leaves no room for additional practical classes and leads to rather crowded laboratories, which are occupied all day long. Additionally, the experts also observe that the infrastructure (buildings and laboratories) are in need of renovation. However, the experts appreciate that Bachelor's students are involved in the teachers' research projects and that the three assessed programmes makes the most of the limited financial and material resources available and that many applied research projects are carried out with a direct link to local problems and issues.

The three degree programmes considered here are characterised by application-oriented research with a regional focus. Despite the limited resources, interesting final theses and research projects are carried out, which prepare students well for a future career in Indonesia. In the opinion of the expert group, it is not necessary to compete with renowned international universities that are significantly better equipped. Instead, it makes much more sense to co-operate with international universities and use their advanced instruments in joint projects.

Another critical point from the experts' point of view is the fact that all the visited laboratories in the Faculty of Engineering as well as in the Faculty of Food Technology do not follow international safety standards. The experts point out that the basic personal protective equipment that needs to be available to all persons working in laboratories includes safety goggles, laboratory coats, and hand gloves. It must be worn all the time when working in the laboratory. In addition, there should be emergency showers and eye washers in each laboratory and the fire extinguishers need to be checked regularly. Moreover, there should be emergency exits signs and posters with the safety regulations.

The experts also learn during the audit, that there is a small Integrated Laboratory (Laboratorium Terpadu) with some advanced instruments, which can used by all teachers from UNRAM. The equipment mostly focuses on molecular biology and from the experts' point of view, it would be useful to broaden the research focus and to ask the different faculties, in which areas research support should be provided.

The expert group understands that modern research equipment for sophisticated laboratory work, sufficient in terms of quality and quantity, is not readily available and that the funds are restricted. For this reason, the experts expect UNRAM to submit a schedule and financing plan on how to update and increase the basic instruments and the technical equipment in the laboratories within the next five years. The first steps towards concrete implementation should be taken as soon as possible.

The experts also see during the audit that students can use and operate the instruments in the laboratories by themselves after being trained and instructed by either senior students or lab technicians. Each laboratory has a lab supervisor; in addition, there are lab assistants.

The students also express their satisfaction with the library and the available literature there. Remote access via VPN is possible. However, the experts notice that the access to current scientific e-books and papers is limited. For this reason, UNRAM should provide full access for students and teachers to current scientific publications, for example by providing access to IEEE Xplore.

With regard to barrier-free access to the laboratories and seminar rooms, the experts still see room for improvement. For example, there are no lifts in some of the multi-story buildings and a number of the laboratories are located on higher floors. However, the experts also recognise that the financial resources available to the faculties are limited and that the first priority must be to improve and update the technical equipment. As a next step, the faculty management should also consider improving access, e.g. for wheelchair users.

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

The experts see that UNRAM acknowledges the importance of complimenting open-source tools with licensed software to enhance the quality of teaching and learning. To a-dress this, all three study programmes have proposed the procurement of several licensed software packages aimed at supporting both practicum activities and research. These recommendations are part of a broader effort to align the available digital infrastructure with current academic and industry standards.

The experts appreciate that UNRAM agrees that there is a need to upgrade laboratory equipment and that modern and adequately equipped laboratories are necessary to support high-quality education and research. To this end, each of the three study programmes has developed a strategic plan for laboratory equipment upgrades for the period 2025–2030. This strategic plan outlines a phased and prioritized approach for enhancing laboratory facilities, including the acquisition of modern instruments and the expansion of existing technical resources to better support both teaching and research activities. However, the experts need a concept that explains why certain measuring and testing equipment should be purchased and why others should not. The measuring and testing equipment should be tailored to the modules. There should also be an overview of which devices are needed for which modules, aligned with the respective content. In electrical engineering, devices such as spectrum analysers, network analysers and oscilloscopes must be available

in the research and development lab. This is not evident from the documentation. The experts expect to receive evidences of the implementation of the strategic plans and verification of the improvements in the further course of the accreditation procedure.

UNRAM explains that zo ensure the long-term functionality of laboratory facilities, the faculties conduct regular annual evaluations of equipment conditions. Based on these evaluations, proposals are made for the procurement of new or backup equipment as needed. Furthermore, a dedicated budget for the maintenance and repair of laboratory instruments has been allocated and is included in the respective programme's financial planning. The experts point out that all faculties should have such a dedicated budget. However, they emphasise that it is essential to strictly follow international standards with respect to safety measures. The experts expect to receive evidences of the implementation of the safety measures and verification of the improvements in the further course of the accreditation procedure.

To address the need for access to current scientific publications and databases UNRAM has proposed the E-Journal Subscription Planning of the University of Mataram Library, which includes access to major academic databases and scientific publication platforms. The experts expect to receive evidences of the implementation of the subscription and verification of the improvements in the further course of the accreditation procedure.

The experts appreciate that UNRAM has included in its infrastructure development plan the construction of elevators in the BIE and BEE tower buildings, specifically designed to support accessibility for people with disabilities. This initiative is part of a broader effort to enhance universal access across campus and is scheduled for implementation by the year 2030.

The experts consider criterion 3 to be partly fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module descriptions
- Homepage UNRAM: https://unram.ac.id
- Homepage Ba Informatics Engineering: https://if.unram.ac.id/

- Homepage Ba Electrical Engineering: https://te.unram.ac.id/jte2/en/home/
- Homepage Ba Agricultural Engineering: https://fatepa.unram.ac.id/tep/

Preliminary assessment and analysis of the experts:
The students, as all other stakeholders, have access to the module descriptions via UNRAM's homepage.

After studying the module descriptions of all three programmes, the experts point out that they do not include all necessary information. The module descriptions should make transparent what share self-studies and contact hours have and this should be aligned with the awarded ECTS points (see criterion 1.5). In addition, on the homepages of the BEE and BAE programmes, not all module descriptions are linked. Finally, some module descriptions (e.g. KKN, Final Project 1, Final Project II, Internship/Practical work) are not included in the module handbooks. This needs to be corrected, because module descriptions for all courses need to be available.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Sample Transcript of Records, Diploma Certificate, and Diploma Supplement for each degree programme

Preliminary assessment and analysis of the experts:
The experts confirm that the Bachelor's students are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all required information about the degree programme. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA.

However, the experts point out that Diploma Supplement should make transparent what specialisation the student has chosen and also the additional specific learning outcomes should be mentioned there (see criterion 1.1).

Criterion 4.3 Relevant rules

Evidence:

- Self-Assessment Report

- All relevant regulations as published on the university's webpage

Preliminary assessment and analysis of the experts:
The auditors confirm that the rights and duties of both UNRAM and the students are clearly defined and binding. All rules and regulations are published on the university's website and the students receive the course material at the beginning of each semester.

In addition, almost all relevant information about the degree programmes (e.g., module handbook, study plan, intended learning outcomes) is available on the English homepage of the programmes. However, the experts point out the complete study plans (including the eight semester) should be published and that the module handbooks need to include descriptions of all courses (see criterion 4.1).

In addition, the English names of the study programmes and the awarded degrees should be consistent in all documents.

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

The experts confirm that UNRAM has revised and updated the module handbooks for all three programmes. The ECTS credits for each module have been calculated based on a detailed estimation of student workload, which includes time spent in class (contact hours), self-study, assignments, mid-term examinations, and final exams. This information is now explicitly stated in the module descriptions to ensure transparency and alignment with the awarded ECTS points. Additionally, the revised handbooks now include module descriptions for all courses, including those that were previously missing. However, the updated module handbook is only available through the BIE websites. When accessing the BAE's, and BEE's homepages, the module descriptions and the complete study plan are not available. This needs to be corrected.

The experts consider criterion 4 to be mostly fulfilled.

5. Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Academic Guidelines

- Discussions during the audit

Preliminary assessment and analysis of the experts:

The highest academic board at UNRAM is the University Senate (University Academic Senates,), which is headed by the Rector and responsible for implementing and supervising all academic processes at UNRAM. On faculty level, there is the Faculty Senate Commission, which is authorized to formulate policies and to monitor all academic activities at faculty level, in this case the Faculty of Engineering and the Faculty of Food Technology and Agroindustry. The Dean is the head of the faculty with the authority and responsibility for administering all teaching and learning activities within the faculty. He/she is supported by four Vice-Deans. Finally, for each degree programme there is the Head of Study Programme, who is responsible for implementing all educational activities within the respective degree programme.

The experts discuss the quality management system at UNRAM with the programme coordinators. The experts learn that there is an institutional system of quality management aiming at continuously improving the degree programmes.

This system relies on internal (SPMI) as well as external (SPME) quality assurance. SPMI encompasses all activities focused on implementing measures for improving the teaching and learning quality at UNRAM. SPME focuses on both national and international accreditations. Every degree programme and every Higher Education Institution in Indonesia has to be accredited by the National Accreditation Board of Higher Education / Badan Akreditasi Nasional Perguruan Tinggi (BAN-PT) or by one of the subject-specific LAM (Lembaga Akreditasi Mandiri). In this case, the BIE programme has received the grade accredited “Unggul” (Excellent) by LAM INFOKOM, while the BAE and BEE programmes have been rated “Baik Sekali” (Very Good) by BAN-PT.

The policy on quality assurance is developed on university level by Institute of Quality Assurance and Learning Development (LPMPP), monitored on faculty level by the Quality Assurance Board (GPM) and the Quality Assurances Unit on programme level. Quality assurance is commenced through the annual Internal Quality Audit (AMI), which is performed collectively by authorities from the study programmes, GPM and LPMPP. Each study programme is visited by the auditors to ensure that the learning process and study programme management have been carried out in accordance with the given standards.

Internal assessment of the quality of the degree programmes is mainly provided through student, alumni, and employer surveys. The students give their feedback on the courses by filling out the questionnaire online each semester. Students assess various aspects such as students’ understanding, lecturer’s responsiveness, course delivery, lecturer’s proficiency,

explanation of course objective, and references in each enrolled course. Students' opinion is quantified by means of index 1 (unsatisfactory) to 4 (excellent).

The students' feedback is given through online questionnaires, which are prepared by LPMPP. The questionnaire consists of several questions related to the learning and teaching processes in each course. The data generated from students' feedback is then analysed by the LPMPP, which then forward the results to faculties.

Giving feedback on the classes is compulsory for the students; otherwise, they cannot access their account on the digital platform SPADA. The experts point out that there should be a regular and institutionalised survey on students' workload in every course. For example, this could be done by including a respective question in the course questionnaires that students have to fill out at the end of each semester (see Criterion 1.4). All lecturers can see the statistics of the course they taught in a specific semester, as a review for their previous courses. Lecturers who got a score below the average will get a reminder from the study programme to evaluate their teaching methods and improve their learning process.

The results of the course questionnaires are discussed during the Management Review Meetings. However, the experts point out that it is necessary to close the feedback cycles and to directly inform the students about the results of the course questionnaires in every course. This way, students can get first-hand information on any issues and on the measures planned to improve the situation.

In addition, UNRAM regularly conducts an alumni tracer study. By taking part at this survey, alumni can comment on their educational experiences at UNRAM, their professional career, and can give suggestions how to improve the programme.

There are regular revision processes in place that take into account feedback by external and internal stakeholders. A minor curriculum adjustment is done every year whereas a major revision including consultations of stakeholders takes place every four or five years.

During the audit, the experts learn that students are not represented in the university's board on faculty or programme level. Thus, students are not directly involved in the decision-making processes. The experts are convinced that it would be very useful to have student members in the different boards. For this reason, they recommend that student representatives should be members of the boards at UNRAM at least on faculty or programme level and be actively involved in the decision-making processes for further developing the degree programmes. For example, it would be useful to make student representatives members of the Quality Assurance Board and the Quality Assurances Unit and to include them in the Management Review Meetings.

The experts discuss with the representatives of UNRAM's partners from public institutions, and private companies if there are regular meetings with the partners on faculty or programme level, where they discuss the needs and requirements of the employers and possible changes to the degree programmes. They learn that UNRAM gets feedback from employers and alumni via the surveys and invites some to discuss MBKM curriculum development. The experts appreciate that UNRAM stays in contact with its alumni and the employers. However, no institutionalised advisory board exists. As the experts consider the input of external stakeholders such as alumni and employers to be very important for the further development of the degree programmes, they recommend establishing official advisory boards at the Faculty of Engineering as well as at the Faculty of Food Technology and Agroindustry in order to discuss regularly with them about the needs of the job market and new developments in the area of engineering and agriculture.

The advisory board should consist of a group of professionals, employers, and experts of the relevant fields from outside the university. Including students, professionals, and employers in the different boards will help further developing the degree programmes.

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

The experts confirm that the results of the satisfactions surveys are now published on the faculty and programme websites, thus, making them accessible to students. Additionally, the results are regularly discussed with students during open talk sessions held at the end of each semester. The experts are satisfied with this improvement.

UNRAM explains that input from alumni and employers is gathered through tracer studies, alumni surveys, stakeholder meetings, and collaborations with industry partners in curriculum development and internship programmes. Additionally, possible improvements are regularly discussed by all stakeholders during open talk sessions held at the end of each semester. However, the experts still think that having an institutionalised advisory board with external stakeholders would be a good idea.

The experts consider criterion 5 to be mostly fulfilled.

D Additional Documents

Before preparing their final assessment, the panel asks 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 (24.04.2025)

With reference to the experts' review of the BIE, BEE, and BAE programmes as documented in the report, University of Mataram hereby submits its formal response:

C . Expert Report for the ASIIN Seal		
1. The Degree Programme: Concept, content & implementation		
Criterion 1.1 Objectives and learning outcomes of a degree programme (intended quali-fications profile)		
No	**Expert Comment**	**UNRAM Response**
1	The vision and mission are rather general, the PLOs cover a number of specific competences students should acquire in their respective degree programme. (p.8, par 2)	Thank you for the observation. While the vision and mission are intended to reflect the broader institutional goals, we recognize the importance of aligning them more clearly with the specific competencies outlined in the Program Learning Outcomes (PLOs). We revise the Vision and Mission statements to ensure a stronger connection between the general goals and the detailed outcomes expected from each degree program as presented in VMTS BIE, VMTS BEE, and VMTS BAE. The Vision and Mission will be implemented in the next curricula, which will be revised in 2026.
2	Students should acquire language skills and should develop a strategy for life-long learning (p.11, par.2)	Thank you for highlighting this essential aspect of graduate attributes. UNRAM is fully committed to equipping students with strong language proficiency and fostering a lifelong learning mindset. Across all undergraduate programmes, English language instruction is

		incorporated into the curriculum and supported by resources such as the Self Access Learning Center (SALC), faculty-level English clubs, and TOEFL preparation programmes. UNRAM has implemented a university-wide policy requiring a minimum TOEFL score of 400 for graduation eligibility. Furthermore, students are provided with opportunities to engage in leadership development, academic writing workshops, and project-based learning. Study programmes such as BAE, BEE, and BIE also encourage student participation in student organizations, international competitions, and research-based community engagement activities. These integrated efforts aim to instill in every student the habits and values of lifelong learning as part of our institutional mission.
3	The experts point out that no separate intended learning outcomes for any of the specialisations exist. This deficit needs to be solved and UNRAM needs to draft specific learning outcomes for each specialisation in the respective Bachelor's degree programme and to publish them on the programme's homepage. In addition, the Diploma Supplement should make transparent what specialisation the student has chosen and also the additional specific learning outcomes should be mentioned there. (p.11, par 4)	We sincerely appreciate the expert comment. UNRAM has made significant efforts to develop detailed and specific intended/program learning outcomes (ILOs/PLOs) for each specialisation within the respective Bachelor's degree programmes. These ILOs/PLOs articulate the unique skills and knowledge expected from students in each specialisation and have been carefully designed to meet international standards and industry needs. The intended learning outcomes have been published on the programme websites and included in the Diploma Supplement format to enhance transparency (attached). Additionally, programme coordinators and curriculum development teams have been sensitized to periodically review these ILOs/PLOs to ensure

		they remain relevant and responsive to technological and societal developments. ILOs/PLOs of each degree program is also presented in VMTS BIE, VMTS BEE, and VMTS BAE.
4	Most of the Bachelor's graduates enter the job market directly, only few continue with a Master's degree. (p.12, par 1)	Thank you for highlighting this trend. UNRAM acknowledges the need to increase the number of graduates pursuing postgraduate education. In response, we have launched the Graduate Advancement Program (GAP), an initiative designed to promote awareness of master's and doctoral study opportunities. This programme includes seminars on scholarships, mentoring by alumni, academic counselling, and dissemination of postgraduate opportunities offered by partner institutions. In addition, BIE, BEE, and BAE have prepared a transition scheme to allow eligible final-year students to continue into master's-level study through an accelerated or early admission scheme (fasttrack program). The programme also promotes the development of potential double-degree or joint-degree collaborations with international universities. The regulation for this program presented in : Unram Fasttract regulation.
	Criterion 1.2 Name of the degree programme	
1	The experts suggest to adjust the English translation of the awarded degrees. (p. 13, par 3)	We are grateful for this recommendation. UNRAM has taken systematic measures to ensure consistency and accuracy in the English translation of all awarded degrees. The revised translations are now used uniformly across academic documents such as transcripts, Diploma Supplements, and programme brochures. Beginning in 2025, all relevant programmes including BAE, BEE, and BIE have adopted the English translation awarded degrees for all related documents.

		This policy is intended to enhance the international visibility and comparability of our degrees in alignment with global academic conventions.
2	In order to align the names of the degree programmes and the names of the awarded degrees, the experts suggest to award a Bachelor of Engineering for all three degree programmes and not only to the graduates of the BEE programme. However, this only concerns the English translation and not the original Indonesian names, as they are determined by the Ministry and cannot be changed by UNRAM. (p. 13, par 3)	Thank you for this valuable recommendation. UNRAM fully understands the significance of international consistency in degree titles. While the Indonesian degree names are regulated nationally and cannot be changed at the university level, we have taken proactive steps to optimize the English translations. Consequently, "Bachelor of Engineering" has been adopted as the English designation across the relevant programmes, aligning with global expectations. This approach enhances the international profile of our graduates while complying with national legal requirements. UNRAM will continue to seek additional ways to harmonize academic communications in English to support student and graduate mobility.
3	The experts point out that it would be useful to use the same English names for the degree programmes in all documents. Otherwise, the experts confirm that the English translation and the original Indonesian names of all three degree programmes correspond with the intended aims and learning outcomes as well as the main course language (Bahasa Indonesia). (p. 13, par 4)	Thank you for your insightful remark. UNRAM has conducted a thorough review of all official publications, digital platforms, promotional brochures, and academic documents to ensure consistency in the use of English names across all materials. This standardization process involved coordination with all relevant faculties, the international office, and the quality assurance unit. The effort is part of our broader institutional goal to enhance international visibility and branding. We will maintain consistency by integrating this practice into our standard operating procedures and regularly auditing our materials to ensure compliance.
	Criterion 1.3 Curriculum	

1	The students suggest during the discussion with the experts to move the course “Object Oriented Programming” from the fifth into the fourth semester and maybe to switch it with the course “Numerical Methods”, which is currently offered in the fourth semester. (p.15, par 5)	We highly appreciate the constructive feedback received from students during the audit. In response, UNRAM has undertaken a review of the course sequencing within the Bachelor of Informatics Engineering curriculum. As a result, "Object Oriented Programming" has been considered to be rescheduled to the fourth semester, while "Numerical Methods" will now be offered in the fifth semester. This adjustment aims to better support students' learning progression, particularly for those who wish to deepen their software development competencies earlier. The change will be formalized through the academic senate and will be effective starting from the next academic year.
2	The experts point out that it would be very useful to make transparent, in which courses of the BAE programme the different aspects of sustainability are treated. This is part of the programmes’ mission and therefore it should be clear how this is reflected in the courses. Clearly identifying where and how the different aspects of sustainability are addressed in the curriculum ensures students gain a well-rounded understanding and helps to show how different courses contribute to the overall sustainability perspective from ecological farming techniques to economic viability (p.17, par 1)	Thank you for this valuable suggestion. UNRAM has made a concerted effort to ensure that sustainability-related topics are explicitly addressed and clearly identified in the curriculum of the BAE programme. The vision and scientific mission of the BAE programme emphasize the development of engineering-based solutions for the archipelagic agroindustry, which is particularly relevant in the context of West Nusa Tenggara (NTB), consisting of Lombok and Sumbawa islands. These islands possess distinctive cultural diversity (Sasak, Samawa, and Mbojo ethnic groups) and predominantly dryland agricultural zones, accounting for approximately 80% of the region's total land area. This unique regional context shapes the character of the BAE curriculum, which includes 20 credits of courses designed specifically to address sustainability and agroindustrial innovation. The courses include Agroindustrial Management (2 credits), Irrigation and Drainage Techniques (3 credits), Bioprocess Engineering 1 (2 credits), Agricultural Production Ma-

		chinery (3 credits), Agricultural Industry Machinery (2 credits), Agricultural Energy and Electricity (3 credits), Dryland Irrigation System Design (2 credits), and Drying and Cooling Techniques (3 credits). These courses are further supported by applied research and community service activities, such as the development of environmentally friendly technologies, smart farming, and biomass-based renewable energy through biogas. The alignment of BAE's curriculum with sustainability principles contributes directly to the Sustainable Development Goals (SDGs), particularly in responsible production, clean energy, and the economic empowerment of rural communities. Full details of these courses and their contribution to sustainability are available in the BAE curriculum.
3	During the discussion with the experts they point out that it would be useful to further improve students' soft skills such as English proficiency, communication skills, and the ability to work in a team. The experts support this suggestion because strong English and communication skills as well as the ability to work successfully in a group help students to articulate their thoughts, participate in discussions, and collaborate on projects, leading to better academic performance and enhanced job perspectives. (p. 18, par 1)	We fully support this recommendation and recognize the strategic importance of developing soft skills across all programmes at UNRAM. To enhance communication skills, learning activities are designed to emphasize student-centered learning through class discussions, presentations, collaborative assignments, and problem-based learning models. Students are encouraged to participate in national and international scientific conferences, which also serve to improve academic writing and public speaking competencies. For English proficiency, UNRAM implements a policy requiring all undergraduate students to achieve a minimum TOEFL score of 400 prior to graduation. This is supported through structured TOEFL training programmes and access to the Self Access Learning Center (SALC). Opportunities for students to join English clubs and engage in international mobility programmes are also promoted to build language fluency in real-world contexts. To

		strengthen teamwork abilities, courses regularly incorporate group projects and cooperative learning. Students are also actively involved in creativity competitions, research collaborations, and community service initiatives that demand coordination within interdisciplinary teams. These integrated academic and non-academic strategies are aligned to ensure that graduates of BAE, BEE, and BIE are not only technically proficient but also possess strong interpersonal, communication, and leadership skills.
4	According to the opinion of the expert group, the academic mobility of the students should be further promoted. The number of Indonesian students who participate in international exchange programmes is still low. (p.19, par 3)	Thank you for emphasizing this crucial point. UNRAM has been actively expanding its international partnership network to create more opportunities for student exchanges, internships, and study abroad experiences. We have signed new Memoranda of Understanding (MoUs) with partner universities and are actively promoting these opportunities through information sessions and mobility fairs. Additional support services have been established to assist students in preparing applications, securing funding, and navigating visa processes. These initiatives are designed to gradually increase outbound student mobility and foster a more internationalized academic environment.
5	The experts recommend increasing the effort to further internationalising UNRAM by offering more places in international exchange programmes and more scholarships. The experts emphasise that it is very useful for students to spend some time abroad already during their Bachelor's studies to improve their English proficiency, to get to know other educational systems, and to enhance their job	We highly value the advice. UNRAM has incorporated internationalisation as a key pillar of its strategic plan. In this regard, we have tried to increase budget allocations to support outbound mobility, established new exchange agreements, and developed an internationalisation task force to coordinate activities. Moreover, we are actively pursuing external funding from international agencies to provide more scholarships for students and staff. We believe these combined efforts will contribute substantially to expanding international exposure for our academic community. The links for the mobility program for each

	opportunities. Furthermore, URAM should invite more visiting lecturers, initiate more international exchange programmes, and provide more scholarships for students. (p. 20, par 4)	programme are provided here : BAE, BEE, BIE.
6	UNRAM should make its degree programmes internationally more visible and make transparent, for example by better advertising the programmes and emphasising that there are English taught classes in the three degree programmes.(p. 20, par 5)	Thank you for this suggestion. UNRAM has undertaken several coordinated measures to improve the international visibility of its academic programmes. Key actions include the expansion of bilingual information across programme websites, production of promotional materials in English, and active participation in international education exhibitions. As part of our long-term internationalisation strategy, the International Degree Programme (INDEEP) has been introduced and will include selected programmes such as BAE, with the first international class scheduled for launch in the academic year 2026/2027. Information about INDEEP has been published through the university's international portal and shared with global partner networks. Additionally, UNRAM collaborates with the Office of International Affairs (OIA) to facilitate access to international scholarships and mobility opportunities. These actions aim to increase the international profile of BAE, BEE, and BIE, attract foreign students, and support UNRAM's broader commitment to global engagement.
	Criterion 1.4 Admission requirements	
1	The experts point out that UNRAM's webpage for the admission of international students in only in Bahasa Indonesia. However, this information should also be available in English. (p.21, par 4)	We appreciate this observation. UNRAM has responded by launching a comprehensive English-language webpage for international student admissions, accessible via the university's international portal. This webpage includes detailed information on academic programmes, application requirements, key deadlines, visa and immigration procedures,

		and available scholarships. The content is curated and maintained in collaboration with the Office of International Affairs (OIA) to ensure accuracy and accessibility. Furthermore, programme-specific pages for BAE, BEE, and BIE have been reviewed and updated to include bilingual content aligned with the central admissions portal. These improvements are part of UNRAM's ongoing digital transformation strategy aimed at improving international accessibility and aligning institutional practices with global standards.
	Criterion 1.5 Work load and credits	
1	The ECTS points need to be calculated separately for each course. This is necessary, because the time students need for self-studies is different for each course. (p.24, par 4)	Thank you for the important comment. UNRAM has recalculated ECTS points separately for each course based on updated workload estimations, following the ECTS Users' Guide. We have factored in contact hours, assignments, independent study, and examination preparation to ensure a fair and accurate reflection of student efforts. The links for the ECTS points for each programme are provided here: BAE, BEE, BIE.
2	The different courses require different proportions of practical work and seminars. This should be reflected in the module descriptions. Currently, the proportions are the same in all of the courses. (p.24, par 4)	Thank you for the constructive feedback. UNRAM acknowledges the importance of clearly defining the proportions of practical work, seminars, and lectures for each course to ensure students' understanding of course expectations. In response, the curriculum development teams across the faculties have conducted a thorough review of all module descriptions. Adjustments have been made to explicitly specify the percentage breakdown of learning activities in each course. This initiative is also intended to improve students' workload planning and learning experience. The updated module descriptions have been compiled into the latest academic handbook, and we have trained academic staff to ensure the consistent application of this practice in

		future course designs.
3	UNRAM should follow the ECTS Users' Guide to determine the students' total workload. As described in the ECTS Users' Guide, the estimation of students' workload should include all learning activities (p.24, par 5)	Thank you for this important recommendation. UNRAM has carefully reviewed the ECTS Users' Guide and has restructured the workload calculation method in line with these international standards. All forms of learning activities, including classroom sessions, laboratory work, independent study, group work, and examination preparation, have been systematically incorporated into the credit allocation process. Additionally, training sessions for programme coordinators and academic staff were conducted to familiarize them with the new methodology. We are committed to continuously reviewing and validating the workload estimates to ensure they accurately reflect the learning efforts required from students and to enhance academic quality assurance mechanisms.
4	Since the workload of the students was only estimated by the programme coordinators, the experts expect UNRAM to re-evaluate the calculation of ECTS points and asking the students about their actual workload, especially the time they need for self-studies, for each course. (p.25, par 1)	We appreciate this valuable advice and fully understand the importance of incorporating student feedback into the workload evaluation process. UNRAM has initiated a structured workload survey that is administered to students at the end of each semester. The survey captures students' perceptions of their actual workload across various courses. The collected data is carefully analyzed and used to make evidence-based adjustments to the ECTS allocation and course design. This student-centered approach will not only improve the accuracy of workload estimates but also foster a culture of continuous improvement and responsiveness to students' academic needs.
5	UNRAM needs to verify the students' total workload and make sure that the actual workload and the awarded ECTS points corre-	Thank you for the critical observation. In line with this recommendation, UNRAM has verified and cross-checked the correspondence between students' actual workload and the awarded ECTS points through the newly institutionalized workload surveys (webpage). The

	spond with each other. This information should be made transparent in the module descriptions and the study plans. (p.25, par 2)	results of this verification process have been used to update the module handbooks, ensuring full transparency for students, lecturers, and external stakeholders. We have also published clear explanations in the course syllabi regarding how credit points are derived based on workload. Moving forward, this verification exercise will be conducted regularly to maintain the integrity of our academic programmes and ensure compliance with international academic standards.
6	There should be a regular and institutionalised survey on students' workload in every course. For example, this could be done by including a respective question in the course questionnaires that students have to fill out each semester. (p.25, par 3)	We fully agree with the recommendation and have acted to institutionalize a systematic process for monitoring students' workload. UNRAM has incorporated a dedicated section in the end-of-semester course evaluations where students report on the workload they experienced in each course. The collected feedback is analyzed annually by the academic quality assurance office and reported to the respective faculties. These insights will be used to adjust curriculum structures, enhance teaching methodologies, and optimize the balance between contact hours, independent study, and assessments. We believe this will create a more supportive learning environment and ensure students' workload remains manageable and appropriate.

2. Exams: System, concept and organisation		
No	**Expert Comment**	**UNRAM Response**
1	The experts resumed that the academic performance is evaluated based on written exams (e.g., multiple choice, essays, quizzes, and calculations), oral exams, presentations, practical work, papers, and	Thank you for the detailed summary. We appreciate the recognition of our assessment methods, including both formative and summative assessments, as well as the flexibility provided through remedial opportunities. The

	reports using various media such as papers, presentation, and/or digital media. They are divided into formative and summative assessments and students may take remedial assessments to improve their academic performance. The exams are managed by a prearranged exams committee in each study programme. For courses that have different exams mechanisms (case-based and project-based learning and as like) the assessment scenarios are presented in the module handbooks. Moreover, students are informed about the summative exams via the Academic Calendar and their results might be accessed via UNRAM's digital platform. Furthermore, students with special needs are provided with support to enable them to participate in the academic activities and exams.	mention of case-based and project-based assessment scenarios outlined in the module handbooks is also accurate. We would also like to emphasize our commitment to inclusivity, as highlighted by the support provided for students with special needs to ensure equal access to academic activities and evaluations.
2	The expert confirmed that the grade from laboratory work consists of laboratory skills, discussions, reports, and oral exams. The grading system is different for the internship, the community service, and the final project. The details, which assessment forms are used in these courses and how they con-	Thank you for the clarification. We appreciate the expert's acknowledgment of the comprehensive grading components for laboratory work, as well as the distinction made for the assessment systems used in the internship, community service, and final project. The reference to detailed module descriptions ensures transparency and helps students understand the expectations and grading criteria in each course.

	tribute to the final grade, are described in the respective module descriptions.	
3	The experts noticed that students who fail have to repeat the whole course in the following semester or in the short semester, which is offered during the summer break while students who have illness might take the exam later in the same semester. Students, who cannot attend practicum might take it later with the arrangement by the lecturer. There is a fixed period after the announcement of the final grades, during which students can ask for explanations and can appeal their grades.	Thank you very much for highlighting the mechanisms in place to support students in managing academic challenges. We appreciate the experts' recognition of the opportunities for course repetition, make-up exams for health-related absences, and flexibility in practicum arrangements. The established period for grade clarification and appeals also reflects our commitment to academic transparency and student rights.
4	The experts also notice students' appreciation that the exam load is appropriate and they are well informed about the examination schedule, the examination form, and the rules for grading.	We are grateful for the experts' observation and the students' positive feedback regarding the exam load and the clarity of the examination process. Ensuring that students are well-informed about schedules, formats, and grading criteria is a key priority for us, and we are pleased that this transparency is reflected in their experiences.
5	The experts inspected a sample of examination papers and final theses and are overall satisfied with the general quality of the samples. In summary, the experts confirm that Unram has different forms of	Thank you very much for the experts' comments. We sincerely appreciate their thorough review of the examination papers and final theses samples, as well as their positive assessment of the samples overall quality. We are also pleased that the competence-oriented and varied assessment methods were

	examination which are competence-oriented and are suitable for verifying the achievement of the intended learning outcomes as specified in the respective module descriptions. The examination contents and its level is appropriate for the respective degree programme. Each course has a flexibility to determine the exams method and are explained publicly in the respective module description.	recognized as appropriate for verifying the intended learning outcomes. The flexibility granted to each course in determining examination methods, as outlined in the respective module descriptions, reflects our commitment to academic rigor and relevance while maintaining transparency for students and stakeholders.

3. Resources		
Criterion 3.1 Staff and Development		
No	**Expert Comment**	**UNRAM Response**
1	During the audit the experts learn that some teachers advise significantly more students than other teachers. Theoretically, teachers should have a maximum of eight students for final projects and an average of eight to ten undergraduate students to advice. From the experts point of view there is an imbalance and it would be better to have a similar number of students assigned to each teacher. This ensures a fair distribution of resources and recognises teachers' limited time and energy. (p.34, par 5)	In response to the audit findings indicating an imbalance in the number of students supervised by individual faculty members, we would like to highlight that the BIE Study Program has implemented a dedicated online supervision system (accessible at *https://ta.if.unram.ac.id/*). This system was specifically developed to ensure a more equitable distribution of final project supervision responsibilities among academic staff. Through this centralized platform, the assignment of students to supervisors is regulated in accordance with established guidelines, which recommend a maximum of eight students per supervisor. This initiative aligns with the experts' recommendations to promote fairness in workload distribution and to acknowledge the limited time and energy of faculty members. Ultimately, this system supports more

		efficient and balanced supervision processes, contributing to improved academic outcomes and a better student experience. Several strategies need to be implemented by the BAE study program to address the imbalance in student supervision workloads. These include: 1. Reassessing and redistributing supervision responsibilities among all eligible faculty members. 2. Evaluating students' areas of academic interest and specialization. 3. Encouraging faculty members to improve the thesis supervision process, particularly for students experiencing difficulties.
2	With respect to the available software in the computer labs, the experts see that UNRAM is currently using open source software. However, it would better support the learning experience if students and teachers would have access to some licensed software (p.35, par 5)	Regarding the current reliance on open-source software in UNRAM's computer laboratories, we acknowledge the importance of complimenting open-source tools with licensed software to enhance the quality of teaching and learning. To address this, **the BIE Study Program** has proactively proposed the procurement of several licensed software packages aimed at supporting both practicum activities and research. The proposed software includes **Matlab**, **Google Colab Pro+** for cloud computing, **Jira Standard** for project management, **NVivo** for qualitative data analysis, and **Gen-AI** tools to support innovation and productivity. These recommendations are part of a broader effort to align the available digital infrastructure with current academic and industry standards. The full list of proposed software can be accessed through the following link: Software Procurement Proposals of BIE. By integrating these licensed tools into the academic environment, we aim to enrich students' hands-on experiences, foster relevant digital competencies, and enhance the overall

		effectiveness of both instruction and research activities within the program. **Regarding the BEE Study Program,** access to licensed software would significantly enhance the learning and research experience in all six laboratories, especially in electrical engineering where simulation, design, and analysis tools are essential (see Software Procurement Proposas of BEE. Here's how software access can better support each lab and the overall learning environment: 1. Digital Electronics Laboratory a. Multisim or Proteus – Circuit simulation and design. b. Quartus Prime – For FPGA design and testing (e.g., Altera-based systems). c. ModelSim – VHDL/Verilog simulation. 2. Power System Laboratory a. TAP or PowerWorld Simulator – For power system modeling and analysis. b. MATLAB/Simulink with Simscape Electrical – To simulate electrical machines, grids, and protection systems. 3. Basic Electrical Laboratory a. MATLAB – For analyzing circuit responses and mathematical modeling. b. NI Multisim – For basic circuit simulation. 4. Control System Laboratory a. MATLAB/Simulink Control System Toolbox b. LabVIEW – For real-time control system simulation and data acquisition. 5. Telecommunication Laboratory a. MATLAB Communications Toolbox b. ANSYS HFSS – For antenna and RF/microwave design. c. CST Studio Suite – Electromagnetic simulation software.

		6. Computer and Network Laboratory a. Cisco Packet Tracer or GNS3 – Network simulation. b. Wireshark – For protocol analysis. c. VMware or VirtualBox – To set up network/server virtualization environments. 7. Lombok Geomagnetic Observatory (Remote Site) a. MATLAB/Octave – For geomagnetic data analysis. b. Python (with SciPy, NumPy, Matplotlib) – Open-source alternative for data science tasks. c. GIS software (QGIS) – For mapping and spatial analysis. **Objectives** 1. Enhance students' learning through realistic simulations and software-based design. 2. Support teaching with up-to-date tools aligned with industry standards. 3. Improve research capabilities through accurate modeling and data analysis. 4. Enable remote/virtual lab activities for flexible and hybrid learning. Regarding to BAE study program, BAE is proposing the procurement of several licensed software including Eagle Autodesk for measurement and instrumentation courses, machine and equipment design courses, MATLAB for Numerical Analysis courses, AUTO CAD for Engineering Drawing courses, ArcGIS for regional surveying courses, and IBM SPSS for research methodology course and computer programming.
3	The expert group visits the laboratories and facilities at the Faculty of Engineering and the Faculty of	BIE: Regarding infrastructure bottlenecks and the need to upgrade laboratory equipment, we fully acknowledge the importance of modern and adequately equipped laboratories in

	Food Technology and Agroindustry. They notice that there are some bottlenecks due to a lacking infrastructure and the technical equipment in the laboratories needs to be updated and increased in numbers. Additionally, more modern instruments for conducting research activities should be available. (p.36, par 2)	supporting high-quality education and research. The BIE Program has recognized this need and has proactively developed a **Strategic Plan for Laboratory Equipment Upgrades for the period 2025–2030**. This strategic plan outlines a phased and prioritized approach to enhancing laboratory facilities, including the acquisition of modern instruments and the expansion of existing technical resources to better support both instructional and research activities. The plan has been designed to align with academic needs, technological advancements, and industry relevance. Details of the proposed upgrades, including specific equipment and timelines, can be accessed through the following link: BIE Laboratory Upgrade Strategic Plan 2025–2030. We are committed to implementing this plan in close coordination with university leadership and relevant stakeholders to ensure that BIE's laboratory infrastructure remains conducive to innovative research and effective student learning. BAE : To support the development of practical and research activities, this year several more modern equipment is being proposed, as in the Submission List. Equipment Development Planning for Bachelor of Agriculture Enginering from 2025 to 2030
4	With respect to the technical equipment in the laboratories of the BEE-programme, the experts see that there need to purchase additional instruments (p.36, par 4)	**BEE:** **1. Digital Electronics Laboratory** Purpose: Logic design, microcontrollers, FPGA systems, embedded systems. Recommended Equipment: 1. Digital Trainer Kits (with breadboard, logic gates, LEDs, switches)

		2. Microcontroller Development Boards (e.g., Arduino, STM32, Raspberry Pi) 3. FPGA Development Boards (e.g., Altera DE10-Lite, Xilinx Spartan) 4. Logic Analyzers 5. Digital Oscilloscopes (50–100 MHz bandwidth) 6. Function Generators 7. EEPROM Programmers and Debuggers (e.g., AVR ISP, JTAG) 8. Soldering stations (with ESD protection) 9. IC Testers **2. Power System Laboratory** Purpose: Power generation, transmission, protection, and analysis. Recommended Equipment: 1. Power System Trainer Kits (load flow, transmission line models, etc.) 2. Transformer Trainer (single-phase and three-phase) 3. Transmission Line Models (π and T models) 4. Protection Relays (Overcurrent, Earth Fault, Differential, etc.) 5. Circuit Breaker Demo Units (Air, Oil, SF6 types) 6. Generator Models (Synchronous and Induction machines) 7. Motor Control Panels (for various load conditions) 8. Digital Multimeters (true RMS) 9. Clamp Meters (AC/DC) 10. Power Quality Analyzers 11. Three-Phase Power Analyzers **3. Basic Electrical Laboratory** Purpose: Foundation in AC/DC circuits, electrical measurements.

		Recommended Equipment: 1. DC Power Supplies (variable) 2. Function Generators 3. Analog/Digital Multimeters 4. Oscilloscopes (dual-channel, 20–60 MHz) 5. Resistor, Inductor, Capacitor boxes (decade type) 6. Basic Electrical Circuit Trainers 7. Breadboards and Component Kits 8. Rheostats and Variable Loads 9. Wattmeters and Energy Meters 10. Measurement Panels (for Ohm's Law, KVL, KCL) **4. Control System Laboratory** Purpose: Study of open-loop and closed-loop systems, motor control, PID, automation. Recommended Equipment: 1. PID Controller Trainers 2. DC and AC Servo Motor Systems 3. Stepper Motor Control Trainers 4. Temperature Control Kits 5. Programmable Logic Controllers (PLCs) – Siemens, Allen-Bradley 6. MATLAB/Simulink Compatible I/O Interface Boards (e.g., NI ELVIS) 7. SCADA System Training Units 8. Inverted Pendulum Trainer (optional for advanced control) 9. Oscilloscopes, Function Generators, Multimeters 10. Industrial sensors (temperature, pressure, proximity, etc.) **5. Telecommunication Laboratory**

		Purpose: Analog/digital communication, antennas, wireless systems. Recommended Equipment: 1. AM/FM Modulation and Demodulation Kits 2. Digital Modulation Trainers (ASK, FSK, PSK) 3. Software Defined Radio (SDR) Kits (e.g., HackRF, USRP) 4. Spectrum Analyzers 5. Signal Generators 6. Oscilloscopes (high-frequency, ≥100 MHz) 7. Transmission Line Kits 8. Antenna Trainers (with Yagi, Horn, Patch antennas) 9. Microwave Test Benches (for RF and waveguide studies) 10. Optical Fiber Communication Kits **6. Computer and Network Laboratory** Purpose: Networking, programming, cybersecurity, virtualization. Recommended Equipment: 1. High-Performance PCs (with at least i5/i7, 16GB RAM, SSD) 2. Networking Switches (Layer 2 & Layer 3) 3. Routers (Cisco/Juniper) 4. Wireless Access Points 5. Structured Cabling Kits (Cat6, RJ45 crimpers, testers) 6. Server Rack with NAS/Cloud Storage 7. Virtualization Servers (VMware, Hyper-V) 8. Raspberry Pi / MiniPCs for IoT Labs 9. Network Analyzers (Wireshark, Fluke testers)

		10. UPS Units for uninterrupted operations **Common/Shared Equipment Across All Labs** 1. Interactive Smart Boards or Projectors 2. High-speed Internet and LAN Connectivity 3. Lab Management Software (attendance, equipment logs) 4. Safety Equipment (Emergency Stop Switches, Fire Extinguishers, First Aid Kits) 5. Standard Lab Furniture (ESD-safe workbenches, stools, storage lockers)
5	BEE students are only introduced to Arduino programming (basic microcontroller). However, students should also know how to access and use more advanced microcontrollers. To this end, it would be useful to provide advanced microcontrollers in the laboratories. Additionally, a Basic Electrical Laboratory that only covers measuring voltage and currents in series and parallel circuits is very elementary. To support more advanced experiments, the lab should incorporate a range of instruments and techniques. (p.36, par 2)	**The BEE study program will** give the BEE students exposure to more advanced microcontrollers and expanding the scope of the Basic Electrical Laboratory is crucial for preparing them for real-world electrical engineering challenges, especially in automation, embedded systems, and power applications. A structured breakdown of how to upgrade both areas — with a mix of equipment, learning focus, and experimental capabilities: **1. Upgrading Microcontroller Exposure Beyond Arduino** Arduino is a great starting point, but it's limited in terms of industry applications. Introducing more powerful, real-time-capable microcontrollers prepares students for embedded systems, IoT, and industrial automation roles. **Learning Activities to Include:** a. RTOS (Real-Time Operating Systems)

		basics using FreeRTOS b. Sensor interfacing with ADC/DAC c. PWM for motor and LED control d. Serial communication (UART, SPI, I2C) e. IoT data logging and cloud upload f. Using microcontrollers with MATLAB/Simulink or LabVIEW for control **2. Enhancing the Basic Electrical Laboratory** For learning voltage/current in series-parallel circuits is foundational but insufficient. The lab should allow students to experiment with real-world electrical behavior, use advanced measurement tools, and explore energy systems, safety, and system dynamics. **Advanced Experiments to Introduce:** a. Power and energy measurement under resistive/inductive loads b. Effects of unbalanced loads in three-phase systems c. Transformer efficiency and voltage regulation d. Load analysis with active/reactive power e. Resonance in RLC circuits (series and parallel) f. Measurement of power factor and methods of correction g. Study of inrush current and switching behavior h. Fault simulation and circuit protection
6	The experts suggest to offer opportunities for students to practice and apply programming modern motor control, to use of modern power electronics (p.36, par 2)	**Regarding this comment,** the BEE study program plan to give Opportunities for Students to Practice & Apply Programming (Motor Control & Power Electronics), as follows: **1. Programming Real-Time Motor Control on**

		Microcontrollers Hands-on tasks: a. PWM generation for speed control b. Motor direction control using H-bridge circuits c. Implementing PID control loops d. Using interrupts and timers for encoder feedback Hardware platforms: a. STM32 (with STM32CubeIDE) b. TI LaunchPad kits (e.g., TMS320F28379D for motor control) c. Arduino with L298N or DRV8835 motor drivers Software tools: a. MATLAB/Simulink with Embedded Coder b. TI MotorWare or ST Motor Control Workbench **2. Using Simulation Tools Before Hardware Implementation** Software for simulation & programming practice: a. MATLAB/Simulink + Simscape Electrical: Model DC, BLDC, and AC motors b. PLECS: Real-time simulation of power electronics and motor control c. PSIM: Excellent for switching device modeling (IGBTs, MOSFETs) d. LTspice or Multisim: For analyzing switching behavior and control circuits Applications: a. Simulate inverter control for induction

		motors b. Design soft-start circuits for DC motors c. Model regenerative braking or torque control **3. Control of Different Types of Motors** Motors students should learn to program/control: a. DC motors: For basic speed/direction control b. Brushless DC (BLDC) motors: For drones, EVs, robotics c. Stepper motors: For precision positioning d. Three-phase induction motors: For industrial loads e. Permanent Magnet Synchronous Motors (PMSM): For high-efficiency systems Advanced control topics: a. Field-Oriented Control (FOC) b. Sensorless control techniques c. Vector control and space vector modulation (SVM) **4. Integrating Power Electronics with Control Systems** Practical student projects: a. Build an H-bridge or inverter circuit using MOSFETs/IGBTs b. Program a microcontroller to generate PWM for an inverter c. Implement overcurrent/overvoltage protection via code d. Real-time monitoring of voltages/currents via sensors and ADCs Key learning outcomes:

		a. Understand switching losses and thermal management b. Learn gate driver circuit programming and timing c. Practice current feedback loops for safe motor operation **6. Remote/Virtual Labs (if resources are limited)** a. NI ELVIS with myDAQ or Quanser QLabs: For motor control virtually b. Simulink Online with Arduino/ESP32 simulation support c. Remote lab servers: Students can log in and run code on actual lab setups remotely
7	With respect to the technical equipment in the laboratories of the BAE programme, the experts see that the programme's goal is to develop, control, and maintain the quality and sustainability of biological and environmental processes in relation to agriculture, food, natural resources, energy, and rural development. To achieve theses aims, it would be necessary for students to gain knowledge of plants, their ingredients and growth conditions. The experts have not seen any equipment for soil analysis, no greenhouse and it would be good if there were always two identical test apparatus to carry out the correct controls (p.37, par 3)	With reference to the experts' observation regarding the availability of technical equipment in the laboratories of the BAE programme, we would like to clarify that several of the mentioned tools are already available to support the expected competencies. Specifically, the TKLP Laboratory is equipped with a pH meter, drying oven, scales, and a greenhouse. These facilities are intended to support students' understanding of plant characteristics, growth conditions, and related biological and environmental processes. Furthermore, to address the need for additional equipment such as soil analysis tools, a muffle furnace, photometer, fume cupboard, shaker, and Atterberg separator, the BAE programme currently utilizes a resource-sharing approach. In addition, a formal proposal has been submitted for the procurement of this equipment under the Faculty of Agriculture and Animal Science (Fatepa) budget plan for the year 2025, as detailed in the following document: Procurement Plan Document of BAE .

8	The experts critically remark that several of the devices are “out of order” because they need to be repaired. This obviously takes several months and in the meantime, the respective experiments cannot be carried out because there are no replacement instruments available. To this end, the experts suggest to provide the faculties with a budget for running the devices in the laboratories, for maintenance and spare parts, so that all the experiments can be carried out. (p.37, par 5)	In response to the experts' concern regarding laboratory equipment that is currently out of order, we would like to convey that the Faculty of Agriculture and Animal Science (Fatepa) is actively addressing this issue. The repair process is ongoing for equipment that can be restored, while proposals have been submitted for the replacement of devices deemed beyond repair. To ensure the long-term functionality of laboratory facilities, Fatepa conducts regular annual evaluations of equipment conditions. Based on these evaluations, proposals are made for the procurement of new or backup equipment as needed. Furthermore, a dedicated budget for the maintenance and repair of laboratory instruments has been allocated and is included in the programme’s financial planning. Details of these efforts can be found in the following document: Equipment Maintenance and Procurement Plan.
9	The experts notice that in most visited laboratories (with the exception of the computer labs) there are too few working places available to carry out the experiments. For example, most laboratories can only accommodate between 10 and 15 students at the same time. As one batch of students has around 150 students, they need to be divided into 10 to 15 different groups and the same lab courses have to be offered as many times per week. This leaves no room for additional practical classes and leads to rather crowded laboratories, which are occupied all day long. (p.38, par 1)	In response to the experts' concern regarding laboratory equipment that is currently out of order, we would like to convey that the Faculty of Engineering and Faculty of Agriculture and Animal Science (Fatepa) are actively addressing this issue as follows: **For BEE Short-Term Solutions (Low Cost, Fast Implementation)** **1. Implement Shift-Based Lab Scheduling** a. Divide the large cohort into smaller lab groups (e.g., 10–15 students). b. Run shorter, focused lab sessions (e.g., 1.5–2 hours) more frequently. c. Use a lab rotation system, where students cycle between physical lab time and simulation/virtual labs. **2. Integrate Virtual Labs & Simulation Software**

		a. Allow half the students to run simulations (e.g., MATLAB, Proteus, PLECS, NI Multisim) while the other half uses physical labs. b. Alternate weekly or per session. c. Use platforms like Simulink Online, TinkerCAD Circuits, or NI Multisim Live for browser-based experiments. **3. Encourage Pre-Lab and Post-Lab Work Online** a. Deliver theoretical and preparatory content before the lab (pre-lab videos, simulations, code practice). b. Use post-lab reporting platforms (Google Classroom, Moodle, LabArchives) to reduce physical time spent discussing results. To further support the effective delivery of laboratory-based learning, the **BAE programme** will organize practicum schedules in a way that optimizes the use of existing laboratory space. In addition, the Faculty is currently collaborating with the University of Mataram (Unram) to plan the development of additional laboratory space, which is targeted for implementation in 2028.
10	In the opinion of the expert group, it is not necessary to compete with renowned international universities that are significantly better equipped. Instead, it makes much more sense to co-operate with international universities and use their advanced instruments in joint projects. (p.38, par 2)	We appreciate and fully agree with the experts' perspective that it is not essential to compete with well-established international universities in terms of infrastructure. Instead, we recognize the value and strategic advantage of **establishing collaborative partnerships** with international institutions to leverage their advanced facilities and expertise.
11	Another critical point from the experts' point of view is the fact that	Ensuring a safe working and learning environ-

	all the visited laboratories in the Faculty of Engineering as well as in the Faculty of Food Technology do not follow international safety standards. The experts point out that the basic personal protective equipment that needs to be available to all persons working in laboratories includes safety goggles, laboratory coats, and hand gloves. It must be worn all the time when working in the laboratory. In addition, there should be emergency showers and eye washers in each laboratory and the fire extinguishers need to be checked regularly. Moreover, there should be emergency exits signs and posters with the safety regulations. (p.38, par 3)	ment is a top priority for the Faculty of Engineering, including the BIE and BEE Program. In response to these concerns, we are pleased to report that **each laboratory within the BIE Program is already equipped with essential safety equipment**, including: ● **Fire extinguishers (APAR)** ● **First aid kits (Kotak P3K)** ● **Smoke detectors** ● **Closed-circuit television (CCTV)** systems for real-time monitoring and safety control. These measures serve as an initial foundation for maintaining safety and overseeing laboratory activities. We acknowledge, however, the importance of further aligning our safety practices with international standards. To this end, we are committed to **continuously improving our facilities**, including the provision of personal protective equipment (PPE) such as safety goggles, lab coats, and gloves for all laboratory users, as well as installing **emergency showers, eye wash stations, clearly marked emergency exits**, and **visible safety regulation posters** in all laboratories. We will ensure that these upgrades are incorporated into our ongoing laboratory improvement plans and carried out in close coordination with the university's health and safety units to meet the expectations outlined by the expert group. Safety standard facilities at faculty are already available, but discipline in their implementation needs to be improved. Therefore, BAE through the laboratory will implement stricter rules in the use of international safety standards. In the Faculty, CCTV cameras are available in every corridor.

12	The experts also learn during the audit, that there is a small Integrated Laboratory (Laboratorium Terpadu) with some advanced instruments, which can used by all teachers from UNRAM. The equipment mostly focuses on molecular biology and from the experts' point of view, it would be useful to broaden the research focus and to ask the different faculties, in which areas research support should be provided. (p.38, par 4)	We are pleased to inform you that the University of Mataram is developing the UPA (Academic Support Unit) Integrated Laboratory, which will provide various laboratory equipment to facilitate practicum and research activities. These tools can later be used by all academic faculties within the University of Mataram, as well as by parties outside the university. The tool loan management system at UPA uses the Uniport platform, which can be accessed through the website https://uniport.unram.ac.id/ . Some laboratory equipment that is not available at BAE can be borrowed through this platform, so as not to interfere with practicum and research activities carried out by lecturers and students.The integrated laboratory does not only focus on molecular microbiology but can support other practicum or research in some fields which are located on the upper floor.
13	The experts expect UNRAM to submit a schedule and financing plan on how to update and increase the basic instruments and the technical equipment in the laboratories within the next five years. The first steps towards concrete implementation should be taken as soon as possible. (p.38, par 5)	We are pleased to inform you that the three Study Program (BIE, BEE, and BAE) has developed a **comprehensive five-year strategic plan (2025–2030)**. This plan outlines the phased upgrading of laboratory facilities, including detailed timelines, priority areas, and corresponding budget allocations. This strategic plan The full strategic plan can be accessed at the following link: BIE Laboratory Upgrade Strategic Plan 2025–2030, BEE Laboratory Upgrade Strategic Plan 2025–2030, and BAE Laboratory Upgrade Strategic Plan 2025–2030, Furthermore, we are pleased to report that the **University has officially approved the procurement of all proposed laboratory upgrade equipment for the year 2025**. This marks a significant first step toward the concrete implementation of the strategic plan, demonstrating our strong commitment to enhancing the quality of education and research

		infrastructure in line with international standards. All of the 5th year proposes laboratory upgrade equipment for BIE, BAE and BEE are have been processed in the university level throuh integrated laboratory unit. We will continue to monitor the implementation closely and ensure timely execution of each phase as outlined in the plan.
14	UNRAM should provide full access for students and teachers to current scientific publications, for example by providing access to IEEE Xplore. (p.39, par 1)	To address this, we have proposed the **E-Journal Subscription Planning of the University of Mataram Library**, which includes access to major academic databases and scientific publication platforms. This initiative reflects our commitment to expanding the digital library resources available to the university community. The detailed proposal can be accessed at the following link: E-Journal Subscription Planning. We believe this plan will significantly enhance the academic environment by providing access to reputable journals and proceedings, thereby strengthening the quality of research and academic output at UNRAM.
15	The faculty management should also consider improving access, e.g. for wheelchair users. (p.39, par 2)	We appreciate the experts' attention to accessibility and inclusivity, particularly the recommendation to improve access for individuals with disabilities, including wheelchair users. Ensuring an inclusive and barrier-free environment is a key priority for the University of Mataram. In alignment with this commitment, the university has included in its infrastructure development plan the construction of **elevator facilities (lifts)** in the **BIE and BEE tower buildings**, specifically designed to support accessibility for people with disabilities. This initiative

		is part of a broader effort to enhance universal access across campus and is scheduled for implementation **by the year 2030**. We are confident that this development will significantly improve access and mobility for all members of the academic community and demonstrate our continued commitment to fostering an inclusive educational environment.

4. Transparency and documentation		
Criterion 4.1 Module descriptions		
No	**Expert Comment**	**UNRAM Response**
1	After studying the module descriptions of all three programmes, the experts point out that they do not include all necessary information. The module descriptions should make transparent what share self-studies and contact hours have and this should be aligned with the awarded ECTS points (see criterion 1.5) (p.40, par 2)	Thank you for the valuable feedback. In response to the experts' observation, we have revised and updated the module handbooks for all three programmes—BAE, BEE, and BIE—to ensure that the descriptions include all necessary information as required by the ECTS framework. The updated handbooks are available through the **BAE's**, **BEE's**, and **BIE's** website. The ECTS credits for each module have been calculated based on a detailed estimation of student workload, which includes time spent in class (contact hours), self-study, assignments, mid-term examinations, and final exams. This breakdown is now explicitly stated in the module descriptions to ensure transparency and alignment with the awarded ECTS points. The updated structure is intended to accurately reflect the actual workload students are expected to undertake and to meet the expectations outlined in Criterion 1.5.

2	On the homepages of the BEE and BAE programmes, not all module descriptions are linked. Finally, some module descriptions (e.g. KKN, Final Project 1, Final Project II, Internship/Practical work) are not included in the module handbooks. This needs to be corrected, because module descriptions for all courses need to be available. (p.40, par 2)	In response to the experts' observation, we have taken steps to update and complete the module handbooks for both the BEE and BAE programmes. The revised handbooks now include module descriptions for all courses, including those that were previously missing—such as KKN, Final Project I, Final Project II, and Internship/Practical Work. In addition, the revisions are finished to ensure that all module descriptions are properly linked and accessible through the respective programme homepages: **BAE's** and **BEE's** . We are committed to maintaining transparency and completeness in all programme documentation and will continue to monitor and update the online resources to ensure ongoing accuracy and accessibility for students, staff, and stakeholder.
	Criterion 4.2 Diploma and Diploma Supplement	
1	the experts point out that Diploma Supplement should make transparent what specialisation the student has chosen and also the additional specific learning outcomes should be mentioned there (p.40, par 4)	In the diploma supplement, what is shown is the overall achievement. If a student has many achievements and wants his/her main expertise to be displayed, it will be displayed according to the student's expertise. If the student only has a few achievements, then all achievements will be displayed on the diploma supplement.
	Criterion 4.3 Relevant rules	
2	The experts point out the complete study plans (including the eight semester) should be published and that the module handbooks need to include descriptions of all courses (see criterion 4.1). (p.41, par 2)	For the complete study plan, students can access it on the web with the link "course map" or in the curriculum book. Meanwhile, the module handbook will only explain the module objectives which contain an explanation of what will be obtained in the course. Specifically, for the Bachelor in Informatics Engineering (BIE) programme, the complete study plan is available https://if.unram.ac.id/#

		tab *ACADEMIC,* While for BEE and BAE available in https://te.unram.ac.id/jte2/en/academik/curriculum/ and in here.
3	The English names of the study programmes and the awarded degrees should be consistent in all documents. (p.41, par 3)	In response to this feedback, we have reviewed and revised the English titles accordingly. Specifically, for the Bachelor in Informatics Engineering (BIE) programme, the awarded degree has been corrected from *Bachelor of Computer Science (B.Sc.Comp)* to *Bachelor of Engineering (B.Eng)*, in alignment with academic standards and the programme's curriculum orientation. This revision has been reflected in the official programme documentation and is publicly accessible via the following link: https://if.unram.ac.id/history/. We remain committed to ensuring consistency and clarity in all programme-related communications and documents.

5. Quality management: quality assessment and development		
No	**Expert Comment**	**UNRAM Response**
1	The experts point out that it is necessary to close the feedback cycles and to directly inform the students about the results of the course questionnaires in every course. This way, students can get first-hand information on any issues and on the measures planned to improve the situation. (p.43, par 2)	Thank you for highlighting the evaluation activities. The results of evaluation surveys have been published and socialized through the faculty and program websites, making them accessible to students. For the Bachelor Agricultural Engineering Program (BAE), the survey report is available at this link. For the Bachelor Informatics Engineering (BIE) and Bachelor Electrical Engineering Programs (BEE), all faculty-level evaluation results can be accessed via the Faculty of Engineering's Quality Assurance page at this website, with the PBM report specifically available through

		a linked Google Drive folder here. Additionally, course and service evaluation results are regularly discussed with students during open talk sessions held at the end of each semester and prior to the start of the following one. These sessions provide a platform for program management, faculty, students, and alumni to collaboratively review and agree on key points for improvement.
2	The experts learn that students are not represented in the university's board on faculty or programme level. Thus, students are not directly involved in the decision-making processes. The experts are convinced that it would be very useful to have student members in the different boards. For this reason, they recommend that student representatives should be members of the boards at UNRAM at least on faculty or programme level and be actively involved in the decision-making processes for further developing the degree programmes. For example, it would be useful to make student representatives members of the Quality Assurance Board and the Quality Assurances Unit and to include them in the Management Review Meetings.(p.43, par 5)	Thank you for the recommendation provided. Both faculties have established student organizations, namely the Faculty Student Executive Board (BEM) and the Faculty Student Representative Council (DPM), which are actively involved as student representatives in various processes. As a result, students have actively participated in the formulation of the curriculum as well as the vision and mission of the study programs, faculties, and the university. Student involvement in quality assurance is reflected in their role as respondents in various surveys, including satisfaction surveys, learning process evaluations, and facility assessments. Additionally, students are also engaged as facilitators and communicators in disseminating information and encouraging other students to participate in these surveys. Additionally, evaluation results or review meetings are regularly discussed with students during open talk sessions held at the end of each semester and prior to the start of the following one. These sessions provide a platform for program management, faculty, students, and alumni to collaboratively review and agree on key points for improvement.
3	No institutionalised advisory board exists. As the experts consider the input of external stakeholders such as alumni and employers to be very	Thank you for the observation and attention provided. The faculty maintains an active alumni association at both the faculty and departmental levels. This association is formally

	important for the further development of the degree programmes, they recommend establishing official advisory boards at the Faculty of Engineering as well as at the Faculty of Food Technology and Agroindustry in order to discuss regularly with them about the needs of the job market and new developments in the area of engineering and agriculture.(p.43, par 5)	established through a Rector's Decree. Each faculty and study program also has its own alumni association, which serves as one of the key stakeholders actively involved in various activities of the program, faculty, and alumni network. Although the faculty does not yet have a formal advisory board, the relevance and responsiveness of the degree programs to current labor market demands and recent developments in the fields of engineering and agriculture are addressed through support from the Counseling and Career Development Center of Universitas Mataram, particularly in alumni career development and labor market engagement. Input from alumni and employers is also gathered through tracer studies, alumni surveys, stakeholder meetings, and collaboration with industry partners in curriculum development and internship programs. Additionally, they are regularly discussed by all stakeholders during open talk sessions held at the end of each semester and prior to the start of the following one. These sessions provide a platform for program management, faculty, students, and alumni to collaboratively review and agree on key points for improvement.
4	The advisory board should consist of a group of professionals, employers, and experts of the relevant fields from outside the university. Including students, professionals, and employers in the different boards will help further developing the degree programmes (p.44, par 2)	Thank you for the valuable observation. Currently, Universitas Mataram does not have a formal advisory board comprising external professionals, employers, or students. This is due to the University's current status as a Public Service Agency (Badan Layanan Umum/BLU), which, in accordance with existing regulations issued by the Ministry, does not permit the inclusion of external parties in the university's governing board. However, if Universitas Mataram is granted an upgrade to the status of a State University with Legal Entity (Perguruan Tinggi Negeri Badan Hukum/PTNBH), it would then be possible to formally involve external stakeholders in

		the governance structure. At present, the University is in the process of submitting an application to the Central Government to request this change in status. Nevertheless, the institution fully acknowledges the importance and benefits of involving external stakeholders—such as industry professionals, alumni, and students—in the development and continuous enhancement of its academic programs. In practice, input from these stakeholders is already being gathered through various mechanisms, including tracer studies, alumni and employer surveys, stakeholder consultations, and collaborative initiatives with industry partners in curriculum development and internship programs. Looking ahead, Universitas Mataram is considering the formal establishment of an advisory board to further strengthen the relevance and responsiveness of its academic programs to evolving labor market needs and technological advancements. The involvement of professionals and employers is expected to offer strategic perspectives, while student representation can ensure that learning outcomes and teaching methods remain aligned with learner expectations and contemporary educational practices.

F Summary: Expert recommendations (16.05.2025)

Taking into account the additional information and the comments given by UNRAM, the experts summarise their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Informatics Engineering	With requirements for one year	Euro-Inf®	30.09.2030
Bachelor Electrical Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030
Bachelor Agricultural Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030

Requirements

For all degree programmes

A 1. (ASIIN 3.2) All laboratories need to follow international standards with respect to safety measures.

A 2. ASIIN 3.2) Update the technical equipment in the laboratories. Provide a concept how the old instruments can replaced by modern devices and can be increased in numbers within the next five years. Important instruments are missing and should be purchased.

A 3. (ASIIN 3.2) Provide full access for students and teachers to current scientific publications and databases.

For the Bachelor's programme Electrical Engineering and the Bachelor's programme Agricultural Engineering

A 4. (ASIIN 4.1) Make the module descriptions and the complete study plans available to all stakeholders, e.g. by publishing them on the programme's webpage.

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to better foster students' academic mobility and to encourage them to spend some time abroad during their studies.

E 2. (ASIIN 3.1) It is recommended to increase the share of teachers with a PhD.

E 3. (ASIIN 3.1) It is recommended to better support teachers with children to have an academic career at UNRAM.

E 4. (ASIIN 3.2) It is recommended to have a budget at the Faculty of Engineering and the Faculty of Food Technology and Agroindustry for maintaining and repairing the instruments and technical equipment in the laboratories.

E 5. (ASIIN 3.2) It is recommended to provide better access to the laboratories in the Faculty of Engineering for disabled students.

E 6. (ASIIN 5) It is recommended to establish an advisory board with external stakeholders on faculty or programme level.

E 7. (ASIIN 5) It is recommended to have students' representatives in the Quality Assurance Board (GPM) on faculty and programme level.

For the Bachelor's programme Agricultural Engineering

E 8. (ASIIN 1.3) It is recommended, to make transparent in what courses the different aspects of sustainability are treated.

G Comment of the Technical Committees (11.06.2025)

Technical Committee 01 – Mechanical Engineering/Process Engineering (05.06.2025)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the assessment of the auditors without any changes.

Assessment and analysis for the award of the EUR-ACE label:

The Technical Committee agrees with the award of the EUR-ACE label.

The Technical Committee 01 – Mechanical Engineering/Process Engineering recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Agricultural Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030

Technical Committee 02 – Electrical Engineering/Information Technology (05.06.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and agrees with the experts' assessment. However, they suggest amending the wording of requirement A3 from “provide full access” to “provide access”.

Assessment and analysis for the award of the EUR-ACE label:

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology.

The Technical Committee 02 – Electrical Engineering/Information Technology recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditation**
Bachelor Informatics Engineering	With requirements for one year	Euro-Inf®	30.09.2030
Bachelor Electrical Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030

Technical Committee 04 – Informatics/Computer Engineering (11.06.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and in particular the requirement A 2 and the associated recommendation E 4. Firstly, the TC is in favour of adding a remark to A 2 that it is not only about hardware but also about the software provided, which is then used in the BIE. Furthermore, the TC is of the opinion that the point raised in E 4 regarding the budget for maintenance should be formulated as part of the requirement A 2. The university should present a concept as to how and with what budget the laboratories, including the new

hardware and software, can be continuously maintained. The TC is therefore in favour of deleting recommendation E 4 and adapting requirement A2 accordingly. The TC also proposes editorial changes to recommendations E 1 and E 5.Otherwise, the TC follows the experts‘ assessment without any changes.

Assessment and analysis for the award of the EUR-Inf label:

The Technical Committee confirms that the intended learning outcomes of the degree programmes do comply with the EUR-Inf criteria.

The Technical Committee 04 – Informatics/Computer Science recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditation**
Bachelor Informatics Engineering	With requirements for one year	Euro-Inf®	30.09.2030

Technical Committee 08 – – Agriculture, Nutritional Sciences and Landscape Architecture (03.06.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC briefly discusses the procedure and the requirements for Ba Agricultural Engineering. They support the proposed requirements and recommendations for Ba Agricultural Engineering.

The Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture recommends the award of the seals as follows:

Degree Programme	**ASIIN-seal**	**Subject-specific label**	**Maximum duration of accreditation**
Bachelor Agricultural Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030

H Decision of the Accreditation Commission (27.06.2025)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission discusses the procedure and decides to follow the suggestions of the different Technical Committees. Especially, the AC agrees to cancel recommendation E3 and to merge it with requirement A2. In addition, the AC decides to slightly change the wording of recommendations E5 and E8.

Assessment and analysis for the award of the EUR-ACE label:

The Accreditation Commission confirms that the intended learning outcomes of the degree programmes do comply with the EUR-ACE criteria.

Assessment and analysis for the award of the EUR-Inf label:

The Accreditation Commission confirms that the intended learning outcomes of the degree programmes do comply with the EUR-Inf criteria.

The Accreditation Commission decides to award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Bachelor Informatics Engineering	With requirements for one year	Euro-Inf®	30.09.2030
Bachelor Electrical Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030
Bachelor Agricultural Engineering	With requirements for one year	EUR-ACE® upon confirmation by the ENAEE administrative council	30.09.2030

Requirements

For all degree programmes

A 1. (ASIIN 3.2) All laboratories need to follow international standards with respect to safety measures.

A 2. (ASIIN 3.2) Update the technical equipment in the laboratories regarding software and hardware. Provide a concept how the old instruments can replaced by modern devices and can be increased in numbers within the next five years, and provide a concept for ensuring ongoing maintenance. Necessary instruments are missing and should be purchased.

A 3. (ASIIN 3.2) Provide sufficient access for students and teachers to current scientific publications and databases.

For the Bachelor's programme Electrical Engineering and the Bachelor's programme Agricultural Engineering

A 4. (ASIIN 4.1) Make the module descriptions and the complete study plans available to all stakeholders, e.g. by publishing them on the programme's webpage.

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to foster students' academic mobility and to encourage them to spend some time abroad during their studies.

E 2. (ASIIN 3.1) It is recommended to increase the share of teachers with a PhD.

E 3. (ASIIN 3.1) It is recommended to better support teachers with children to have an academic career at UNRAM.

E 4. (ASIIN 3.2) It is recommended to provide better access to the laboratories in the Faculty of Engineering for physically disabled students.

E 5. (ASIIN 5) It is recommended to establish an advisory board with external stakeholders on faculty or programme level.

E 6. (ASIIN 5) It is recommended to have students' representatives in the Quality Assurance Board (GPM) on faculty and programme level.

For the Bachelor's programme Agricultural Engineering

E 7. (ASIIN 1.3) It is recommended, to make transparent in which courses the different aspects of sustainability are treated.

Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Informatics Engineering:

No	PLO Detail	Description
	Attitude	
PLO1	**Humanitarian and Social Awareness.**	Having ability to solve humanitarian and social issues, open minded, and concerned with academic/ professional ethics. (2.1.5)
PLO2	**Professional, Responsibility, and Sustainable Learning**	Demonstrate professional attitude in boundary conditions; having ability and responsibility to work independently and/or as a team; and be ready for sustainability learning. (2.1.2, 2.1.5)
	Skill	
PLO3	**Leadership and Communication.**	Having managerial and communication skills to maintain their subordinates. In addition, the communicative skills (written and oral) will support their role to initiate and expand collaboration networks with their former supervisors, colleagues, and potential partners inside and/or across the institution/ country and manage possible conflicts. (2.1.6)
PLO4	**Entrepreneurship Experiences.**	Having competence to run business with the support of information technology to evaluate its progress by applying data analysis knowledge. (2.1.5)
PLO5	**Information Technology.**	Having ability to develop an IT system based on the recent evaluation; then evaluate performance improvement of the updated system. (2.1.2, 2.1.3, 2.1.4)
PLO6	**Scientific Logic.**	Having critical thinking analysis skill to innovate on the basis of their obtained knowledge and technology. In addition, the graduates are also urged to write scientific papers. (2.1.2, 2.1.6)
	Knowledge	
PLO7	**Fundamental and Engineering Knowledge.**	Having strong basic knowledge (mathematics, computations, statistics, system computer, and network) and solving complex problems related to informatics engineering. (2.1.1, 2.1.2)
PLO8	**Data Engineering Solution.**	Having knowledge and expertise as a data analyst and/or data engineer; AI system developers; IoT developers; information system developers; system administrators; and database administrators. (2.1.1, 2.1.2, 2.1.3)
PLO9	**Knowledge of Contemporary Issues and Local Wisdom.**	Having full awareness on local-community issues such as physical resources and human resources; being able to solve and evaluate local-community problems using advanced technology. (2.1.6)

The following **curriculum** is presented:

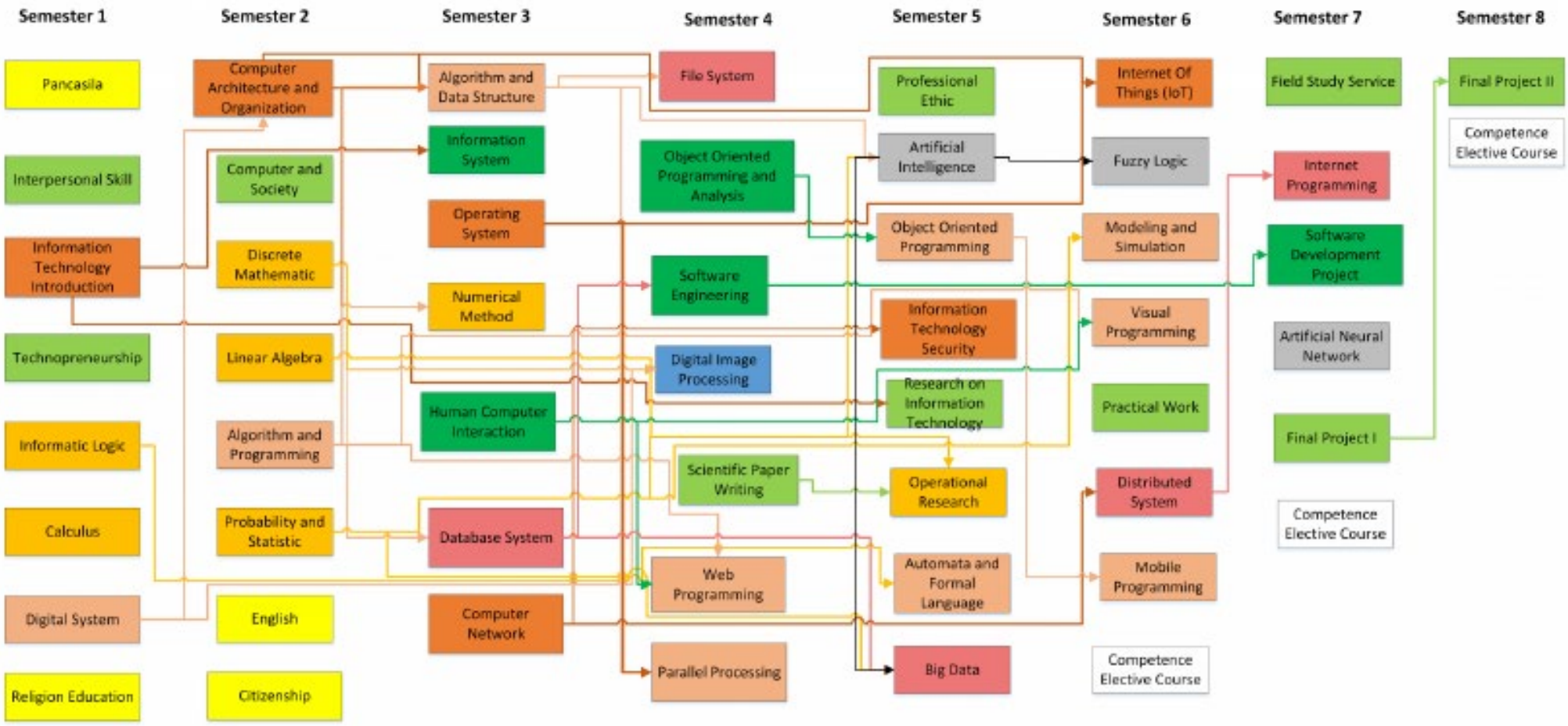
No	Course ID	Name of Course	Type	Sem	SKS	ECTS
1	W22K11	Informatic Logic	M	1	3	4.8
2	W22K12	Information Technology Introduction	M	1	2	3.2
3	W22K13	Digital System	M	1	3	4.8
4	W22P11	Interpersonal Skill	M	1	2	3.2
5	W22P12	Technopreneurship	M	1	2	3.2
6	W22U11	Calculus	M	1	3	4.8
7	W22U12	Pancasila	M	1	2	3.2
8	W22U13	Religion Education	M	1	2	3.2
Sub-Total SKS and ECTS of Semester 1					**19**	**30.4**
9	W22B21	Linear Algebra	M	2	2	3.2
10	W22B22	Discrete Mathematic	M	2	3	4.8
11	W22B23	Computer Architecture and Organization	M	2	3	4.8
12	W22K21	Probability and Statistic	M	2	3	4.8
13	W22K22	Algorithm and Programming	M	2	4	6.4
14	W22P21	Computer and Society	M	2	2	3.2
15	W22U21	Citizenship	M	2	2	3.2
16	W22U22	English	M	2	2	3.2
Sub-Total SKS and ECTS of Semester 2					**21**	**33.6**

17	W22B31	Algorithm and Data Structure	M	3	3	4.8
18	W22B32	Human Computer Interaction	M	3	2	3.2
19	W22B33	Computer Network	M	3	3	4.8
20	W22B34	Database System	M	3	3	4.8
21	W22B35	Information System	M	3	3	4.8
22	W22B36	Operating System	M	3	3	4.8
23	W22K31	Numerical Method	M	3	3	4.8
Sub-Total SKS and ECTS of Semester 3					**20**	**32**
24	W22B41	Object Oriented Programming and Analysis	M	4	2	3.2
25	W22B42	Web Programming	M	4	3	4.8
26	W22B43	Digital Image Processing	M	4	3	4.8
27	W22B44	Software Engineering	M	4	3	4.8
28	W22B45	File System	M	4	3	4.8
29	W22P41	Parallel Processing	M	4	3	4.8
30	W22U41	Scientific Paper Writing	M	4	2	3.2
Sub-Total SKS and ECTS of Semester 4					**19**	**30.4**
31	K22B51	Big Data	M	5	3	4.8
32	K22B52	Information Technology Security	M	5	2	3.2
33	K22B53	Artificial Intelligence	M	5	3	4.8
34	K22B54	Object Oriented Programming	M	5	3	4.8
35	K22B55	Operational Research	M	5	2	3.2
36	K22B56	Research on Information Technology	M	5	2	3.2
37	K22B57	Automata and Formal Language	M	5	3	4.8
38	K22U51	Professional Ethic	M	5	2	3.2
Sub-Total SKS and ECTS of Semester 5					**20**	**32**

39	K22B61	Internet of Things (IoT)	M	6	2	3.2
40	K22P61	Fuzzy Logic	M	6	2	3.2
41	K22B62	Modeling and Simulation	M	6	3	4.8
42	K22P62	Mobile Programming	M	6	2	3.2
43	K22B63	Visual Programming	M	6	3	4.8
44	W22B61	Practical Work	M	6	2	3.2
45	K22B64	Distributed System	M	6	3	4.8
46	P22xxx	Competence Elective Course	**E**	6	2	3.2
Sub-Total SKS and ECTS of Semester 6					**19**	**30.4**
47	W22L71	Field Study Service	M	7	4	6.4
48	W22B71	Final Project I	M	7	2	3.2
49	K22B71	Internet Programming	M	7	3	4.8
50	K22U71	Software Development Project	M	7	2	3.2
51	K22P71	Artificial Neural Network	M	7	2	3.2
52	P22xxx	Competence Elective Course	E	7	5	8
Sub-Total SKS and ECTS of Semester 7					**18**	**28.8**
53	W22B81	Final Project II	M	8	4	6.4
54	P22xxx	Competence Elective Course	E	8	4	6.4
Sub-Total SKS and ECTS of Semester 8					**8**	**12.8**
Total SKS and ECTS of Semester 1-8					**144**	**230.4**

Electives

No	Course ID	Name of Course	SKS	ECTS
Expert System and Its Application Competence				
1	P22A01	Artificial Intelligence Application	2	3.2
2	P22A02	Bioinformatics	2	3.2
3	P22A03	Feature Extraction	2	3.2
4	P22A04	Compression Method	2	3.2
5	P22A05	Machine Learning	2	3.2
6	P22A06	Natural Language Processing	2	3.2
7	P22A07	Digital Signal Processing	2	3.2
8	P22A08	Audio Processing	2	3.2
9	P22A09	Pattern Recognition	2	3.2
10	P22A10	Geospatial Information System	2	3.2
11	P22A11	Steganography and Watermarking	2	3.2
Network and Embedded System Competence				
12	P22B01	Network Analysis and Planning	2	3.2
13	P22B02	Internet of Things Application	2	3.2
14	P22B03	Database and Data Graf Analysis	2	3.2
15	P22B04	Blockchain	2	3.2
16	P22B05	Data Mining	2	3.2
17	P22B06	Advanced Computer Network	2	3.2
18	P22B07	Wireless Network	2	3.2
19	P22B08	Mobile Ad Hoc Network	2	3.2
20	P22B09	Mobile Security	2	3.2
21	P22B10	Database Technology	2	3.2
Information System Competence				
22	P22C01	3D Animation	2	3.2
23	P22C02	E-Business	2	3.2
24	P22C03	Engineering Economy	2	3.2
25	P22C04	Introduction to Smart City Global Convergence	2	3.2
26	P22C05	Industrial Management	2	3.2
27	P22C06	Software Management	2	3.2
28	P22C07	Mobile Game	2	3.2
29	P22C08	Game Programming	2	3.2
30	P22C09	Advanced Web Programming	2	3.2
31	P22C10	Project in Emerging Technology	2	3.2
32	P22C11	Interaction Engineering	2	3.2
33	P22C12	Enterprise Information System	2	3.2
34	P22C13	Multimedia System	2	3.2
35	P22C14	Smart City System	2	3.2
36	P22C15	IT Governance	2	3.2


Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
Pancasila
Interpersonal Skill
Information Technology Introduction
Technopreneurship
Informatic Logic
Calculus
Digital System
Religion Education
Computer Architecture and Organization
Computer and Society
Discrete Mathematic
Linear Algebra
Algorithm and Programming
Probability and Statistic
English
Citizenship
Algorithm and Data Structure
Information System
Operating System
Numerical Method
Human Computer Interaction
Database System
Computer Network
File System
Object Oriented Programming and Analysis
Software Engineering
Digital Image Processing
Scientific Paper Writing
Web Programming
Parallel Processing
Professional Ethic
Artificial Intelligence
Object Oriented Programming
Information Technology Security
Research on Information Technology
Operational Research
Automata and Formal Language
Big Data
Internet Of Things (IoT)
Fuzzy Logic
Modeling and Simulation
Visual Programming
Practical Work
Distributed System
Mobile Programming
Competence Elective Course
Field Study Service
Internet Programming
Software Development Project
Artificial Neural Network
Final Project I
Competence Elective Course
Final Project II
Competence Elective Course

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Electrical Engineering:

No	PLO Detail	Relevance to SSC-02
	Attitude	
PLO1	**Religious and ethical** Able to demonstrate religious attitude, apply ethical principles and be committed to professional responsibilities and ethics as well as engineering practice norms and care for the community and the environment.	Graduates commit to professional ethics, responsibilities and norms of engineering practice; Graduates are able to demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environmental context; Graduates are aware of the nontechnical effects of engineering activities.
	Knowledge	
PLO2	**Knowledge** Able to apply knowledge of science and mathematics, electrical technology, information technology and/or materials technology to gain a thorough understanding of the principles in the field of electrical engineering.	Graduates have in particular gained a broad and sound knowledge in mathematics, natural sciences and engineering enabling them to understand the complex phenomena peculiar to electrical engineering/information technology; Graduates can apply their knowledge and understanding to acquire practical skills for problem solving, for research tasks and the design of systems and procedures.
	Skill	
PLO3	**Engineering Analysis** Able to determine methods, make literature reviews, design experiments with simulations, and analyse results to reach the right conclusions, as well as develop guidelines for using tools.	Graduates are able to select and apply actual methods of modelling, calculating, and testing concerning their field of specialisation; Graduates are able to make research of technical literature and other sources of information related to given problems.
PLO4	**Engineering Design** Able to design and develop components, system and/or engineering processes to support engineering activities and create	Graduates have special abilities to develop analogue and digital electric and electronic circuits, devices and products; Graduates have special abilities to control in their design work the use of elements like modelling,
	technological innovations by optimally utilising potential resources.	simulation and tests as well as their integration in a problem oriented way; Graduates are able to design products for the global market.

PLO5	**Experiment** Able to design and carry out experiments using basic and modern technical tools and analyse then interpret data based on the correct methods to strengthen engineering assessment.	Graduates are able to design and run experiments and computer simulations and to explain the results; Graduates are able to consult database systems, information on norms, guidelines ("codes of good practice") and safety regulations for these purposes.
PLO6	**Communication** Able to deliver and express ideas effectively both orally and in writing within the engineering environment and the public in the national and international scope.	Graduates are capable of searching technical literature and other information sources.
PLO7	**Individual and Teamwork** Able to plan, implement, complete, and evaluate tasks both individually and collaboratively in interdisciplinary, multidisciplinary, multinational, and multicultural teams.	Graduates are able to operate on technical working tasks in a team and to coordinate it if necessary.
PLO8	**Entrepreneurship** Able to apply entrepreneurial principles and methods in starting a business independently and to build technology-based business networks.	Graduates are in the position to develop marketable products for the global market.
PLO9	**Life-long learning** Able to understand the need for life-long learning with data literacy, technology literacy, and human literacy.	Graduates have in particular gained an understanding for the broader multi-disciplinary context of Engineering Sciences; Graduates are able to analyse and present technical contexts understandingly in their own field and in neighbour fields; Graduates are able to demonstrate an awareness of project management and business practices, such as risk and change management, and understand their limitations; Graduates are able to recognise the need for, and have the ability to engage in independent, life-long learning.

The following **curriculum** is presented:

Code	1st Semester	SKS	ECTS
FBS1101	Religion	2	3.2
FBS1102	Academic Indonesian Language	2	3.2
FBS1103	Physics I	3	4.8
FBS1104	Calculus I	3	4.8
FBS1105	Electrical Materials	2	3.2
FBS1106	Concept of Science and Technology	2	3.2
FBS1107	Logic Circuit	2	3.2
FBS1108	Pancasila	2	3.2
FBS1109	Basic Information Technology	2	3.2
		20	**32**
Code	**2nd Semester**	**SKS**	**ECTS**
FBS1210	Character Building	2	3.2
FBS1211	Physics II	3	4.8
FBS1212	Calculus II	3	4.8
FBS1213	Electrical Circuit I	3	4.8
FBS1214	Probability and Statistics	2	3.2
FBS1215	Basic Programming	3	4.8
FBS1216	Basic Programming Laboratory	1	1.6
FBS1217	Telecommunications Basics	3	4.8
FBS1218	Logic Circuit Laboratory	1	1.6
		21	**33.6**
Code	**3rd Semester**	**SKS**	**ECTS**
FBS2119	Academic English	2	3.2
FBS2120	Engineering Mathematics I	3	4.8
FBS2121	Stochastic Process	2	3.2
FBS2122	Electrical Circuit II	3	4.8
FBS2123	Electrical Measurement	2	3.2
FBS2124	Electrical Measurement Laboratory	1	1.6
FBS2125	Basic Electronics	3	4.8
FBS2126	Basic Electric Power	3	4.8
FBS2127	Basic Telecommunication System Laboratory	1	1.6
		20	**32**
Code	**4th Semester**	**SKS**	**ECTS**
FBS2228	Engineering Mathematics II	3	4.8
FBS2229	Signal and System	3	4.8
FBS2230	Numerical Method	2	3.2
FBS2231	Electrical Circuits Laboratory	1	1.6
FBS2232	Electromagnetics	3	4.8
FBS2233	Basic Electronics Laboratory	1	1.6
FBS2234	Basic Electric Power Laboratory	1	1.6
FBS2235	Microprocessor System	3	4.8
FBS2236	Engineering Economics	2	3.2
		19	**30.4**
Code	**8th Semester**	**SKS**	**ECTS**
FBS4244	Technopreneurship	2	3.2
FBS4245	Environment and Engineering Ethics	2	3.2
FBS4246	Thesis	4	6.4
		8	**12.8**

A. Electrical Power System

Code	5th Semester	SKS	ECTS
FBS3137	Citizenship	2	3.2
FBS3138	Microprocessor System Laboratory	1	1.6
FBS3139	Control System	3	4.8
FBS3140	Control System Laboratory	1	1.6
FBA3101	Power System Analysis I	2	3.2
FBA3102	Electric Power Transmission	2	3.2
FBA3103	Hydro-Thermal Energy Conversion	2	3.2
FBA3104	Electric Machines	3	4.8
FBA3105	Electric Machines Laboratory	1	1.6
FBA3106	Power Electronics	2	3.2
FBA3107	Power Electronics Laboratory	1	1.6
		20	**32.0**
Code	**6th Semester**	**SKS**	**ECTS**
FBS3241	Internship	4	6.4
FBA3208	Power System Analysis II	2	3.2
FBA3209	Power System Analysis Laboratory	1	1.6
FBA3210	Renewable Energy Conversion	2	3.2
FBA3211	Modern Distribution System	2	3.2
FBA3212	Transmission & Distribution Laboratory	1	1.6
FBA3213	Electrical Installation Design	3	4.8
FBA30xx	Free-Elective I	2	3.2
FBA30xx	Free-Elective II	2	3.2
		19	**30.4**
Code	**7th Semester**	**SKS**	**ECTS**
FBS4142	Field Study Program	4	6.4
FBS4143	Pre-Thesis	2	3.2
FBA4114	Power Systems Operation Management	2	3.2
FBA4115	Power Systems Protection	2	3.2
FBA4116	Power Systems Protection Laboratory	1	1.6
FBA4117	Power Quality	2	3.2
FBA4118	High Voltage Engineering	2	3.2
FBA40xx	Free-Elective III	2	3.2
FBA40xx	Free-Elective IV	2	3.2
		19	**30.4**
Code	**Free-Elective Courses**	**SKS**	**ECTS**
FBA0001	EPS Dynamic and Stability	2	3.2
FBA0002	Computer Application on EPS	2	3.2
FBA0003	Distributed Generation	2	3.2
FBA0004	EPS Substation Technology & Grounding	2	3.2
FBA0005	Maintenance of EPS Equipment	2	3.2
FBA0006	Design of Electrical Machines	2	3.2
FBA0007	Utility & Control of Electrical Machine	2	3.2
FBA0008	Programmable Logic Control	2	3.2
FBA0010	EPS Reliability	2	3.2
FBA0011	High Fields Phenomena	2	3.2
FBA0012	SCADA	2	3.2
FBA0013	Optimization of Modern EPS	2	3.2
FBA0014	Energy Planning	2	3.2
FBA0015	Occupational Health and Safety	2	3.2
FBA0016	Geothermal Exploration & Utilization	2	3.2

B. Electronics Engineering

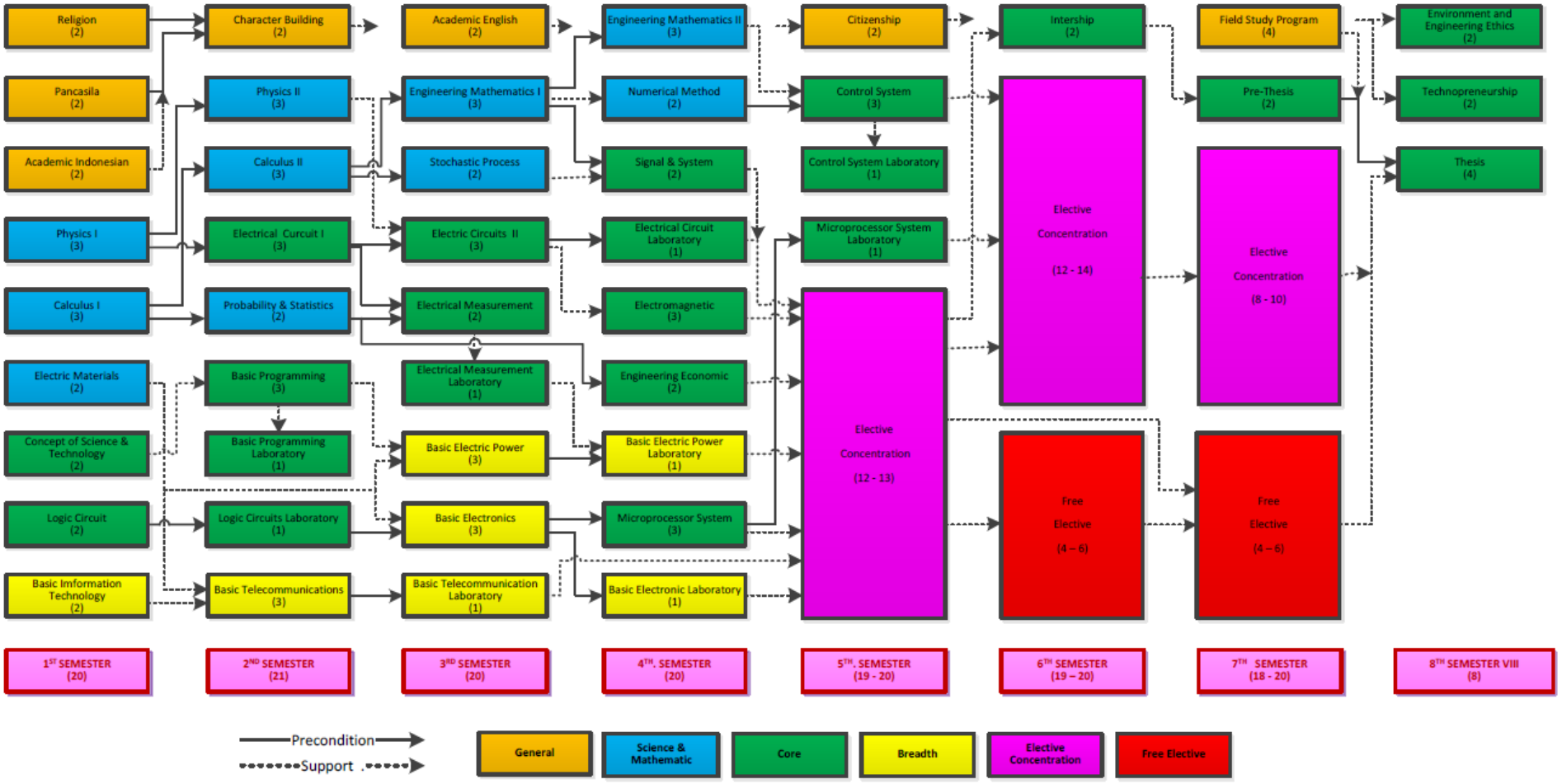
Code	5th Semester	SKS	ECTS
FBS3137	Citizenship	2	3.2
FBS3138	Microprocessor System Laboratory	1	1.6
FBS3139	Control System	3	4.8
FBS3140	Control System Laboratory	1	1.6
FBB3101	Electronic Circuit	3	4.8
FBB3102	Electronic Circuit Laboratory	1	1.6
FBB3103	Digital Electronics	2	3.2
FBB3104	Digital Electronics Laboratory	1	1.6
FBB3105	Electronic Instrumentation System	3	4.8
FBB3106	Industrial Electronics	3	4.8
		20	**32.0**
Code	**6th Semester**	**SKS**	**ECTS**
FBS3241	Internship	4	6.4
FBB3207	Advanced Electronics Laboratory	1	1.6
FBB3208	Digital Signal Processing	3	4.8
FBB3209	Digital Signal Processing Laboratory	1	1.6
FBB3210	Analog Electronics	2	3.2
FBB3211	Programmable Logic Control	2	3.2
FBB3212	Mechatronic	2	3.2
FBB3213	Interface Engineering & Embedded Systems	3	4.8
FBB30xx	Free-Elective I	2	3.2
		20	**32.0**
Code	**7th Semester**	**SKS**	**ECTS**
FBS4142	Field Study Program	4	6.4
FBS4143	Pre-Thesis	2	3.2
FBB4114	Robotic	2	3.2
FBB4115	Electronic Systems Design	2	3.2
FBB4116	Digital Controls Engineering	2	3.2
FBB40xx	Free-Elective II	2	3.2
FBB40xx	Free-Elective III	2	3.2
FBB40xx	Free-Elective IV	2	3.2
		18	**28.8**
Code	**Free-Elective Courses**	**SKS**	**ECTS**
FBB0001	Algorithm and Data Structure	2	3.2
FBB0002	Image Processing	2	3.2
FBB0003	Optoelectronics	2	3.2
FBB0004	Artificial Intelligence	2	3.2
FBB0005	Biomedical Instrumentations	2	3.2
FBB0006	Advanced Mechatronics	2	3.2
FBB0007	Geo-electromagnetic Instrumentation	2	3.2
FBB0008	Power Electronics	2	3.2
FBB0009	Fast Algorithm	2	3.2

C. Telecommunication Engineering

Code	5th Semester	SKS	ECTS
FBS3137	Citizenship	2	3.2
FBS3138	Microprocessor System Laboratory	1	1.6
FBS3139	Control System	3	4.8
FBS3140	Control System Laboratory	1	1.6
FBC3101	Advanced Electromagnetics	2	3.2
FBC3102	Telecommunication System	3	4.8
FBC3103	Telecommunication Network	3	4.8
FBC3104	Digital Communication	2	3.2
FBC3105	Traffic Engineering	2	3.2
		19	**30.4**
Code	**6th Semester**	**SKS**	**ECTS**
FBS3241	Internship	4	6.4
FBC3206	Wave Transmission and Propagation	3	4.8
FBC3207	Digital Signal Processing	3	4.8
FBC3208	Telecommunication Electronics	3	4.8
FBC3209	Telecommunication Network Laboratory	1	1.6
FBC3210	Data Communication and Computer Network	3	4.8
FBC3211	Telecommunication Systems Laboratory	1	1.6
FBC30xx	Free-Elective I	2	3.2
		20	**32.0**
Code	**7th Semester**	**SKS**	**ECTS**
FBS4142	Field Study Program	4	6.4
FBS4143	Pre-Thesis	2	3.2
FBC4112	Digital Signal Processing Laboratory	1	1.6
FBC4113	Antenna	2	3.2
FBC4114	Telecommunication System Measurement	3	4.8
FBC4115	Telecommunication System Measurements Laboratory	1	1.6
FBC40xx	Free-Elective II	2	3.2
FBC40xx	Free-Elective III	2	3.2
FBC40xx	Free-Elective IV	2	3.2
		19	**30.4**
Code	**Free-Elective Courses**	**SKS**	**ECTS**
FBC0001	Deep Neural Network	2	3.2
FBC0002	Mobile Communication	2	3.2
FBC0003	Microwave Communication	2	3.2
FBC0004	Satellite Communication	2	3.2
FBC0005	Digital Image Processing	2	3.2
FBC0006	Radar and Remote Sensing	2	3.2
FBC0007	Optical Fiber Communication System	2	3.2
FBC0008	Telemetry	2	3.2
FBC0009	Specials Topic on Telecommunication	2	3.2
FBC0010	Software Defined Radio	2	3.2
FBC0011	Geo-Electromagnetic Data and Signal Processing	2	3.2

D. Computer Engineering

Code	5th Semester	SKS	ECTS
FBS3137	Citizenship	2	3.2
FBS3138	Microprocessor System Laboratory	1	1.6
FBS3139	Control System	3	4.8
FBS3140	Control System Laboratory	1	1.6
FBD3101	Discrete Mathematics	3	4.8
FBD3102	Database	3	4.8
FBD3103	Software Engineering	2	3.2
FBD3104	Object Oriented Programming	2	3.2
FBD3105	Operating System	2	3.2
FBD3106	Database Laboratory	1	1.6
		20	**32.0**
Code	**6th Semester**	**SKS**	**ECTS**
FBS3241	Internship	4	6.4
FBD3207	Computer Organization and Architecture	2	3.2
FBD3208	Data Communication and Computer Networks	3	4.8
FBD3209	Algorithms and Data Structures	2	3.2
FBD3210	Object Base Programming Laboratory	1	1.6
FBD3211	Artificial Intelligence	2	3.2
FBD3212	Web and Mobile Programming	2	3.2
FBD3213	Algorithms and Data Structures Laboratory	1	1.6
FBD3214	Computer Networks Laboratory	1	1.6
FBD30xx	Free-Elective I	2	3.2
		20	**32.0**
Code	**7th Semester**	**SKS**	**ECTS**
FBS4142	Field Study Program	4	6.4
FBS4143	Pre-Thesis	2	3.2
FBD4115	Information Systems Security	2	3.2
FBD4116	Cloud Computing Technology	2	3.2
FBD4117	IoT Technology	2	3.2
FBD40xx	Free-Elective II	2	3.2
FBD40xx	Free-Elective III	2	3.2
FBD40xx	Free-Elective IV	2	3.2
		18	**28.8**
Code	**Free-Elective Courses**	**SKS**	**ECTS**
FBD0001	Pattern Recognition	2	3.2
FBD0002	Data Engineering	2	3.2
FBD0003	Machine Learning	2	3.2
FBD0004	Software Project	2	3.2
FBD0005	Computer Network Security	2	3.2
FBD0006	IoT Wireless Communication	2	3.2
FBD0007	Smart IoT Device	2	3.2
FBD0008	Computer Graphics	2	3.2
FBD0009	Game Development Techniques	2	3.2
FBD0010	Information System Audit	2	3.2
FBD0011	Digital Forensic	2	3.2
FBD0012	Distributed System	2	3.2
FBD0013	Special Topics on Computer	2	3.2


Religion (2)
Character Building (2)
Academic English (2)
Engineering Mathematics II (3)
Citizenship (2)
Intership (2)
Field Study Program (4)
Environment and Engineering Ethics (2)
Pancasila (2)
Physics II (3)
Engineering Mathematics I (3)
Numerical Method (2)
Control System (3)
Pre-Thesis (2)
Technopreneurship (2)
Academic Indonesian (2)
Calculus II (3)
Stochastic Process (2)
Signal & System (2)
Control System Laboratory (1)
Thesis (4)
Physics I (3)
Electrical Curcuit I (3)
Electric Circuits II (3)
Electrical Circuit Laboratory (1)
Microprocessor System Laboratory (1)
Elective Concentration (12 - 14)
Elective Concentration (8 - 10)
Calculus I (3)
Probability & Statistics (2)
Electrical Measurement (2)
Electromagnetic (3)
Electric Materials (2)
Basic Programming (3)
Electrical Measurement Laboratory (1)
Engineering Economic (2)
Concept of Science & Technology (2)
Basic Programming Laboratory (1)
Basic Electric Power (3)
Basic Electric Power Laboratory (1)
Elective Concentration (12 - 13)
Free Elective (4 – 6)
Free Elective (4 – 6)
Logic Circuit (2)
Logic Circuits Laboratory (1)
Basic Electronics (3)
Microprocessor System (3)
Basic Imformation Technology (2)
Basic Telecommunications (3)
Basic Telecommunication Laboratory (1)
Basic Electronic Laboratory (1)
1ST SEMESTER (20)
2ND SEMESTER (21)
3RD SEMESTER (20)
4TH. SEMESTER (20)
5TH. SEMESTER (19 - 20)
6TH SEMESTER (19 – 20)
7TH SEMESTER (18 - 20)
8TH SEMESTER VIII (8)
Precondition
Support
General
Science & Mathematic
Core
Breadth
Elective Concentration
Free Elective

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Agricultural Engineering:

PLO	Description	Category
PLO-1	Able to understand and apply knowledge of mathematics, natural sciences, materials, information and communication technology to gain a thorough understanding of engineering principles in agriculture and biosystems.	KNOWLEDGE
	Detail Description: PLO-1, defined as the ability to apply analytical, precision, logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology in order to produce solutions, ideas, designs in the fields of natural resource management, engineering of agricultural tools and machinery, management systems agricultural engineering and postharvest engineering.	
PLO-2	Able to design components, systems and or processes to meet the expected needs within realistic limits from economic, social, health and environmental safety aspects, sustainability and to identify and or utilise the potential of local and national resources with global insight.	SKILL
	Detail Description: PLO-2, defined as the main characteristic for graduates of Agricultural and Biosystems Engineering graduates who are characterised by the ability to design components, systems and or processes that are technically and non-technically feasible and able to utilise resources in the form of local and/or national biodiversity into national and or global agricultural products.	
PLO-3	Able to design and carry out laboratory and/or field experiments as well as analyse and interpret data to strengthen technical assessment of agricultural systems.	SKILL
	Detail Description: PLO-3, defined as the ability to identify the scientific field that is the object of research and position it into a more comprehensive and interdisciplinary or multidisciplinary problem-solving scheme.	
PLO-4	Able to identify, formulate, analyse and solve problems in agricultural engineering and biosystems.	KNOWLEDGE
	Detail Description: PLO-4, defined as the ability to make appropriate decisions in the context of solving problems in complex agricultural systems, based on the results of analysis of information and data.	
PLO-5	Able to apply modern methods, skills and technical tools needed for engineering practice in the field of agricultural and biosystem engineering.	SKILL
	Detail Description: PLO-5 defined as the ability to apply a precise and intelligent approach in the chain of agricultural operations from upstream to downstream which is based on logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology in accordance with the field of expertise in agricultural and biosystems engineering.	

PLO-6	Able to express oneself, understand and solve problems and communicate effectively orally and in writing in a national and international environment.	SKILL
	Detail Description: PLO-6, defined as the ability to get along and sell ideas through skills in communicating both orally and writing to maintain and develop networks with supervisors, colleagues, peers both inside and outside the institution.	
PLO-7	Able to plan, complete and evaluate tasks within existing constraints.	SKILL
	Detail Description: PLO-7, defined as the ability to be responsible for the achievement of group work results and to supervise and evaluate the completion of work assigned to workers under their responsibility.	
PLO-8	Independently skilled in using techniques, abilities, and ICT in solving Agricultural and Biosystem Engineering problems both individually and in groups in a national and international environment.	SKILL
	Detail Description: PLO-8, is defined as the ability to work hard, be disciplined and love what is done and be able to appreciate the diversity of cultures, views, religions, and beliefs, as well as the opinions or original findings of others.	
PLO-9	Able to be responsible to the community and comply with professional ethics in solving agricultural and biosystem engineering problems.	ATTITUDE
	Detail Description: PLO-9, defined as the ability to contribute in solving general problems in agriculture and biosystems in the context of improving the quality of life in society, nation, state, and progress of civilization based on a willingness to work together and have social sensitivity and concern for society and the environment.	
PLO-10	Able to understand the need for lifelong learning, including access to knowledge regarding relevant contemporary issues.	KNOWLEDGE
	Detail Description: PLO-10, defined as the ability to develop a competitive personality characterised by skills in internalising the spirit of independence, struggle, and entrepreneurship as well as skills in managing learning independently.	

The following **curriculum** is presented:

Semester I

Course Code	Course Name	Credits	W/P	Prerequisites
TPBU01201	Religion	2 (2-0)	W	-
TPBU02201	Pancasila	2 (2-0)	W	-
TPBU04201	Indonesian Language	2 (2-0)	W	-
TPBU05201	English Language	2 (2-0)	W	-
TPBU06201	Basic Socio-Cultural Science	2 (2-0)	W	-
TPB101301	Mathematics	3 (3-0)	W	-
TPB102211	Physics	3 (2-1)	W	-
TPB103211	Chemistry	3 (2-1)	W	-
TPB104211	Biology	3 (2-1)	W	-
Total		**22 (19-3)**		

Semester II

Course Code	Course Name	Credits	W/P	Prerequisites	Description
TPBU03202	Civics	2 (2-0)	W	-	
TPBU07202	Entrepreneurship	2 (2-0)	W	-	
FTP01202	Introduction to Agricultural Technology	2 (2-0)	W	-	SSC 01/02/06
FTP02202	Introduction to Economics	2 (2-0)	W	-	SSC 06
TEP01212	Introduction to Soil Science	3 (2-1)	W	TPB102211	SSC 01
TEP02212	Introduction to Agricultural and Bio-System	3 (2-1)	W	TPB104211	SSC 01
TEP03202	Engineering Mathematics	2 (2-0)	W	TPB101301	SSC 01
TEP04212	Computer Programming	3 (2-1)	W	TPB101301	SSC 01/02
TEP05202	Materials Science and Engineering	2 (2-0)	W	TPB102211	SSC 01
TEP06202	Calculus	2 (2-0)	W	TPB101301	SSC 01
Total		**23 (20-3)**			

Semester III

Course Code	Course Name	Credits	W/P	Prerequisites	Description
FTP03203	Operation Research	2 (2-0)	W	-	SSC 06
TEP07213	Operation Unit	3 (2-1)	W	-	SSC 01
TEP08213	Measurement and Instrumentation	3 (2-1)	W	-	SSC 02
TEP09203	Engineering Mechanics	2 (2-0)	W	TEP03202	SSC 01
TEP10203	Engineering Bio-System	2 (2-0)	W	-	SSC 01
TEP11203	Statistics	2 (2-0)	W	-	SSC 01/02/06
TEP12213	Agricultural Production Machinery	3 (2-1)	W	TPB101301	SSC 01
TEP13203	Thermodynamics and Heat Transfer	2 (2-0)	W	-	SSC 01
TEP14213	System and Design Analysis	3 (2-1)	W	TEP04212	SSC 01
TEP15203	Agroindustry Management	2 (2-0)	W	-	SSC 06
Total		**22 (18-4)**			

Semester IV

Course Code	Course Name	SKS	W/P	Prerequisites	Description
TEP16214	Farm Power	3 (2-1)	TEP16214	TEP08213	SSC 01
TEP17214	Engineering Hydrology & Agro-climatology	3 (2-1)	TEP17214	-	SSC 01
TEP18204	Engineering Economics	2 (2-0)	TEP18204	FTP02202	SSC 06
TEP19214	Fluid Mechanics	3 (2-1)	TEP19214	TPB102211	SSC 01
TEP20114	Engineering drawings	2 (2-0)	TEP20114	-	SSC 01
TEP21204	Agricultural Industrial Machinery	2 (2-0)	TEP21204	-	SSC 01/06
TEP22204	Agricultural Equipment and Machinery Management	2 (2-0)	TEP22204	-	SSC 01/06
TEP23204	Numerical Analysis	2 (2-0)	TEP23204	TEP03202	SSC 06
TEP24214	Agricultural Buildings and Environment	3 (2-1)	TEP24214	-	SSC 01
Total		22 (17-5)			

Semester V

Compulsory Courses for all departments

Course Code	Course name	Credits	W/P	Prerequisites	Description
FTP04215	Post-harvest Physiology and Technology	3 (2-1)	W		SSC 01
TEP15205	Agroindustry Management	2 (2-0)	W		SSC 06
TEP25215	Irrigation and Drainage Engineering	3 (2-1)	W	TEP01212	SSC 01
TEP26205	Research methodology	2 (0-2)	W	-	SSC 01/06
TEP27205	Bioprocess Engineering	2 (2-0)	W	TEP07213	SSC 01/02
TEP28215	Geometry & Geographic Information Systems	3 (2-1)	W	TPB101301	SSC 01/02
TEP29205	Machine Element Planning	2 (2-0)	W	TPB102211	SSC 01
TEP30215	Machinery and Equipment Design	3 (2-1)	W	TEP20114	SSC 01
TEP31105	Professional Engineering Ethics	1 (1-0)	W	-	SSC 01/02/06
Total		21 (17-4)			

Elective Course for All Tracks
Available for all students

Course Code	Course Name	Credits	W/P	Prerequisites	Description
Interests: Agricultural Power and Machinery					
DMP01215	Ergonomics & Work Safety	3 (2-1)	P	TEP12213	SSC 01/06
DMP02205	The Strength of Construction Materials	2 (2-0)	P	TEP06202	SSC 01
DMP03205	Energy conversion	2 (2-0)	P	TEP16214	SSC 01
DMP04205	Mechatronics and Robotics	2 (2-0)	P	TEP08213	SSC 01/02
Interests: Bioprocess Engineering					
TBP01215	Bioprocess Engineering (Advanced)	3 (2-1)	P	TEP07213	SSC 01
TBP02205	General Microbiology	2 (2-0)	P	TPB104211	SSC 01
TBP03205	General Biochemistry	2 (2-0)	P	TPB103211	SSC 01
TBP04215	Technical Characteristics of Agricultural	3 (2-1)	P	-	SSC 01
TBP05215	Products Drying and Cooling Techniques	3 (2-1)	P	-	SSC 01
Interests: Agricultural Engineering and Environmental Conservation					
SLP01205	Irrigation Design in Dry Land	2 (2-0)	P	TEP01212	SSC 01
SLP02205	Analysis and Design of Agriculture Environmental	2 (2-0)	P	TEP24214	SSC 01
SLP03205	Land Conservation Techniques	2 (2-0)	P	TEP17214	SSC 01
SLP04205	Watershed Management	2 (2-0)	P	TEP17214	SSC 06

Semester VI

Compulsory Courses for all tracks

Course Code	Course name	Credits	W/P	Prerequisites	Ket
TEP32216	Agricultural Energy and Electricity	3 (2-1)	W	TEP16214	SSC 01/02
TEP33216	Workshop	3 (2-1)	W	-	SSC 01
TEP34216	Agricultural Product Processing	3 (2-1)	W	TEP27205	SSC 01
FTP05026	Internship	2 (0-2)	W	-	SSC 01/02/06
Total		**11 (6-5)**			

**W= Compulsory, P= Elective*

Elective Courses for all tracks

Course Code	Course name	Credits	W/P	Prerequisites	Ket
Interests: Power and Agricultural Machinery					
DMP05206	Pumps & Compressors	2 (2-0)	P	TEP16214	SSC 01
DMP06206	Digital Farming	2 (2-0)	P	TEP28215	SSC 01/02
DMP07206	Machinery and Equipment Production Technology	2 (2-0)	P	TEP29205	SSC 01
DMP08206	New and Renewable Energy Technology	2 (2-0)	P	TEP16214	SSC 01
Interests: Bioprocess Engineering					
TBP06206	Packaging and Storage Techniques	2 (2-0)	P	TEP27205	SSC 01
TBP07206	Processing Unit Planning	2 (2-0)	P	TEP27205	SSC 01
TBP08206	Bioreactor Engineering	2 (2-0)	P	TBP02205	SSC 01
TBP09206	Bio-separation Engineering	2 (2-0)	P	TEP27205	SSC 01
TBP10206	Agricultural Nano Technology	2 (2-0)	P	-	SSC 01
Interests: Agricultural Engineering and Environmental Conservation					
SLP05206	Digital Irrigation System	2 (2-0)	P	TEP25215	SSC 02
SLP06206	Land Evaluation and Suitability	2 (2-0)	P	TEP17214	SSC 01
SLP07216	Waste and Garbage Treatment Techniques	3 (2-1)	P	-	SSC 01

Semester VII

Compulsory Courses for all Tracks

Code	Course name	Credits	W/P	Prerequisites	Ket
TEP35207	Capita Selecta	2 (2-0)	W	-	SSC 01/02/06
FTP06137	Community Service Program	4 (1-3)	W	-	
Total		**6 (3-3)**			

**W= Compulsory, P= Elective*

The package of elective courses for all Tracks in Semester VII is the same as those in Semester V

Semester VIII

Code	Course name	SKS	W/P	Prerequisites
FTP07108	Seminar	1 (1-0)	W	-
FTP08508	Undergraduate thesis	5 (5-0)	W	-
Total		**6 (6–0)**		