ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Automotive Engineering Education
Electronics Engineering Education
Mechanical Engineering Education
Building Engineering Education
Agricultural Technology Education

Provided by
Universitas Negeri Makassar

Version: 18 March 2022

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]
Pendidikan Teknik Otomotif	Automotive Engineering Education	ASIIN	BAN-PT (Indonesian national agency)	01
Pendidikan Teknik Elektronika	Electronics Engineering Education	ASIIN	BAN-PT	02
Pendidikan Teknik Mesin	Mechanical Engineering Education	ASIIN	BAN-PT	01
Pendidikan Teknik Bangunan	Building Engineering Education	ASIIN	BAN-PT	03
Pendidikan Teknologi Pertanian	Agricultural Technology Education	ASIIN	BAN-PT	08, 01
Date of the contract: 22.03.2021 **Submission of the final version of the self-assessment report:** 18.10.2021 **Date of the onsite visit:** 13.-15.12.2021 **Through videoconference**				
Peer panel: Prof. Dr.-Ing. Elmar Griese, University of Siegen				

[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 03 - Civil Engineering, Geodesy and Architecture; TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture.

Prof. Dr. Wolfgang Kath-Petersen, Technical University of Cologne Prof. Dr.-Ing. Hans-Reiner Ludwig, Frankfurt University of Applied Sciences Prof. Dr.-Ing. Andreas Zilian, University of Luxembourg Dr. Gerd Conrads, Lean Enterprise Institut GmbH Fakhri Ghiffari, Student at Universitas Gadjah Mada	
Representative of the ASIIN headquarter: Jan Philipp Engelmann	
Responsible decision-making committee: Accreditation Commission	
Criteria used: European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of December 10, 2015 Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering/Process Engineering as of December 9, 2011 Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering/Information Technology as of December 9, 2011 Subject-Specific Criteria of Technical Committee 03 – Civil Engineering, Geodesy and Architecture as of September 28, 2012 Subject-Specific Criteria of Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture as of March 27, 2015	

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Automotive Engineering Education	Sarjana Pendidikan (S.Pd.)/Bachelor of Education		6	Full time	/	8 semesters	144 SKS (around 229 ECTS)	Yearly in August 1983
Electronics Engineering Education	Sarjana Pendidikan (S.Pd.)/Bachelor of Education		6	Full time	/	8 semesters	146 SKS (around 232 ECTS)	Yearly in August 1985
Mechanical Engineering Education	Sarjana Pendidikan (S.Pd.)/Bachelor of Education		6	Full time	/	8 semesters	144 SKS (around 229 ECTS)	Yearly in August 1978
Building Engineering Education	Sarjana Pendidikan (S.Pd.)/Bachelor of Education		6	Full time	/	8 semesters	146 SKS (around 232 ECTS)	Yearly in August 1965
Agricultural Technology Education	Sarjana Pendidikan (S.Pd.)/Bachelor of Education		6	Full time	/	8 semesters	144 SKS (around 229 ECTS)	Yearly in August 2011

For the Bachelor's degree programme Automotive Engineering Education the institution has presented the following profile on the programme's website:

"Vision

In 2021, The Program Will Become An Excellent Study Program in The Development of Education And Application of Automotive Vocational Technology With an Entrepreneurial Insight

Mission

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

1. Organizing automotive vocational education with entrepreneurship insight and relevant to local, national and global communities
2. Conducting research and engineering in the automotive field
3. Conducting training, consulting and entrepreneurship in the field of Automotive Technology.
4. Conduct scientific cooperation in the field of automotive engineering at home and abroad.
5. Conduct community service related to the automotive sector."

For the Bachelor's degree programme Electronics Engineering Education the institution has presented the following profile on the programme's website:

"Vision

The vision of the Electronic Engineering Education Study Program S1 (PSPTA-S1) FT UNM is: "As a center for education, training and assessment in the field of Electronic Engineering Education that produces educators and educational staff with superior Technopreneur insight in 2024".

Mission

A. Organizing academic education in the field of electronic engineering education to produce superior electronics engineering education graduates based on piety, independence, and intelligence.
B. Conducting basic and applied research in the field of electronic engineering education.
C. Organizing community service and empowerment activities that encourage the development of community and environmental potentials to realize community welfare.
D. Organizing the management of excellent electronics engineering education study programs.
e. Develop various resources in the field of Electronic Engineering Education.
F. Develop cooperation with industry to enhance creativity, innovation, communication, and personal development of graduates.
G. Fostering interest and attitude of student technopreneur through education and training activities in the field of Electronic Engineering."

For the Bachelor's degree programme Mechanical Engineering Education the institution has presented the following profile on the programme's website:

"The vision, mission and objectives of Mechanical Engineering Education

Based on the vision and mission of MEE-SP which is closely related to the vision and mission of UNM and faculties, then the study program objectives (PEO) which are graduates' career achievements that have been formulated by the study program, are:

1. Produce professional graduates of teacher and education personnel in the field of Mechanical Engineering
2. Produce research and studies in the context of developing and implementing science and technology in the field of Mechanical Engineering Education
3. Applying science and technology in the field of Mechanical Engineering Education in the form of community service
4. Development of teachers and education personnel for further studies or short courses in Mechanical Engineering education
5. Generate cooperation (MOU and MOA) with institutions, the business world, and industry in an effort to develop the Mechanical Engineering Education Sector."

For the Bachelor's degree programme Building Engineering Education the institution has presented the following profile on the programme's website:

"Vision

To become a Center for the Development of Building Engineering Education, Study and Development of Competent, Intelligent, Dignified and Excellent Vocational Technology with Entrepreneurship in 2025.

Mission

1. Organizing education and teaching in the field of Building Engineering Education which is oriented towards independence and entrepreneurship
2. Carry out research and community service oriented towards improving quality and professionalism
3. Developing the Building Engineering Education study program as a superior teaching university and research university to meet the needs of national development.
4. Developing a management institution for the Building Engineering Education study program which is oriented towards quality and professionalism.
5. Providing services in community empowerment efforts in order to improve the quality of life of the community, nation and state."

For the Bachelor's degree programme Agricultural Technology Education the institution has presented the following profile on the programme's website:

"Vision

In 2021, the programme will become an excellent Study Program with technology-based work system to produce qualified educators with educational and entrepreneurial insight

Mission

1. Organizing professional agricultural technology education to produce educators (teachers) in the field of agricultural technology education.
2. Conducting research and community service by involving students whose results can be applied to community empowerment in solving problems in the field of agricultural technology.
3. Produce scientific publications of lecturers and students in the field of agricultural technology education both nationally and internationally.
4. Establish partnerships with agricultural vocational schools, government agencies, state-owned enterprises and the industries that are relevant to the field of agricultural technology education.
5. Creating and developing an entrepreneurial spirit to be able to live independently and assisting the government in creating job opportunities."

C Peer 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
- Website of Automotive Engineering Education: http://pto.ft.unm.ac.id/
- Website of Electronics Engineering Education: https://jpta.ft.unm.ac.id/
- Website of Mechanical Engineering Education: http://ptm.ft.unm.ac.id/
- Website of Building Engineering Education: http://sipil.ft.unm.ac.id/
- Website of Agricultural Technology Education: http://ptp.ft.unm.ac.id/
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The peers base their assessment of the learning outcomes as provided on the websites of the five Bachelor's degree programmes under review.

Universitas Negeri Makassar (UNM) has described and published graduate profiles and programme learning outcomes (PLOs) for each of the five degree programmes. While the graduate profiles are developed based on the vision and mission of the university as well as the respective faculty and department and are rather general and concise, the PLOs describe in greater detail the competences which the students should acquire during their studies. The PLOs are published on the website of the degree programmes in Indonesian and English, with the apparent exception of Building Engineering Education (BEE), for which no English version could be found online. Consequently, the peers ask UNM to publish the PLOs of BEE in English as well. For the other programmes, they are already accessible for students as well as for all other stakeholders. UNM has established a regular process to

revise and update the objectives of the programmes that involves internal as well as external stakeholders.

To evaluate the intended learning outcomes of the programmes, the peers refer to the Subject-Specific Criteria (SSC) of ASIIN's respective technical committee (TC). For Automotive Engineering Education (AEE) and Mechanical Engineering Education (MEE), this is TC 01 - Mechanical Engineering/Process Engineering. For Electronics Engineering Education (EEE), they refer to the SSC of TC 02 - Electrical Engineering/Information Technology, for Building Engineering Education (BEE) to those of TC 03 - Civil Engineering, Geodesy and Architecture, and for Agricultural Technology Education (ATE) to those of TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture. Analysing the intended learning outcomes of the programmes (see the PLOs for each programme in the appendix) against this background, they come to the following conclusions:

The peers understand from the discussions with UNM representatives that graduates of all programmes should be able to work as vocational high school teachers for the respective subject and as engineers in the respective field.

First, they notice that, given these very similar approaches, there is very little coherence between the graduate profiles and PLOs of the different programmes. While the PLOs of all programmes contain aspects of engineering and educational skills, most heavily focus on the former, some on the latter. This disparity can also be observed with regards to other areas of competences: The PLOs of some programmes contain a long list of general and social skills (such as critical thinking, teamwork, group leadership etc.), while others barely mention general and social skills at all. The peers think that a better coordination between these study programmes with similar profiles would be very helpful for their further development.

Second, the peers are surprised that the programmes lack a clear focus. As has been mentioned, all programmes aim at qualifying their graduates to work as both engineers and vocational teachers. The PLOs of most programmes also contain the skills to conduct research in the respective field, in terms of either technical or educational matters. Some go even further by claiming that graduates are qualified to work as entrepreneurs, designers, or analysts. The peers are convinced that the objectives of all programmes are too broad to be reasonably achieved by the programmes (see also chapter 1.3). Therefore, they urge UNM to focus the programmes to ensure that the intended learning outcomes can really be realised in the curricula. Considering that the university also offers pure engineering programmes, it would make sense to concentrate on the education of educators in the programmes under review. In turn, the references to other possible jobs for which the programmes do not directly qualify should be toned down. In the same vein, the peers are not

convinced that graduates are indeed able to conduct independent research, which in their opinion should also not be a goal of a Bachelor's degree programme.

Moreover, the peers notice that according to the PLOs graduates of the programmes should have "basic knowledge", "basic skills" or an understanding of "basic concepts" in many areas. For instance, graduates of ATE are supposed to have "basic knowledge" in agricultural engineering, food technology, and aquatic/fisheries science. The peers emphasise that basic knowledge is not enough if graduates are supposed to teach these subjects in vocational high schools. It might rather refer to the level of skill expected from their high school students. In order to properly teach their subjects, graduates need a much deeper understanding than is implied by the current PLOs. This could be achieved more easily if the programmes had a clearer focus (as mentioned above) by concentrating on the areas that are most important for the graduate profile.

Students and alumni confirm during the audit that they are satisfied with their job opportunities as teachers or employees in various positions in private companies. The representatives of the industry and the vocational schools confirm that they are generally satisfied with the alumni and their competences. The peers acknowledge that UNM has good relationships with surrounding vocational schools and companies, although these could be developed further (see chapter 4.1). However, for the peers it is hard to imagine that graduates of the programmes under review will be able to start an employment in a typical position for Bachelor's graduates. In their opinion, the programmes train students to be good professionals rather than university graduates who are qualified to take up higher positions in companies, for example as professional engineers or in research and development departments. This impression is confirmed during the discussion with industry representatives who explain that graduates of the programmes are employed in the maintenance of machines or electric devices or work as machine operators, amongst other things. This strengthens the peers in their assessment that the programmes under review are currently not situated at level 6 of the European Qualifications Framework which corresponds to Bachelor programmes (see chapter 1.3 for more details).

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:

The names of all degree programmes refer to educating educators in the different engineering disciplines. As discussed in the previous chapter, this is a key aspect of the programmes, but the PLOs as well as the structure of the programmes should better reflect

this focus. The original Indonesian names correspond with the main courses language, which is Indonesian.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Objective-module-matrices
- Website of Automotive Engineering Education: http://pto.ft.unm.ac.id/
- Website of Electronics Engineering Education: https://jpta.ft.unm.ac.id/
- Website of Mechanical Engineering Education: http://ptm.ft.unm.ac.id/
- Website of Building Engineering Education: http://sipil.ft.unm.ac.id/
- Website of Agricultural Technology Education: http://ptp.ft.unm.ac.id/
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The curricula of the degree programmes are designed to implement the programme objectives and learning outcomes and they are subject to constant revision processes. As such, the curricula are reviewed regularly and commented on by students and teachers as well as by external stakeholders such as alumni or partners from the private sector and other universities. Regular changes are made based on these feedback processes.

All programmes under review are designed for eight semesters or four years, in which – depending on the programme – the students have to achieve at least 144 or 146 credit points (SKS), which is equivalent to approximately 229/232 ECTS points (see chapter 2.2 for more details). The maximum period of study is 14 semesters. Each semester is equivalent to 16 weeks of learning activities including 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 lasts from February to July. In addition, there is an optional short summer semester which is designed for students, who need to make up missed or failed courses.

The curricula consists of university requirements and compulsory and elective courses determined by UNM and the respective departments. University requirements are courses that need to be attended by all undergraduate students at UNM, such as Civic Education, Indonesian, English, or Pancasila (Indonesian constitutional principles). These courses are

mostly located in the first half of the course of studies. Furthermore, as educational programmes all study programmes share a number of courses that deal with pedagogical and didactic issues. These include courses such as Introduction to Vocational Education, Educational Psychology, Lesson Planning, Learning Media, and Learning Evaluation that run in parallel with the subject-specific courses in all programmes. Additionally, students of all programmes take part in a school internship, an industrial internship and a community service in semesters 7 and 8. In the eighth semester, they are meant to work on their final thesis.

Besides these general and educational courses, all programmes contain courses that cover the respective subject, most of which are compulsory. Depending on the programme, students start with basics such as engineering mathematics, physics, technical drawing or statics. Afterwards, they are introduced into the different areas of their subject. In the later semesters, all programmes offer elective courses that allow the students to specialise according to their skills and interests (see the curriculum structure in the appendix for more details on all programmes).

The peers are convinced that all programmes under review provide the students with a solid practical education in accordance with the needs of local industry and vocational high schools. However, as has been mentioned in chapter 1.1, they currently do not correspond to EQF level 6 (bachelor level) in the assessment of the peers. This particularly relates to their academic and scientific character. Given the very broad structure of all programmes, it seems almost impossible to cover the subjects in a depth that would be required for reaching EQF level 6. As a related point, the programmes lack some fundamentals which are necessary for the students to fully understand more advanced courses. This is most obvious in EEE. As is evident from the module descriptions and as is confirmed during the discussions with UNM representatives, students are not taught topics such as vector analysis, numerical analysis or Fourier transformation that are crucial for understanding electrical engineering. Similar observations are made for MME. The course of Engineering Mathematics covers such a wide range of topics that it cannot be believed to provide the required depth of knowledge and intensity of training. The same appears in the subject of Engineering Mechanics: there is only one compulsory course in the third semester, too less to form a mechanical engineer, covering statics and elastostatics in an appropriate way. The module on Advanced Engineering Mechanics in the sixth semester is only an elective course.

The fact that the programmes currently do not correspond to EQF level 6 is further confirmed by the laboratory exercises as well as the exams. The information provided by UNM about the lab exercises in all programmes shows that these are suitably designed to teach

the students practical tasks. On the other hand, the elements of critical reflection and scientific questioning are not evident to an appropriate degree. In the same vein, the exams mostly require students to reproduce acquired knowledge (see also chapter 3). Against the background of these findings, the peers urge UNM to redesign the programmes, especially their scientific focus, to ensure that they consistently adhere to EQF level 6.

It has already been mentioned that the learning outcomes of all programmes are rather broad and that graduates are supposedly able to work both as professional engineers and as teachers in vocational high schools, in some cases also as entrepreneurs or analysts. In accordance with their findings mentioned above, the peers are convinced that these objectives are presently not achieved, at least not at the level at which the programmes aim. Therefore, in the process of revising the programmes UNM should attach particular importance to better matching the learning outcomes with the content of the programmes.

Based on the documents and the discussion with teaching staff and students, the peers are under the impression that there is quite a strict separation between the different programmes/departments, which they consider surprising, given that all programmes deal with the same challenge of educating students for engineering education. This is evident from the huge differences in the learning outcomes as well as from the lack of common courses, except for a few education courses. The peers are convinced that a higher degree of interdisciplinary cooperation would be beneficial to all programmes. This relates to different aspects. For instance, it would be worthwhile to consider economic and other related aspects where appropriate when teaching engineering subjects. Furthermore, the engineering and pedagogical components of the programmes could be better interlinked in order to strengthen cross-fertilisation between the two areas.

Since UNM has the goal to become internationally more visible and wants to further internationalise its degree programmes, the peers discuss with the programme coordinators and students if any classes in the programmes are taught in English. The programme coordinators explain that all courses are delivered in Indonesian language, although some of the recommended literature is in English. Students are currently not encouraged to actively communicate in English, apart from one language course, which is compulsory for all degree programmes. Therefore, the peers recommend expanding the use of English within the programmes, for instance through more English textbooks, having (parts of) lectures in English and especially through facilitating active communication in English between students and teachers.

Criterion 1.4 Admission requirements

Evidence:

- Self-assessment report

- Admission website
- Discussions during the audit

Preliminary assessment and analysis of the peers:
There are three different ways by which students can be admitted to a Bachelor's programme at UNM:

1. National Entrance Selection of State Universities (Seleksi Nasional Masuk Perguruan Tinggi Negeri, SNMPTN), a national admission system, which is based on the academic performance during the high school (30 % of the students at UNM are admitted through this selection system).

2. Joint Entrance Selection of State Universities (Seleksi Bersama Masuk Perguruan Tinggi Negeri, SBMPTN). This national selection test is held every year for university candidates. It is a nationwide written test (subjects: mathematics, Bahasa Indonesia, English, physics, chemistry, biology, economics, history, sociology, and geography). It accounts for 40 % of the admitted students at UNM.

3. Independent Selection (Seleksi Mandiri). Students are selected based on a written test (similar to SBMPTN) specifically held by UNM for prospective students that have not been accepted through SNMPTN or SBMPTN (30 % of the students at UNM are admitted through this test).

The requirements, schedule, registration venue, and selection test are announced on UNM's webpage and thus accessible for all stakeholders. The number of applicants exceeds by far the number of available places. For example, in 2019 the ratio between admitted students and applications was between 1:4 and 1:13 for the programmes under review.

Students have to pay tuition fees depending on their parents' income that amounts to around $ 350 on average per semester. Scholarships for students from poor families are available primarily through the Bidikmisi programme funded by the Indonesian government.

The admission website informs potential students in great detail about the requirements and the necessary steps to apply for admission into the programs. Since the rules are based on decrees by the ministry of education and on the university's written regulations, the peers deem them binding and transparent.

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

The peers thank UNM for its comments on the report. They acknowledge that the PLOs of BEE are now available online in an English translation. The university explains that the intended learning outcomes of all programmes will be reworked in order to focus more strictly on qualifying students to become educators in the respective engineering fields. This should also make the differences to UNM's regular engineering programmes clearer. Moreover, the university plans to more adequately describe the level of knowledge that students are expected to achieve.

Concerning the curricula of the programme, UNM signals its commitment to strengthen the fundamental courses and to ensure that the programmes consistently adhere to EQF level 6. The university stresses that the match between PLOs and the curricula shall be improved as well as the link between engineering and pedagogical aspects.

The peers very much appreciate these announcements and encourage UNM to follow up on them. Until these changes have been implemented, they retain their original assessment.

They consider criterion 1 not fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Reports
- Study plans of the degree programmes
- Module descriptions
- Academic handbooks
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The curricula of all programmes under review are designed for eight semesters. Average students take 18 credits in every semester, while outstanding students may take up to 24 credits. Therefore, outstanding students are able to complete the Bachelor's degree in less

than 4 years. However, this case is rare since the workload of the undergraduate programmes is rather high and the curricula are designed for four years. The students' individual study plans can be different from each other but have to be approved by their academic advisors.

After analysing the module descriptions and the study plans, the peers confirm that all degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. All programmes allow the students to define individual focuses through broad ranges of electives (see the lists of electives in the appendix).

Many students are not able to finish their studies in the regular time of eight semesters. Instead, the average time needed for the programmes under review is between nine and ten semesters. Part of this problem is due to the students' high workload particularly for their final theses (see chapter 2.2). Apart from that, students and teaching staff mentioned other potential reasons. Some students have side jobs, others need longer due to private problems. However, it did not become clear whether these issues are sufficient to explain the issue or whether there are other structural reasons why many students are not able to finish in time. Consequently, the peers suggest that UNM systematically is inquire into this problem. Based on the results of this analysis, appropriate action should be taken to improve the situation.

International Mobility

The self-assessment report as well as the discussions make it very clear that international recognition is one of UNM's primary goals for the next years. The peers point out that international mobility, with regard to the lecturers as well as to the students, is a key factor in these efforts.

They learn that UNM already offers some support for international mobility. There are various programmes to promote international internships. Lecturers are encouraged and financially supported to participate in international conferences and to pursue further qualifications, such as a PhD, abroad. There are cooperation agreements with various international universities to enable the students to spend some time abroad. Most of these programmes and cooperation agreements clearly focus on South-East Asia. UNM has also set rules concerning the recognition of achievements acquired at other universities.

The peers appreciate these efforts. At the same time, the actual amount of international student mobility is rather low. In the discussion, the students mention the possibility of a national student exchange based on a programme sponsored by the ministry of education (MBKM), but do not seem very eager for international mobility. The peers suspect that there may be room for improvement in the communication of existing opportunities to the

students. Furthermore, they believe that establishing cooperation with more renowned universities in South-East Asia and beyond would be helpful to strengthen students' interest. In order to attract incoming students, holding a number of courses in English would be an important step.

Criterion 2.2 Work load and credits

Evidence:

- Self-assessment report
- Study plans of the degree programmes
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Based on the National Standards for Higher Education of Indonesia (SNPT), all programmes under review use a credit point system called SKS. The workload of the programmes is 144 or 146 SKS, which corresponds to 6,528/6,619 academic hours or 229/232 ECTS (calculating with 28.5 hours per ECTS). The normal workload of each regular semester is 816 hours, which corresponds to 18 SKS (29 ECTS).

To complete the degree programme in time, bachelor students need to take an average of 18 SKS per semester. However, the regular schedule usually covers 20-21 SKS per semester to give more space in the last semesters for finishing earlier, for resits, or pursuing extra-curricular activities. If a student is not satisfied with his/her GPA, she or he can repeat the classes, but this will lead to a prolongation of the study time.

1 SKS of academic load is equivalent to 170 minutes per semester week. For lectures, tutorials, and similar classes, this means 50 minutes of face-to-face activity, 60 minutes of structured tasks and 60 minutes of independent learning per semester week. For seminars and practical work, it is 100 minutes in class and 70 minutes of independent learning, whereas for thesis and internship, 1 SKS equals 170 minutes of the respective activity per semester week.

On the one hand, the students report that their workload is generally acceptable and that they normally have enough time to prepare for the courses, do the assignments and learn for the exams. On the other hand, the peers detect that they need significantly more than four years on average to finish their studies, which may indicate that the workload is too high (see chapter 2.1). Furthermore, the students say that they need at least six months to finish their undergraduate thesis, for which only 4 SKS (around 6 ECTS) are awarded. This

translates into around 181 hours of work and thus far less than the students' actual workload. The situation is similar with regards to the internships. There are 3 SKS (136 hours) allocated to the industrial internship and 4 SKS (around 181 hours) to the school internship. However, during the discussion UNM representatives explain that these internships extend over a period of three months each, although in parallel to other courses. They state that the net duration of the internships is around 40 days (around 320 hours), which is significantly more than the corresponding number of credit points. Consequently, UNM has to ensure that the credits awarded for the final projects and internships correspond with the actual workload of the students.

Regarding the regular courses, the workload for assignments and individual study in each course is estimated by the lecturers based on their experience. There is, however, currently no mechanism in place to ensure that this estimated workload is realistic and to prevent students from having to invest disproportional effort into certain courses. Thus, the peers recommend to establish a system to monitor the actual student workload in the individual modules. This could, for instance, be incorporated into the existing course evaluation surveys.

Criterion 2.3 Teaching methodology

Evidence:

- Self-assessment report
- Module handbooks
- Discussions during the online audit

Preliminary assessment and analysis of the peers:

The teaching and learning methods employed in each course are laid down in the module handbook. Through the Indonesian regulations on credit points (see criterion 2.2), an adequate balance between face-to-face activities and independent learning is intended. In the programs under review, various student-centered learning methods are utilised. Besides the regular lectures, cooperative learning, problem-based learning and small projects are used to a considerable degree. The students confirm that these methods are actually used in the courses, and that they are satisfied with the variety of teaching methods. They emphasise the opportunities to be involved in research projects. The teaching and learning activities are supported by a broad range of media, both traditional (books, papers) and online (video, presentations etc.). The university's online learning management system SYAM supports teachers and students in communicating and disseminating learning mate-

rial. However, the peers would like to understand this e-learning system better and therefore ask UNM for additional information on how it functions and how it is implemented in the programmes under review.

In summary, the peer group considers the teaching methods and instruments suitable to support the students in achieving the intended learning outcomes.

Criterion 2.4 Support and assistance

Evidence:

- Self-assessment report
- Website
- Discussions during the audit

Preliminary assessment and analysis of the peers:
In order to support students in completing their studies on time with good achievements, the university and the faculty provide academic and personal support and assistance through various means. The main contact person for every student is their academic advisor, who is assigned to them in their first semester. The academic advisor shall help them develop an adequate schedule for their studies, choose electives according to their skills and interests and support them in case of academic and non-academic problems. Each student has the opportunity to meet with their academic advisor, who is also responsible for monitoring their study progress, on a regular basis. Furthermore, there are two supervisors for the thesis who offer help on the choice of an adequate topic, on finding useful literature, conducting research and analyzing the results. The university supports the students in finding a job in various ways. All programmes offer a course on entrepreneurship in which the students learn how to develop a business model and how to start a company. Moreover, for students of all programs, UNM organizes regular job fairs and trainings for writing applications and CVs.

Students with disabilities are eligible for admission into the programmes and support is offered on an individual basis, but as UNM representatives explain, official supporting structures have not yet been established. The peers emphasise that such structures are important, both for students and teachers as contact points into the administration and to help the teaching staff support these students and provide accessible learning media. Therefore, they recommend to establish such a centre.

The peers conclude that, apart from this issue, there are enough resources available to provide individual assistance, advice and support for all students. The support systems help

the students to achieve the intended learning outcomes to complete their studies successfully.

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

The peers thank UNM for commenting on the report and for the additional information on the implementation of the university's e-learning system. They learn that the university plans to introduce several measures to facilitate graduation within the standard period of study, particularly better advice and monitoring during the final project. Moreover, UNM announces to establish a systematic monitoring of students' workload. The number of SKS awarded for the final thesis shall be increased from 4 to 6, which according to the peers reasonably corresponds to the student workload. Furthermore, the university is willing to establish a centre for students with disabilities to support them during their study.

The peers very much appreciate these announcements and encourage UNM to follow up on them. Until these changes have been implemented, they retain their original assessment.

They consider criterion 2 partly fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-assessment report
- Module handbooks
- Exam regulations
- Sample written exams and final theses
- Discussions during the online audit

Preliminary assessment and analysis of the peers:

For the examination of the students' achievement, each course has to determine objectives, which support the achievement of the overall learning outcomes of the respective programme. Accordingly, each course must assess whether all defined learning outcomes stated in the module description have been achieved. For this purpose, UNM utilises various types of examination.

In each course, the students have to pass written mid-term and final examinations. These commonly feature short answers, essays, problem-solving or case-based questions as well as calculation problems. To be admitted to the final exam, the students have to attend at least 80 % of the classes. Additionally, according to the self-assessment report, quizzes, presentations, practical performances, assignments, and small projects are employed to assess the students' achievement of the learning outcomes. At the first meeting of a course, the students are informed about what exactly is required to pass the module. The final grade of each module is calculated based on the score of these individual kinds of assessment. The exact formula is given in the module handbook. UNM uses a grading system with the grades A, A-, B+, B, B-, C+, C, C-, D and E, where a D (equivalent to a Grade Point of 1) is necessary to pass a module. Students who score E, must repeat the entire course.

The peers are concerned that the type of assessment used in the individual courses does not always seem appropriate in relation to the skills that students are supposed to acquire. For instance, written tests are used in many subjects that deal with practical educational matters. In some courses, there are so-called "practicum exams" that are supposed to assess practical skills, but according to the self-assessment report, these are solely based on written documents such as practice reports. The peers particularly miss practical teaching exams in which students have to demonstrate their teaching skills and in which teachers evaluate these and give feedback for further improvement. In this vein, they ask UNM to revise their assessment methods so that the exams reflect the skills to be obtained in the individual courses more adequately.

The peers were provided with a selection of exams and final theses to check. As a logical consequence of the fact that large parts of the curricula do not correspond to EQF level 6, the requirements and standards of most of the presented exams do not reach bachelor's level either. The exams mostly require students to reproduce knowledge which they have acquired in the course and only to a very small degree are they asked to apply their knowledge in a different areas or to evaluate a certain matter. In order to ensure that the entire programmes correspond to EQF level 6, the exams have to be redesigned accordingly to assess the skills that bachelor students should acquire during their studies. There is also room for improvement with regards to the practical design of the exams. In the presented cases, the questions are not always posed very clearly (although this may partly be due to translation) and the students are not informed about how many points are allocated to individual tasks.

In line with the remarks made above about support for students with disabilities (see chapter 2.4), the peers appreciate that the teaching staff is willing to help them by adapting exams to their needs (e.g. by giving more time or allowing them to write exams in a separate room). However, according to the information obtained during the discussions, there

are currently no official rules and regulations on these compensation measures. As a result, they solely depend on the initiative of the respective lecturers. To guarantee that students with disabilities can study on an equal footing, UNM should establish formal compensation measures that specify under which conditions and how exams are modified to accommodate students' special needs.

The schedule for mid-term and final exams is prepared by the departments and is communicated to the students at least two weeks before the start of the exam week. If a student cannot participate in the exam due to illness (with a doctor's certificate) or for another important reason, they can take the make-up exam that is scheduled in the same semester. There is a defined objection process for students who feel that their grade does not adequately reflect their achievement of the learning outcomes. Within the maximum study duration of 14 semesters, there is no limit on how often students can repeat an exam. To fully evaluate UNM's examination system, the peers ask the university to provide statistical data about the number of students who fail exams and courses.

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

The peers thank UNM for commenting on the report. The university declares its intention to introduce more practical exams in order to assess the students' teaching skills, to raise the general level of the exams and to establish official compensation measures for students with disabilities. The latter should ensure that appropriate solutions can be found as a response to any given individual disability.

The peers appreciate these announcements and encourage UNM to follow up on them. Until these changes have been implemented, they retain their original assessment.

They consider criterion 3 not fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-assessment report
- Staff handbooks
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:
At UNM, 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 professor needs to hold a PhD degree. In addition, the responsibilities and tasks of a staff member with respect to teaching, research, and supervision partly depend on the academic position.

According to the self-assessment report, the teaching staff for AEE consists of 25 full-time teachers (15 with a PhD, 10 with a master's degree). For EEE, there are 22 teaching staff (17 with a PhD, 5 with a master's degree), for MEE there are 21 (12 with a PhD, 9 with a master's degree), for BEE 28 (14 with a PhD, 14 with a master's degree), and for ATE there are 28 (13 with a PhD, 15 with a master's degree). Among these, the number of professors is very low and ranges between 0 (MEE) and 4 (ATE). The peers discuss with the university about this issue and they learn that the primary reason for this is that most lecturers are relatively young and therefore do not yet fulfil the conditions for professorship required by the Indonesian government (quantity of teaching experience and research output). The peers can understand this situation but stress the importance of professors for a degree programme. Based on their experience and knowledge of the field, they should be mainly responsible for further developing and for ensuring the academic character of the programmes. Therefore, a lack of professors usually has negative consequences for a degree programme. Consequently, the peers ask UNM to provide a concept of how the number of full professors can be increased in order to strengthen the academic character of the programmes.

The current teacher to student ratio is between 1:12 (AEE) and 1:19 (BEE), which are good ratios according to international standards and which contribute to the good relation between students and teaching staff as well as the well-functioning support system.

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.

Due to the educational and practical character of the programmes, the peers discuss with UNM whether there are any requirements of practical experience for lecturers. They learn that amongst other things practical experience gained in industry or schools is indeed a criterion in the staff recruitment process. Concerning direct collaboration with industry, UNM sometimes invites guest lecturers from these fields, but – as it appears to the peers – only relatively rarely. The peers appreciate these efforts, but notice during the discussion with external stakeholders that there is a strong interest to intensify cooperation with

UNM, both from high schools and from industry companies. Hence, they encourage the university to expand the cooperation with industry and schools, be it through joint research projects or through making better use of opportunities to include guest lecturers into the teaching.

Criterion 4.2 Staff development

Evidence:

- Self-assessment report
- Staff handbook
- Discussions during the audit

Preliminary assessment and analysis of the peers:
UNM encourages training of its academic and technical staff for improving their scientific and didactic abilities and teaching methods. As described in the self-assessment reports, faculty members and non-academic staff regularly participate in training or workshops.

To this end, UNM has established several programmes to support staff development. New staff members are required to undertake an intensive basic training programme to be able to teach. Junior lecturers learn from senior lecturers by assisting them in at least one course, thereby gaining practical teaching experience. For established faculty members, there are English trainings, workshop to improve scientific capabilities, lecturer exchange programmes (domestic and abroad), and various didactic training opportunities. For junior teaching staff, study permits and funding opportunities are provided to pursue a PhD degree, preferably abroad.

The peers appreciate the university's efforts in this regard and consider the support mechanisms for the continuing professional development of the teaching staff adequate and sufficient.

Criterion 4.3 Funds and equipment

Evidence:

- Self-assessment report
- Videos and presentation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The university and the faculty are mainly funded by the Indonesian government, through tuition fees and through grants for research projects in collaboration with industry. The

figures presented by the university show that the faculty's income is stable and the operation of the degree programmes is secured.

In preparation of the audit, the university provides a number of videos showing the laboratories of the programmes. During the virtual on-site visit, the facilities of all programmes are shown in more detail. The peers notice that the lecture rooms are well equipped. There are teaching laboratories for all programmes. Most of the equipment is relatively basic, but as students and teaching staff emphasise, generally sufficient for the lab courses. In some cases, UNM cooperates with private companies to get access to more advanced machines and tools. The peers agree that the presented equipment constitutes a solid basis for the lab courses in all programmes. However, what remains unclear to them is what equipment is used for conducting research – both by the lecturers and by the students for the final projects. For instance, there was an evident lack of measurement tools in the presented equipment. Therefore, they ask UNM for clarification about in which laboratories the teaching staff can conduct research and the students can work for their final projects and what equipment is provided for this purpose.

Students and staff can use UNM's central library, which is open on weekdays from 6 am to 5 pm. It provides regular books and journals as well as access to e-books and electronic journals. There are several computer pools distributed among the faculties with an overall capacity of around 500 PCs for the entire university that students can access outside of the courses. For the dissemination of course material, all lecturers use a Moodle-based platform. The students and the peers are satisfied with these resources.

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

The peers thank UNM for its comments on the report. The university plans to increase the number of full professors through the provision of a scholarship for lecturers to pursue a PhD abroad, through better management of academic position and through strengthening research and publication efforts. The peers generally agree but would like UNM to develop and provide a more detailed strategy on this point.

Furthermore, the university presents some additional information on the equipment used for research and final projects. Overall, the peers are under the impression that most of the equipment is suitable for workshops and only some can be used for scientific research. For instance, in electrical engineering equipment such as a spectrum analyser, network analyser and TDR are missing. However, whether the equipment is adequate mainly depends on the precise profile and learning outcomes of the programmes, which will be revised by

UNM. Given a focus on training educators, facilities and equipment for the practical teaching of engineering subjects (and the assessment thereof) may be more relevant than advanced research equipment. Therefore, the peers agree that it is necessary to assess the technical infrastructure and facilities onsite at UNM in the further course of the procedure. This will be done by at least one expert and one ASIIN programme manager in order to ensure that the equipment is appropriate for the programmes under review.

The peers consider criterion 4 partly fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Self-assessment report
- Module descriptions
- Website of Automotive Engineering Education: http://pto.ft.unm.ac.id/
- Website of Electronics Engineering Education: https://jpta.ft.unm.ac.id/
- Website of Mechanical Engineering Education: http://ptm.ft.unm.ac.id/
- Website of Building Engineering Education: http://sipil.ft.unm.ac.id/
- Website of Agricultural Technology Education: http://ptp.ft.unm.ac.id/

Preliminary assessment and analysis of the peers:
The module handbooks for all programmes have been published on the university's website and are thus accessible to the students as well as to all stakeholders. The peers observe that they, in principle, contain information on all important issues, that is, responsible persons, the intended learning outcomes, the credit points awarded, the workload, the main content, prerequisites, examinations, and recommended literature. However, the content and learning outcomes are often quite unspecific and the latter sometimes only repeat the overall programme learning outcomes. UNM has to ensure that the content and learning outcomes of the individual courses are formulated specifically for the respective course.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Self-assessment report
- Sample diploma for each degree programme

- Sample diploma supplement for each degree programme

Preliminary assessment and analysis of the peers:
The peers confirm that the students of all degree programmes under review are awarded a diploma and a diploma supplement after graduation. The diploma consists of a diploma certificate and a transcript of records. The transcript of records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA. The diploma supplement contains information about the degree programme as well as acquired soft skills and awards (extracurricular activities). However, it currently does not inform about the distribution of grades within the student cohort, which is necessary so that potential employers can properly evaluate a student's grade. Therefore, UNM has to add this statistical data in accordance with the ECTS Users' Guide.

Criterion 5.3 Relevant rules

Evidence:

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

Preliminary assessment and analysis of the peers:
The peers confirm that the rights and duties of both UNM and the students are clearly defined and binding. All rules and regulations are published on the university's Indonesian website and hence available to all stakeholders. In addition, the students receive all relevant course material in the language of the degree programme at the beginning of each semester.

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

The peers thank UNM for commenting on the report. The university announces to revise the content and learning outcomes of the modules as well as the diploma supplement to include statistical data in accordance with the ECTS Users' Guide.

The peers appreciate these plans but until these changes have been implemented, they retain their original assessment.

They consider criterion 5 partly fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Self-assessment report
- Internal quality assurance regulations
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The peers 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.

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 agency (BAN-PT). UNM as an institution has received the highest accreditation status, the five degree programmes under review either the highest or the second-highest.

SMPI encompasses all activities focused on implementing measures for improving the teaching and learning quality at the university. There are quality assurance units responsible for these activities at university, faculty and department level. The basis for internal quality assurance are the vision and mission of the university, faculty and department. There are key performance indicators for each study programme (e.g. competences of graduates, graduate placement). These documents contain current goals and targets that are used to measure the faculty's success. The university employs various methods of internal quality assurance, for instance a monitoring of the students' performance, regular surveys among students and graduates and a major revision of each programme at least every five years in a process that involves all important internal and external stakeholders.

Course and lecturer performance evaluation is carried out each semester, based on well-defined criteria. The results of these course evaluation surveys go to the respective lecturer as well as the head of the respective department. In case of deficiencies of the lecturers' teaching skills or methods, the teaching staff is encouraged to improve, for instance by attending pedagogical training. The students feel that their feedback is taken seriously and necessary measures are taken. Nevertheless, the peers see that the results of the satisfac-

tion surveys are currently not systematically communicated to or discussed with the students. UNM has to devise a clear process of how the students are informed about the results and possible improvement measures so that the feedback loops are closed.

As the peers understand it, the students as crucial stakeholders of the programmes are involved in the quality assurance processes in various ways, for instance through the surveys, but also through discussions with student representatives. The student representatives are, however, currently not directly involved in the decision-making processes. As the peers regard this as a good opportunity to strengthen the students' awareness and engagement, they suggest to consider whether there are ways how to achieve this. To this end, it would also be advisable to have student representatives as members of UNM's boards at university, faculty and department level.

Apart from the mentioned issues, the peers note that the quality management system at UNM is appropriately designed to regularly identify weaknesses and to take corrective actions in order to continuously improve the degree programmes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

The peers thank UNM for commenting on the report and for signalling its willingness to devise a clear process of how the results of satisfaction surveys can be communicated to the students. Until this has been implemented, they retain their original assessment.

They consider criterion 6 partly fulfilled.

D Additional Documents

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

1. Please explain in more detail in which laboratories the teaching staff can conduct research and the students can work for their final projects.
2. Please provide statistical data about the number of students who fail exams and courses.
3. Please explain your e-learning system and how it is implemented in the programmes at hand.

E Comment of the Higher Education Institution (20.02.2022)

The institution provided additional information on the following points:

- Use of laboratories
- Failure rates of exams
- E-learning system and implementation

The following quotes the comment of the institution:

Criteria	Sub Criteria	Issue(s)	Clarification/Statement	Additional Information
1	1.1	1. The PLOs are published on the website of the degree programmes in Indonesian and English, with the apparent exception of Building Engineering Education (BEE), for which no English version could be found online. Consequently, the peers ask UNM to publish the PLOs of BEE in English as well.	The English version is now available online at the BEE's website.	http://si-pil.ft.unm.ac.id/asiin/program-learning-out-come/
	1.1	2. There is very little coherence between the graduate profiles and PLOs of the different programmes. While the PLOs of all programmes contain aspects of engineering and educational skills, most heavily focus on the former, some on the latter. This disparity can also be observed with regards	We commit to focus the programmes to ensure that the intended learning outcomes can really be realised in the curricula. Considering that the faculty also offers pure engineering programmes. So all the engineering education SP focused on the	The profiles such as analyst, consultant and entrepreneur will be focused to engineering education context only. All the intended profile of the programmes do not directly qualify like researcher,

		to other areas of competences: The PLOs of some programmes contain a long list of general and social skills (such as critical thinking, teamwork, group leadership etc.), while others barely mention general and social skills at all. The peers are surprised that the programmes lack a clear focus. As has been mentioned, all programmes aim at qualifying their graduates to work as both engineers and vocational teachers. The PLOs of most programmes also contain the skills to conduct research in the respective field, in terms of either technical or educational matters. Some go even further by claiming that graduates are qualified to work as entrepreneurs, designers, or analysts. The peers are convinced that the objectives of all programmes are too broad to be reasonably achieved by the programmes.	education of educators only. The objectives of the Programmes will be focused on educating educators of the respective fields.	will be toned down.

		In the same vein, the peers are not convinced that graduates are indeed able to conduct independent research, which in their opinion should also not be a goal of a Bachelor's degree programme.		
		3. The peers notice that according to the PLOs graduates of the programmes should have "basic knowledge", "basic skills" or an understanding of "basic concepts" in many areas. For instance, graduates of ATE are supposed to have "basic knowledge" in agricultural engineering, food technology, and aquatic/fisheries science. The peers emphasise that basic knowledge is not enough if graduates are supposed to teach these subjects in vocational high schools. It might rather refer to the level of skill expected from their high school students. In order to properly teach their subjects, graduates need a much deeper understanding than is implied by the current	The graduates are expected not only to have basic knowledge but also advanced knowledge and skills to develop science and technology in agriculture engineering, food technology and aquatic/fisheries science. For example, in Agricultural robotics course, students are not only taught principles or basic theories of robotics but also focused on the development/design of applied products such as spray drones for spraying pesticide and fertilizer. Agricultural machinery design course teaches students	

		PLOs. This could be achieved more easily if the programmes had a clearer focus (as mentioned above) by concentrating on the areas that are most important for the graduate profile.	about designing and making agricultural tools and machines with the support of basic knowledge such as engineering mechanics, computer programming, robotics, physical and mechanical properties of agricultural materials. Many more advanced courses offered to students such as Food analysis, enzyme technology, functional food development, fishing ground analysis. In addition, some advance courses are added in the new curriculum (2021) including plant tissue culture, marine bioprospecting and aquatic biotechnology. Therefore, the current PLOs will be adjusted according to the expected level of knowledge and skills.	
	1.2	The names of all degree programmes refer to educating educators in the dif-	The possibility to add more compulsory education courses i.e ad-	

		ferent engineering disciplines. This is a key aspect of the programmes, but the PLOs as well as the structure of the programmes should better reflect this focus. The original Indonesian names correspond with the main courses language, which is Indonesian.	vanced microteaching, digital learning media, e-learning, Development of digital student worksheets (LKPD), innovative learning models, curriculum development, development of classroom action research.	
	1.3	1. the programmes lack some fundamentals which are necessary for the students to fully understand more advanced courses. This is most obvious in EEE. As is evident from the module descriptions and as is confirmed during the discussions with UNM representatives, students are not taught topics such as vector anal-ysis, numerical analysis or Fourier transformation that are crucial for understanding electrical engineering. Similar observations are made for MEE. The course of Engineering Mathematics covers such a wide range of topics that it cannot be believed to provide the required depth of knowledge and intensity of training. The same appears in the subject of	The curricula of the programmes will be revised by adding fundamental courses that support more advanced courses in the subsequent semester.	

		Engineering Mechanics: there is only one compulsory course in the third semester, too less to form a mechanical engineer, covering statics and elastostatics in an appropriate way. The module on Advanced Engineering Mechanics in the sixth semester is only an elective course. 2. The fact that the programmes currently do not correspond to EQF level 6 is further confirmed by the laboratory exercises as well as the exams. The information provided by UNM about the lab exercises in all programmes shows that these are suitably designed to teach the students practical tasks. On the other hand, the elements of critical reflection and scientific questioning are not evident to an appropriate degree. In the same vein, the exams mostly require students to reproduce acquired knowledge (see also chapter 3).	We strongly commit to redesign the Curriculum for the five Study Programs, especially their scientific focus, to ensure that they consistently adhere to EQF level 6, as required. Also, the exam will be adjusted to the cognitive level according to Bloom's taxonomy at least level C4.	In the process of revising the curriculum, we consider to attach particular importance to better matching the learning outcomes with the content of the programmes. The engineering and pedagogical aspects of the programmes will be better interlinked in order to strengthen cross-

		3. Based on the documents and the discussion with teaching staff and students, the peers are under the impression that there is quite a strict separation between the different programmes/departments, which they consider surprising, given that all programmes deal with the same challenge of educating students for engineering education. This is evident from the huge differences in the learning outcomes as well as from the lack of common courses, except for a few education courses. The peers are convinced that a higher degree of interdisciplinary cooperation would be beneficial to all programmes. This relates to different aspects. For instance, it would be		fertilisation between engineering education and pure engineering programmes. We also committed to expanding the use of English within the programmes, for instance through more English textbooks, having (parts of) lectures in English and especially through facilitating active communication in English between students and teachers.

		worthwhile to consider economic and other related aspects where appropriate when teaching engineering subjects. 4. Students are currently not encouraged to actively communicate in English, apart from one language course, which is compulsory for all degree programmes.	PLO and course of each program are different except educational courses. Collaborative work is a must in curricula redesign between the five programmes.	

			Students are encouraging to learn and practice English during learning processes and interaction between students and lecturers and amongst students. But these could be intensified	

			through structured activities. For example, English study club of each study programmes should be more actively promote programs to encourage students to communicate in English, English speaking day to all students and lecturers (Friday? or others specific day), encouraging students to speak in English di the classroom or when presenting their assignments/projects, lectures or course materials are delivered in English.	
2	2.1	1. Outstanding students are able to complete the Bachelor's degree in less than 4 years. However, this case is rare since the workload of the undergraduate programmes is rather high and the curricula are designed for four years. 2. Part of this problem is due to the students' high workload particularly for their final theses. Apart from that, students and teaching staff	Appropriate action should be taken to improve the situation as the following: 1. Close monitoring of students doing their final project (supervisors and the program coordinator). 2. Students make a project completion schedule/contract. 3. A routine meeting schedule between students and	

		mentioned other potential reasons. Some students have side jobs, others need longer due to private problems. However, it did not become clear whether these issues are sufficient to explain the issue or whether there are other structural reasons why many students are not able to finish in time.	supervisors should be arranged to determine the progress/obstacles in project completion. 4. Optimizing the role of academic advisors in guiding students under supervise, 5. Academic advisory lecturers make a structured schedule to intensify mentoring in regular basis.	
	2.1	**International mobility** At the same time, the actual amount of international student mobility is rather low.	We commit to establishing cooperation with more renowned universities in around the globe. This would be helpful to strengthen students' interest. In order to attract incoming students, we also have a plan for holding a number of courses in English for academic student's mobility purpose.	
	2.2	1. UNM has to ensure that the credits awarded for the final projects and internships correspond with the actual	In the new curriculum, the credit for thesis is 6 credits. The faculty rules and industry requests for a	

		workload of the students. 2. The workload for assignments and individual study in each course is estimated by the lecturers based on their experience. There is, however, currently no mechanism in place to ensure that this estimated workload is realistic and to prevent students from having to invest disproportional effort into certain courses.	minimum of 2 months for Industrial Practice/Internship. In the MBKM program, industrial internships for 6 months are recognized 20 credits Establish a system to monitor the actual student workload in the individual modules. This could, for instance, be incorporated into the existing course evaluation surveys.	
	2.3	1. The university's online learning management system SYAM supports teachers and students in communicating and disseminating learning material. However, the peers would like to understand this e-learning system better and therefore ask UNM for additional information on how it functions and how it is	See the confirmation at the separated document (Statement on Part D)	

		implemented in the programmes under review.		
	2.4	Students with disabilities are eligible for admission into the programmes and support is offered on an individual basis, but as UNM representatives explain, official supporting structures have not yet been established. The peers emphasise that such structures are important, both for students and teachers as contact points into the administration and help the teaching staff support these students and provide accessible learning media. Therefore, they recommend to establish such a centre.	The need to establish a centre to support students with disabilities	
3		The peers are concerned that the type of assessment used in the individual courses does not always seem appropriate in relation to the skills that students are supposed to acquire. For instance, written tests are used in many subjects that deal with practical educational matters. In some courses, there are so-called "practicum exams" that are supposed to assess practical skills, but according to the self-assessment report, these are solely	The assessment methods will be revised by including practicum exams to assess practical skills.	

		based on written documents such as practice reports. The peers particularly miss practical teaching exams in which students have to demonstrate their teaching skills and in which teachers evaluate these and give feedback for further improvement. In this vein, they ask UNM to revise their assessment methods so that the exams reflect the skills to be obtained in the individual courses more adequately.		
		the requirements and standards of most of the presented exams do not reach bachelor's level either. The exams mostly require students to reproduce knowledge which they have acquired in the course and only to a very small degree are they asked to apply their knowledge in a different areas or to evaluate a certain matter. In order to ensure that the entire programmes correspond to EQF level 6, the exams have to be redesigned accordingly to assess the skills that bachelor students should acquire during their studies. There is also room for improvement with regards to the	the exams will be redesigned to assess the skills that bachelor students should acquire during their studies.	

		practical design of the exams. In the presented cases, the questions are not always posed very clearly (although this may partly be due to translation) and the students are not informed about how many points are allocated to individual tasks.		
		In line with the remarks made above about support for students with disabilities (see chapter 2.4), the peers appreciate that the teaching staff is willing to help them by adapting exams to their needs (e.g. by giving more time or allowing them to write exams in a sepa-rate room). However, according to the information obtained during the discussions, there are currently no official rules and regulations on these compensation measures. As a result, they solely depend on the initiative of the respective lecturers. To guarantee that students with disabilities can study on an equal footing, UNM should establish formal compensation measures that specify under which conditions and how exams	UNM will establish formal compensation measures that specify under which conditions and how exams are modified to accommodate students' special needs.	

		are modified to accommodate students' special needs.		
		To fully evaluate UNM's examination system, the peers ask the university to provide statistical data about the number of students who fail exams and courses.	The statistical data will be provided in a separate document	
4	4.1	Therefore, a lack of professors usually has negative consequences for a degree programme. Consequently, the peers ask UNM to provide a concept of how the number of full professors can be increased in order to strengthen the academic character of the programmes.	Initial Strategic Programs and Policies: 1. Lecturer scholarship for PhD program overseas 2. Lecturer mobilization and exchange 3. Better Management of academic position (Assoc. Professor to Full Professor) 4. Joint committee for International conferences and Collaborative publication	1. Cultivating SISTER (integrated information system) of Indonesian lecturer information system in order to automatically record the lecturers' requirements for promotion (to Professor). 2. Inviting word class professor to home university for academic and publication development as well as encouragement and inspiration purposes.
	4.1	Concerning direct collaboration with industry, UNM sometimes invites guest lecturers from these fields, but- as it appears to the peers- only relatively	Expand the cooperation with industry and schools, be it through joint research projects or through making	

		rarely. The peers appreciate these efforts, but notice during the discussion with external stakeholders that there is a strong interest to intensify cooperation with UNM, both from high schools and from industry companies.	better use of opportunities to more include guest lecturers into the teaching. In the last five years, all programmes have been inviting industry partner as a guest lecture in limited number.	
	4.3	The peers agree that the presented equipment constitutes a solid basis for the lab courses in all programmes. However, what remains unclear to them is what equipment is used for conducting research – both by the lecturers and by the students for the final projects. For instance, there was an evident lack of measurement tools in the presented equipment. Therefore, they ask UNM for clarification about in which laboratories the teaching staff can conduct research and the students can work for their final projects and what equipment is provided for this purpose.	The clarification of the equipment used for conducting research both by the lecturers and by the students for the final projects will be provided in a separate document.	
5	5.1	The content and learning outcomes are often quite unspecific and the latter sometimes only repeat the overall programme learning outcomes.	Commit to ensure that the content and learning outcomes of the individual courses are formulated specifically for the respective course.	

	5.2	The diploma supplement contains information about the degree programme as well as acquired soft skills and awards (extracurricular activities). However, it currently does not inform about the distribution of grades within the student cohort, which is necessary so that potential employers can properly evaluate a student's grade.	Later on we commit to add this statistical data in accordance with the ECTS Users' Guide.	
6	6	The students feel that their feedback is taken seriously and necessary measures are taken. Nevertheless, the peers see that the results of the satisfaction surveys are currently not systematically communicated to or discussed with the students.	All the SP have committed to devise a clear process of how the students are informed about the results and possible improvement measures so that the feedback loops are closed.	
	6	The student representatives are, however, currently not directly involved in the decision-making processes. As the peers regard this as a good opportunity to strengthen the students' awareness and engagement, they suggest to consider whether there are ways how to achieve this.	The student's representative as members of UNM's board at university, faculty and department level is a National Government Policy. Once policy is allowed than we will have students representative across the levels	

F Summary: Peer recommendations (27.02.2022)

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Automotive Technology Education	Suspension	Suspension for 18 months	--	--
Ba Electronics Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Mechanical Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Building Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Agricultural Technology Education	Suspension	Suspension for 18 months	--	--

Prerequisites

For all degree programs

V 1. (ASIIN 1.3) Redesign the programmes, especially their scientific focus, to ensure that they adhere to EQF level 6 both regarding the engineering and educational components. Consequently, revised module descriptions must be provided.

V 2. (ASIIN 3) Exams must be redesigned so that they contribute to achieving the learning outcomes corresponding to EQF level 6.

Requirements

For all degree programs

A 1. (ASIIN 1.1, 1.3) Make sure and evidence that the intended learning outcomes of the degree programmes and their content correspond with each other.

A 2. (ASIIN 2.2) Ensure that the credits awarded for the final projects and internships correspond with the actual workload of the students.

A 3. (ASIIN 3) Establish official compensation procedures in order to modify examinations for students with disabilities.

A 4. (ASIIN 3) The examination system must reflect the skills to be obtained in the individual courses more adequately.

A 5. (ASIIN 4.1) Provide a concept of how the number of full professors can be increased in order to strengthen the academic character of the programmes.

A 6. (ASIIN 4.3) It is necessary to assess the technical infrastructure and facilities onsite at UNM.

A 7. (ASIIN 5.1) Ensure that the content and learning outcomes of the individual courses are formulated specifically for the respective course.

A 8. (ASIIN 5.2) The Diploma Supplement must include statistical data as set forth in the ECTS Users' Guide.

A 9. (ASIIN 6) The students need to be informed about the results of the course evaluations and about the measures that are taken to improve the courses.

Recommendations

For all degree programs

E 1. (ASIIN 1.3) It is recommended to expand the use of English within the programmes.

E 2. (ASIIN 1.3) It is recommended to strengthen interdisciplinary cooperation regarding students and teaching staff.

E 3. (ASIIN 2.1) It is recommended to further promote the academic mobility of the students and to cooperate with more renowned international universities.

E 4. (ASIIN 2.1) It is recommended to systematically inquire into why many students need more than four years to finish their studies in the programmes. Based on the results of this analysis, appropriate action should be taken to improve the situation.

E 5. (ASIIN 2.2) It is recommended to establish a system to monitor the actual student workload in the individual courses.

E 6. (ASIIN 2.4) It is recommended to establish supporting structures for students and staff with disabilities.

E 7. (ASIIN 4.1) It is recommended to further strengthen the cooperation with industry and to make better use of opportunities to include guest lecturers from industry into the teaching.

E 8. (ASIIN 6) It is recommended to directly involve the students in the decision-making processes for further developing the degree programmes.

E 9. (ASIIN 6) It is recommended to make student representatives members of the boards at UNM.

G Comment of the Technical Committees

Technical Committee 01 – Mechanical Engineering/Process Engineering (07.03.2022)

Assessment and analysis for the award of the ASIIN seal:

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

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Automotive Technology Education	Suspension	Suspension for 18 months	--	--
Ba Mechanical Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Agricultural Technology Education	Suspension	Suspension for 18 months	--	--

Technical Committee 02 – Electrical Engineering/Information Technology (04.03.2022)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the decision of the peers without any changes.

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Electronics Engineering Education	Suspension	Suspension for 18 months	--	--

Technical Committee 03 – Civil Engineering, Geodesy and Architecture (07.03.2022)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the accreditation procedure and concurs with the assessment of the peers.

The Technical Committee 03 – Civil Engineering, Geodesy and Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Building Engineering Education	Suspension	Suspension for 18 months	--	--

Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture (10.03.2022)

Assessment and analysis for the award of the ASIIN seal:

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

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Agricultural Technology Education	Suspension	Suspension for 18 months	--	--

H Decision of the Accreditation Commission (18.03.2022)

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

The Accreditation Commission discusses the procedure and mostly agrees with the peers and the Technical Committees. It is of opinion, however, that the teaching staff of the programmes under review is generally sufficient despite the low number of full professors, as this is a quite common situation in Indonesia and there are enough associate and assistant professors. Therefore, it changes requirement A 5 into a recommendation.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Automotive Technology Education	Suspension	Suspension for 18 months	--	--
Ba Electronics Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Mechanical Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Building Engineering Education	Suspension	Suspension for 18 months	--	--
Ba Agricultural Technology Education	Suspension	Suspension for 18 months	--	--

Prerequisites

For all degree programs

V 1. (ASIIN 1.3) Redesign the programmes, especially their scientific focus, to ensure that they adhere to EQF level 6 both regarding the engineering and educational components. Consequently, revised module descriptions must be provided.

V 2. (ASIIN 3) Exams must be redesigned so that they contribute to achieving the learning outcomes corresponding to EQF level 6.

Requirements

For all degree programs

A 1. (ASIIN 1.1, 1.3) Make sure and evidence that the intended learning outcomes of the degree programmes and their content correspond with each other.

A 2. (ASIIN 2.2) Ensure that the credits awarded for the final projects and internships correspond with the actual workload of the students.

A 3. (ASIIN 3) Establish official compensation procedures in order to modify examinations for students with disabilities.

A 4. (ASIIN 3) The examination system must reflect the skills to be obtained in the individual courses more adequately.

A 5. (ASIIN 4.3) It is necessary to assess the technical infrastructure and facilities onsite at UNM.

A 6. (ASIIN 5.1) Ensure that the content and learning outcomes of the individual courses are formulated specifically for the respective course.

A 7. (ASIIN 5.2) The Diploma Supplement must include statistical data as set forth in the ECTS Users' Guide.

A 8. (ASIIN 6) The students need to be informed about the results of the course evaluations and about the measures that are taken to improve the courses.

Recommendations

For all degree programs

E 1. (ASIIN 1.3) It is recommended to expand the use of English within the programmes.

E 2. (ASIIN 1.3) It is recommended to strengthen interdisciplinary cooperation regarding students and teaching staff.

E 3. (ASIIN 2.1) It is recommended to further promote the academic mobility of the students and to cooperate with more renowned international universities.

E 4. (ASIIN 2.1) It is recommended to systematically inquire into why many students need more than four years to finish their studies in the programmes. Based on the results of this analysis, appropriate action should be taken to improve the situation.

E 5. (ASIIN 2.2) It is recommended to establish a system to monitor the actual student workload in the individual courses.

E 6. (ASIIN 2.4) It is recommended to establish supporting structures for students and staff with disabilities.

E 7. (ASIIN 4.1) It is recommended to increase the number of full professors in order to strengthen the academic character of the programmes.

E 8. (ASIIN 4.1) It is recommended to further strengthen the cooperation with industry and to make better use of opportunities to include guest lecturers from industry into the teaching.

E 9. (ASIIN 6) It is recommended to directly involve the students in the decision-making processes for further developing the degree programmes.

E 10. (ASIIN 6) It is recommended to make student representatives members of the boards at UNM.

Appendix: Programme Learning Outcomes and Curricula

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Automotive Engineering Education:

a) Attitude:
1. Having the basic character of an educator and professional who is responsible, have good ethics and be aware of health and safety occupation.
2. Demonstrate good scientific manners, critical thinking, and innovation skills in educational, research, and professional fields
3. Having the entrepreneurial spirit in order to develop and adapt to future challenges.

b) Knowledge:
1. Applying basic sciences and technology to solve problems in engineering field
2. Applying automotive technology principles to solve problems in automotive field
3. Demonstrating knowledge in relating to automotive education research
4. Demonstrating pedagogical knowledge in planning, teaching, and evaluating of automotive learning

c) General Competence:
1. Making the right decisions in the context of solving problems in the automotive sector, based on the results of an analysis of information and data
2. Conducting research that includes identification, formulation and analysis of problems on automotive systems
3. Utilizing information technology and computational devices for designing, and maintaining automotive systems
4. Applying logical, critical, systematic, and innovative thinking in the context of developing or implementing automotive science and/or technology.
5. Making a plan, do, and evaluate of automotive learning by using information and communication technology
6. Designing and conducting experiments in learning automotive by applying the scientific method

d) Specific Competence:
1. Applying new technology in the field of automotive by considering technical standards, aspects of performance, reliability, applicability and sustainability
2. Implementing, and evaluating learning plan and processing through the use of learning models and media in the field of Automotive Engineering Education.
3. Applying and developing automotive technology, maintenance, repair and modify vehicles.
The following **curriculum** is presented:

Sem	Code	Course	CP	ECTS	Workloads Hours
I	18B41C101	Islamic Education	3	5,49	120
	18B41C102	Protestant Education			
	18B41C103	Catholicity Education			
	18B41C104	Hinduism Education			
	18B41C105	Buddhism Education			
	18B41C106	Occupational Health and Safety	2	3,66	80
	18B41C107	Engineering Mathematics	2	3,66	80
	18B41C108	Engineering Physics	2	5,49	80
	18B41C109	Basic Manufacture Technology	3	5,49	136
	18B41C110	Engineering Drawing	3	3,66	130.7
	18B41C111	Philosophy of Science	2	3,66	80
	18B41C112	Civic Education	3	3,66	120
II	18B41C201	Pancasila Education	2	3,66	80
	18B41C202	Indonesian Language	3	5,49	120
	18B41C203	Engineering English	2	3,66	80
	18B41C204	Materials Engineering	2	3,66	80
	18B41C205	Basic Electricity and Electronics	3	5,49	130.7
	18B41C206	Introduction to Vocational Education	2	3,66	80
	18B41C207	Lubricating Fuels	3	5,49	120
	18B41C208	Automotive Engine Technology	3	5,49	120
III	18B41C301	Fluid Mechanics	2	3,66	80
	18B41C302	Electrical and Automotive Electronics	3	5,49	136
	18B41C303	Measurement and Testing Techniques	3	5,49	136
	18B41C304	Computer Application	3	5,49	130.7
	18B41C305	Motorcycle Technology	3	5,49	130.7
	18B41C306	Vehicle Mechanics	2	3,66	80
	18B41C307	Learning and Education	3	5,49	120
	18B41C308	Student Development	2	3,66	80
	18B41C309	Car AC System	3	5,49	136
IV	18B41C401	Energy Convertion Engine	2	3,66	80
	18B41C402	Gasoline Engine Technology	3	5,49	136
	18B41C403	Welding Technology	3	5,49	136
	18B41C404	Machine Manufacture	3	5,49	136
	18B41C405	Automotive Industry Management	2	3,66	80
	18B41C406	Teaching Profession	3	5,49	120
	18B41C407	Vocational Learning Media	2	3,66	80
	18B41C408	Vocational Learning Evaluation	2	3,66	80
	18B41C409	Vocational Learning Planning	2	3,66	80
	18B41C410	Automotive Electronics *	2	3,66	80
	18B41C411	Motorcycle Modification *			
	18B41C412	Lifting Vehicle Technology *			
	18B41C413	Vehicle Aerodynamics *			
	18B41C414	Ergonomics *			
	18B41C501	Entrepreneurship	3	5,49	120

	18B41C502	Automotive Chassis	3	5,49	130.7
	18B41C503	Diesel Engine Technology	3	5,49	136
	18B41C504	Painting Technology	3	5,49	130.7
	18B41C505	Engine Management System	3	5,49	130.7
	18B41C506	Educational Research Methodology	3	5,49	120
	18B41C507	Vocational Learning Strategies	2	3,66	80
	18B41C508	Statistics	2	3,66	80
	18B41C509	Automotive Electronics Control System *			
	18B41C510	Multipurpose Engine Modification *			
	18B41C511	Heavy Equipment Electrical System *			
	18B41C512	Automotive Design *			
	18B41C513	Environmental Education*			
	18B41C514	Diesel Fuel System *			
	18B41C515	Gasoline Fuel System *	2	3,66	80
	18B41C516	Motorcycle Drive System *			
	18B41C517	Motorcycle Electricity *			
	18B41C518	Hydraulic System *			
	18B41C519	Engine Tune Up *			
	18B41C520	Vehicle Body Modification *			
	18B41C521	Advanced Painting Technology *			
VI	18B41C601	Powertrain	3	5,49	130.7
	18B41C602	Vehicle Diagnosis and Repair	3	5,49	130.7
	18B41C603	Micro Teaching	2	3,66	90.7
	18B41C604	Heavy Equipment Technology	2	3,66	80
	18B41C605	Tune Up Diesel Engine *			
	18B41C606	Tune Up Gasoline Engine *			
	18B41C607	Motorcycle Tune Up *			
	18B41C608	Motorcycle Engine Overhaul *			
	18B41C609	Heavy Equipment System Maintenance *			
	18B41C610	Steering System *			
	18B41C611	Electric Welding and Acitelin *	8	3,66	80
	18B41C612	Vehicle Body Repair *			
	18B41C613	Hybrid Vehicle Technology *			
	18B41C614	Advanced Motorcycle Technology *			
	18B41C615	Machine Control System *			
	18B41C616	Fiberglass Technology *			
	18B41C617	Advanced Entrepreneurship *			
VII	14B41C701	Industrial Practice	3	5,49	136
	14B41C702	Educational Internship Program	4	7,32	181
VIII	14B41C801	Community Service	3	5,49	136
	14B41C802	Thesis	4	7,32	181
Total			144		

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Electronics Engineering Education:

Aspect	Code	Study Program Learning Outcomes
Knowledge	P1	Able to apply logical, critical, systematic and innovative thinking in the context of developing and implementing pedagogic concepts
	P2	Mastering theoretical concepts, natural science principles, mathematical applications, and engineering design in the development of the field of Electronic Engineering Elektronik
	P3	Mastering theoretical concepts and principles of analysis in the field of Electronic Engineering.
	P4	Mastering theoretical concepts and design principles in the field of Electronic Engineering.
	P5	Mastering knowledge about the latest technological developments in the field of Electronic Engineering
Specific skills	KK1	Able to design, implement, and evaluate learning based on pedagogic principles by integrating character values in the field of Electronic Engineering Teknik
	KK2	Able to apply mathematics, science, and engineering principles to solve engineering problems in electronic systems.
	KK3	Able to conduct research which includes identification, formulation, analysis of engineering problems and providing conclusions in the field of electronic engineering
	KK4	Able to design electronic systems, taking into account technical standards, aspects of performance, reliability, ease of application, and sustainability
General skills	KU1	Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with the field of Electronic Engineering

Aspect	Code	Study Program Learning Outcomes
	KU2	Able to make appropriate decisions in the context of problem solving in the field of Electronic Engineering, based on the results of information and data analysis analisis
	KU3	Able to compile a scientific description of the results of the study in the form of a thesis, and upload it on the university website
	KU4	Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism
Attitude	S1	Upholding human values in carrying out duties based on religion, morals, and ethics
	S2	Work together and have social sensitivity and concern for society and the environment
	S3	Demonstrate a responsible attitude towards work in the field of electronic engineering independently
	S4	Internalize the spirit of independence, struggle, and entrepreneurship

The following **curriculum** is presented:

Semester	Course code	Course Title	Credits
I	20B51C101	Islamic Religion Education	3
	20B51C106	Civic Education	3
	20B51C107	English	2
	20B51C108	Philosophy of Science	2
	20B51C109	Basic Mathematics	2
	20B51C110	Basic Physics	2
	20B51C111	Electric Circuit	2
	20B51C112	Basic Telecommunications	2
	20B51C113	Electronic Measurement System	2
	SUM		20
II	20B51C201	English	3
	20B51C202	Calculus	2
	20B51C203	Pancasila	3
	20B51C204	Psychological Educations	2
	20B51C205	Digital Electronics	2
	20B51C206	Analog Electronics	2
	20B51C207	Electronic Signal System	2
	20B51C208	Power Electronics	2
	20B51C209	Electronic Measurement Lab	2
	SUM		20
III	20B51C301	Learning Planning	3
	20B51C302	Student Development	3
	20B51C303	Learning and Instruction	3
	20B51C304	Teaching and Learning Strategy	2
	20B51C305	Introduction to Vocational Education	2
	20B51C306	Microprocessor	2
	20B51C307	Control Systems	2
	20B51C308	Digital Electronics Lab	2
	20B51C309	Analog Electronics Lab 1	2
	20B51C310	Basic Programming	2
	SUM		23

IV	20B51C401	Entrepreneurship	2
	20B51C402	Multimedia Learning	2
	20B51C403	Digital Transformation	2
	20B51C404	Learning Assessment	2
	20B51C405	Communication and Informatics Technology	2
	20B51C406	Teaching Profession	2
	20B51C407	Research Methods of Education	2
	20B51C408	Occupational Health and Safety	2
	20B51C409	Statistics	2
	20B51C410	Micro Learning	2
	SUM		20
V	20B51C501	Microcontroller and Interface	3
	20B51C502	Microprocessor	2
	20B51C503	Control Systems Lab	2
	20B51C504	Sensors and Transducers	2
	20B51C505	Programmable Logic Controller	2
	20B51C506	Power Electronics Lab	2
	20B51C507	Pneumatic and hydraulic	2
	20B51C508	Electronics Design and Workshop	3
	20B51C509	Maintenance and Repair of Electronics Lab	2
	SUM		20
VI	20B51C601	Programmable Logic Controller Lab	3
	20B51C602	Sensors and Transducers	2
	Elective Courses		
	20B51C603	Telecommunication System*)	3
	20B51C604	Antenna and Propagation*)	3
	20B51C605	Audio System Engineering**)	3
	20B51C606	TV & Radio System Engineering**)	3
	20B51C607	Robotics***)	3
	20B51C608	Robotics Embedded System***)	3
	20B51C609	Autotronics****)	3
	20B51C610	Embedded System of Industrial Electronics ****)	3
	20B51C611	Medical Instrumentation*****)	3
	20B51C612	Medical Information System*****)	3

VII	20B51C701	Industrial Practice Work	3
	Elective Course		
	20B51C702	Digital Communications*)	3
	20B51C703	Transmission Lines*)	3
	20B51C704	Engineering of Television**)	3
	20B51C705	Digital Control System**)	3
	20B51C706	Mechatronics Control System**)	3
	20B51C707	Industrial Control System***)	3
	20B51C708	Anatomy and Physiology of The Body***)	3
	20B51C709	Medical Image Processing***)	3
	SUM		27
VIII	20B51C801	Teaching Experience	4
	20B51C802	Community Service Program	3
	20B51C803	Thesis	4
	SUM		11

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Mechanical Engineering Education:

1. Demonstrate a responsible attitude towards work in the field of mechanical engineering vocational expertise by internalizing the spirit of independence, struggle, entrepreneurship that is religious, moral and ethical.

2. Mastering theoretical concepts and pedagogical principles in planning and implementing learning;

3. Mastering the concepts, theories, and applications of basic vocational knowledge in mechanical engineering;

4. Mastering the basic concepts of mechanical engineering in general and basic concepts in the field of concentration: machining engineering, metal fabrication, engineering drawings, industrial machine maintenance, welding, and refrigeration, as well as being able to formulate procedural problem solving in the product manufacturing process in accordance with the following areas: areas of expertise

5. Able to develop and plan curriculum and learning in the vocational field

6. Able to solve problems in the field of mechanical engineering education by applying the basic principles of critical thinking, humanitarianism, inter- and multi-disciplinary empowerment and developing innovative works.

7. Have the ability to communicate effectively, think critically, work in a team, entrepreneurship, and make the right decisions.

8. Able to develop and plan curriculum and learning in the field of mechanical engineering education;

9. Able to apply the field of expertise in mechanical engineering vocational education by utilizing science and technology in the field of mechanical engineering education and adapting to practical and theoretical learning situations in vocational education;

10. Able to apply mechanical engineering knowledge and solve problems procedurally in the areas of concentration: machining engineering, metal fabrication, engineering drawings, industrial machinery maintenance, welding, and refrigeration.

The following **curriculum** is presented:

OBE Curriculum Structure:

Number	Course Code	Courses	Credits Unit				Semester	
			Teory	Practices	Field	Amount	Odd	Even
1	18B21C101	Islamic Education	2	1	0	3	I	
	18B21C102	Protestant Religious Education					I	
	18B21C103	Catholic Religious Education					I	
	18B21C104	Hindu Religious Education					I	
	18B21C105	Buddhist Religious Education					I	
2	18B21C106	Civic Education	3			3	I	
3	18B21C107	Basic Mathematic	2			2	I	
4	18B21C108	Engineering Physics	2			2	I	
5	18B21C109	Measurement Technique/Metrology	1	1		2	I	
6	18B21C110	Mechanical Technology	2		1	3	I	
7	18B21C111	Engineering Drawings	1	2		3	I	
8	18B21C112	Knowledge of Engineering Materials	2			2	I	
		Total Credits				**20**		
1	18B21C201	Pancasila Education	3			3		II
2	18B21C202	Engineering Mathematics	2			2		II
3	18B21C203	Engineering Chemistry	2			2		II
4	18B21C204	Educational Philosophy	2			2		II
5	18B21C205	Heat Transfer	3			3		II
6	18B21C206	Work Health and Safety	1	1		2		II
7	18B21C207	Indonesian Language	3			3		II
8	18B21C208	Introduction to Vocational Education	3			3		II
		Total Credits				**20**		
1	18B21C301	Engineering English	2			2	III	
2	18B21C302	Engineering Mechanics	3			3	III	
3	18B21C303	Thermodynamics	2			2	III	

Number	Course Code	Courses	Credits Unit				Semester	
			Teory	Practices	Field	Amount	Odd	Even
4	18B21C304	Fluid Mechanics	2			2	III	
5	18B21C305	Welding Practices and Plates I		2		2	III	
6	18B21C306	Practices Machine Tools I		2		2	III	
7	18B21C307	Machine Elements	2	1		3	III	
8	18B21C308	Development of Students	3			3	III	
9	18B21C309	Teaching and Learning	3			3	III	
10	18B21C310	Educational Psychology	2			2	III	
		Total Credits				**24**		
1	18B21C401	Kinematics and Engineering Dynamics	2			2		IV
2	18B21C402	Welding Practices and Plates II		2		2		IV
3	18B21C403	Practices Machine Tools II		2		2		IV
4	18B21C404	Pneumatic and Hydraulic Practices		2		3		IV
5	18B21C405	Energy Conversion Machine	2	1		3		IV
6	18B21C406	Computer Application	1	1		2		IV
7	18B21C407	Learning Media	1	1		2		IV
8	18B21C408	Teacher Profession	3			3		IV
9	18B21C409	Entrepreneurship	1	1	1	3		IV
10	18B21C410	Lesson Planning	2			2		IV
		Total Credits				**24**		
1	18B21C501	Educational Research	2			2	V	
2	18B21C502	Mechanical Vibration	2			2	V	
3	18B21C503	Management and Production Systems	3			3	V	
4	18B21C504	Teaching and Learning Strategy	2			2	V	
5	18B21C505	Learning Evaluation	2			2	V	
6	18B21C506	Practice of Testing and Inspection of Materials		3		3	V	
7	18B21C507	NC/CNC Machining Practices	1	2		3	V	
8	18B21C508	Machine Design	2			2	V	
9	18B21C509	Maintenance and repair of Machine	2			2	V	
10	18B21C510	Refrigeration Machines	2			2	V	
		Total Credits				**23**		

1	18B21C601	Micro Teaching		2		2		VI
2	18B21C602	Fluid Mechanics Practice		3		3		
3	18B21C603	Statistics	2			2		VI
		Total Credits				7		
		Elective Courses of Machining Expertise*						
			T	P	L	J		
1	18B21C604	Machine Construction Design		3		3		VI
2	18B21C605	Jig and Fixture Design	2			2		VI
3	18B21C606	Handling Equipment	3			3		VI
4	18B21C607	Quality Control	3			3		VI
5	18B21C608	Electrical and Machine Electronics Systems	2	1		3		VI
6	18B21C609	Production Process Practices		3		3		VI
7	18B21C610	Advanced Engineering Mechanics	2			2		VI
8	18B21C611	Advanced Materials Science	2	1		3		VI
		NUMBER OF CREDITS PROVIDED				22		
		TOTAL SELECTED CREDITS				**11**		
		Elective Courses of Welding Expertise*						
9	18B21C612	Welding Construction Design		3		3		VI
10	18B21C613	Welding Testing	2			2		VI
11	18B21C614	MIG and TIG Welding Practices	3			3		VI

Number	Course Code	Courses	Credits Unit				Semester	
			Teory	Practices	Field	Amount	Odd	Even
12	18B21C615	Advanced Acetylene Welding Practice	3			3		VI
13	18B21C608	Electrical and Machine Electronics Systems	2	1		3		VI
14	18B21C609	Production Process Practices		3		3		VI
15	18B21C610	Advanced Engineering Mechanics	2			2		VI
16	18B21C611	Advanced Materials Science	2	1		3		VI
		NUMBER OF CREDITS PROVIDED				22		
		TOTAL SELECTED CREDITS				11		
		Elective Courses of Metal Fabrication Expertise*						
17	18B21C607	Quality Control		3		3		
18	18B21C613	Metal Fabrication Installations	2			2		VI
19	18B21C614	Fabrication Construction Design	3			3		VI
20	**18B21C615**	Advanced Plate Practice	3			3		VI
21	18B21C608	Electrical and Machine Electronics Systems	2	1		3		VI
22	18B21C609	Production Process Practices		3		3		VI
23	18B21C610	Advanced Engineering Mechanics	2			2		VI
24	18B21C611	Advanced Materials Science	2	1		3		VI
		NUMBER OF CREDITS PROVIDED				**22**		
		TOTAL SELECTED CREDITS				**11**		
		Elective Courses of Refrigeration Expertise*						
24	18B21C616	Industrial Refrigeration		3		3		VI
25	18B21C617	Refrigeration System Installation	2			2		VI
26	18B21C618	Air Conditioning Techniques	3			3		VI
27	18B21C619	Cooling Practices	3			3		VI
28	18B21C608	Electrical and Machine Electronics Systems	2	1		3		VI
29	18B21C609	Laboratory Experiment for Production Process		3		3		VI
30	18B21C610	Advanced Engineering Mechanics	2			2		VI
31	18B21C611	Advanced Materials Science	2	1		3		VI
		NUMBER OF CREDITS PROVIDED				22		
		TOTAL SELECTED CREDITS				**11**		
		Elective Courses of Machine Drawing Expertise*						
31	18B21C620	Manufacturing Design		3		3		VI
32	18B21C621	Appropriate Technology Practice	2			2		VI
33	18B21C622	Mechanical Drawings	3			3		VI
34	18B21C623	Automation and Basic Robotics	3			3		VI
35	18B21C608	Electrical and Machine Electronics Systems	2	1		3		VI
36	18B21C609	Production Process Practices		3		3		VI
37	18B21C610	Advanced Engineering Mechanics	2			2		VI
38	18B21C611	Advanced Materials Science	2	1		3		VI
		NUMBER OF CREDITS PROVIDED				22		
		TOTAL SELECTED CREDITS				**11**		
		Elective Courses of Industrial Mechanical Maintenance Expertise*						
39	18B21C624	Machine Calibration		3		3		VI
40	18B21C625	Maintenance Management	2			2		VI
41	18B21C626	Practice Maintenance and Repair	3			3		VI
42	18B21C627	Fabrication Installation Design	3			3		VI
43	18B21C608	Electrical and Machine Electronics Systems	2	1		3		VI
44	18B21C609	Production Process Practices		3		3		VI
45	18B21C610	Advanced Engineering Mechanics	2			2		VI
46	18B21C611	Advanced Materials Science	2	1		3		VI
		NUMBER OF CREDITS PROVIDED				22		

Number	Course Code	Courses	Credits Unit				Semester	
			Teory	Practices	Field	Amount	Odd	Even
TOTAL SELECTED CREDITS						**11**		
1	18B21C701	Industrial Practice			4	4		VII
2	18B21C702	Teaching and learning Field Experience Program			3	3		VII
3	18B21C703	Community Service Program			4	4		VII
Total Credits						**11**		
1	18B21C801	**Final Project/Thesis**	2		2	4		VIII
Total Credits						**4**		
Total Credits						**144**		

***Expertise Elective Courses**

Allocation per semester
Semester 1 : 20
Semester 2 : 20
Semester 3 : 24
Semester 4 : 24
Semester 5 : 23
Semester 6 : 18
Semester 7 : 11
Semester 8 : 4
Total : 144

According to the diploma supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Building Engineering Education:

1. Able to plan, implement, develop, and evaluate innovative learning in the field of Building Engineering;

2. Having character and ethics as a responsible professional;

3. Able to generate applicable and constructive ideas in solving learning problems and construction work;

4. Able to apply research methods that produce creative and innovative learning and construction technology products;

5. Mastering basic science in civil engineering;

6. Able to plan construction and property designs;

7. Able to carry out construction and property development;

8. Able to evaluate construction and property development activities;

9. Having entrepreneurial skills in construction and property;

10. Able to develop themselves as lifelong learners.

The following **curriculum** is presented:

Semester	Course Code	Course Title	Credits	SEMESTER								C/E
				1	2	3	4	5	6	7	8	
1	17B11C101	Civic Education	3	3								
	17B11C102	Indonesian	3	3								
	17B11C103	Science Phylosophy	2	2								
	17B11C104	Engineering Physics	2	2								
	17B11C105	Engineering Drawings	2	2								C
	17B11C106	Building Materials Science	2	2								
	17B11C107	Statics and Mechanics of Materials	2	2								
	17B11C108	Soil Measurement Science and Lab. I	2	2								
	17B11C109	Introduction to Environmental Science	2	2								
		Sum	**20**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
2	17B11C201	Religious Education	3		3							
	17B11C202	Introduction to Vocational Education	3		3							
	17B11C203	Engineering Mathematics	2		2							
	17B11C204	English	2		2							
	17B11C205	Structural Analysis	2		2							C
	17B11C206	Building Construction I	2		2							
	17B11C207	Wood Structure	2		2							
	17B11C208	Soil Mechanics	2		2							
	17B11C209	Concrete Practice	2		2							
		Sum	**20**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	
3	17B11C301	Pancasila	3			3						
	17B11C302	Educational Psychology	2			2						
	17B11C303	Basic Steel Structure	2			2						
	17B11C304	Basic Concrete Structure	2			2						
	17B11C305	Hydraulics	2			2						C
	17B11C306	Foundation Engineering I	2			2						
	17B11C307	Highway Construction I	2			2						
	17B11C308	Building Construction II	3			3						
	17B11C309	Plumbing Practices	2			2						
	17B11C310	Material Testing Practices	2			2						
		Sum	**22**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	
4	17B11C401	Teaching Profession	3				3					
	17B11C402	Learning and Learning	3				3					
	17B11C403	Learning Media	2				2					
	17B11C404	Construction Business Basics	2				2					
	17B11C405	Highway Construction II	2				2					
	17B11C406	Estimated Construction Costs	2				2					C
	17B11C407	Irrigation I	2				2					
	17B11C408	Building Utilities	2				2					
	17B11C409	Information Communication Technology	2				2					
	17B11C410	Soil Measurement Science and Lab. II	2				2					
		Sum	**22**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	
5	17B11C501	Student Development	3					3				
	17B11C502	Learning Planning	2					2				
	17B11C503	Learning Evaluation	2					2				C
	17B11C504	Learning Strategies	2					2				

Semester	Course Code	Course Title	Credits	SEMESTER								C/E
				1	2	3	4	5	6	7	8	
	17B11C505	Entrepreneurship	3					3				C
	17B11C506	Construction Management	2					2				
	17B11C507	Soil Testing Practices	2					2				
Civil	17B11C508	Foundation Engineering II	2									E
elective	17B11C509	Advanced Structural Analysis	2									
courses	17B11C510	Construction Software Applications	2									
rchitectura	17B11C511	Building Physics	2					6				
elective	17B11C512	Architectural Drawing	2									
courses	17B11C513	Introduction to Architecture	2									
		Sum	**22**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	
6	17B11C601	Educational Research	2						2			C
	17B11C602	Micro Learning	2						2			
	17B11C603	Statistics	2						2			
	17B11C604	Building Structure Feasibility Assessment	2						2			
	17B11C605	Heavy Equipment & PTM	2						2			
	17B11C606	Wood Working Practices	2						2			
Civil	17B11C607	Advanced Concrete Structure	2									E
elective	17B11C608	Irrigation II	2									
courses	17B11C609	Advanced Soil Measurement Science	2									
	17B11C610	Environmental Drainage	2									
	17B11C611	Road Material Testing	2						8			
Architectural	17B11C612	Basic Theory of Architecture & Aesthetics	2									
elective	17B11C613	Architectural Design Studio I	2									
courses	17B11C614	Mockups & Building Modeling	2									
	17B11C615	Residential & Residential Studios	2									
	17B11C616	3D Computer & Animation	2									
		Sum	**20**	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	
7	17B11C701	Interior	2							2		C
	17B11C702	Practical work	3							3		
Civil	17B11C703	Legal Aspects of Construction Services	2									E
elective	17B11C704	Structural Repair Techniques	2									
courses	17B11C705	Advanced Steel	2									
Architectural	17B11C706	Architectural Design Studio II	2							4		
elective	17B11C707	Building Construction III	2									
courses	17B11C708	Site & Landscape Design	2									
		Sum	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	
8	17B11C801	Job training	3								3	C
	17B11C802	Field Experience Program	4								4	
	17B11C803	Thesis	4								4	
		Sum	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	
TOTAL AMOUNT OF CREDIT EVERY SEMESTER			**146**	**20**	**20**	**22**	**22**	**22**	**20**	**9**	**11**	**146**
NUMBER OF COURSES EVERY SEMESTER				**9**	**9**	**10**	**11**	**10**	**10**	**4**	**3**	**66**

C = Compulsory subject of study program
E = Elective subject of study program

According to the website the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Agricultural Technology Education:

Aspects	Learning Outcomes	Code

Attitude	Believe in God Almighty and able to demonstrate a religious attitude;	AT1
	uphold human values in carrying out duties based on religion, morals and ethics;	AT2
	contribute to improving the quality of life in society, nation, state, and advancement of civilization based on Pancasila;	AT3
	play a role as citizens who are proud and love the country, have nationalism and a sense of responsibility to the state and nation;	AT4
	respect the diversity of cultures, views, religions and beliefs, as well as the original opinions or findings of others;	AT5
	cooperate and have social sensitivity and concern for the community and the environment;	AT6
	obey the law and discipline in the life of society and the state;	AT7
	internalize the values, norms, and academic ethics;	AT8
	show an attitude of responsibility for work in their field of expertise independently;	AT9
	internalize the spirit of independence, struggle, and entrepreneurship	AT10
Knowledge	Have basic knowledge in the field of agricultural engineering	KN1
	Have basic knowledge in the field of food technology	KN2
	Have basic knowledge in the field of aquatic/fisheries science	KN3
	Have the ability to plan learning by referring to behavioristic learning theories, cognitive learning theories, and humanist learning theories.	KN4
	Have the ability to carry out an active learning.	KN5
	Able to carry out the learning process well by mastering basic teaching skills.	KN6

	Able to establish various approaches, strategies, methods, and learning techniques that educate creatively and effectively in accordance with teacher competency standards.	KN7
	Have the ability to carry out evaluation of the process and learning outcomes objectively according to the goals.	KN8
Specific Skills	have skills in the field of agricultural technology.	SK1
	Able to apply the results of research in the field of education into the practice of learning agricultural technology.	SK2
	Have sufficient ability to master basic sciences and engineering tools and are competent and skilled in using them,	SK3
	Have skills in operating tools / machines in the field of agricultural technology.	SK4
	Able to plan and carry out the process of maintenance and repair of tools and machines in agriculture.	SK5
	Able to design agricultural technology training devices.	SK6
	Have the ability in training the use of practical equipment in the field of agricultural mechanization, food technology, and aquatic science	SK7
	Have the ability to analyze, evaluate and predict future agricultural technology.	SK8
General Skills	able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their field of expertise;	SK9

	able to demonstrate independent, quality, and measurable performance;	SK10
	able to study the implications of the development or implementation of technology science that pays attention to and applies humanities values according to their expertise based on scientific principles, procedures and ethics in order to produce solutions, ideas, designs or art criticism, compile scientific descriptions of the results of their studies in the form of a thesis or final project report, and upload it on the college page;	SK11
	compile a scientific description of the results of the study mentioned above in the form of a thesis or final project report, and upload it on the college page;	SK12
	able to make decisions appropriately in the context of problem solving in their area of expertise, based on the results of information and data analysis;	SK13
	able to maintain and develop networks with mentors, colleagues both inside and outside the institution;	SK14
	able 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;	SK15
	able to carry out the self-evaluation process of the work group under their responsibility, and able to manage learning independently;	SK16
	able to document, store, secure, and recover data to ensure validity and prevent plagiarism	SK17

The following **curriculum** is presented:

Table 1. Structure of compulsory subjects in the 2018 Agricultural Technology Education Study Program curriculum

No.	Course Code	Course Title	Credits	Semester
1	18B01C101	Pancasila Education	3	1
2	18B01C102	Citizenship Education	3	1
3	18B01C103	English	2	1
4	18B01C104	Philosophy	2	1
5	18B01C105	Introduction to Fisheries and Agricultural Technology	2	1
6	18B01C106	Engineering Maths	2	1
7	18B01C107	Applied Physics	2	1
8	18B01C108	Applied Chemistry	2	1
9	18B01C109	Applied Biology	2	1
	SUM		**20**	
1	18B01C201	Islamic Religion Education	3	2
2	18B01C202	Indonesian Language	3	2
3	18B01C203	Introduction to Vocational Education	3	2
4	18B01C204	Agricultural Products Biochemistry	2	2
5	18B01C205	Engineering Mechanics	2	2
6	18B01C206	Health Management System and Work Safety	2	2
7	18B01C207	Agricultural Workshop	3	2
8	18B01C208	Engineering Drawing	2	2
	SUM		**20**	
1	18B01C301	Student Development	3	3
2	18B01C302	Learn and Learning	3	3
3	18B01C303	Educational Phsycology	2	3
4	18B01C304	Fundamental of Agricultural Cultivation	2	3

5	18B01C305	Thermodinamics	2	3
6	18B01C306	Fish Breeding Technology	2	3
7	18B01C307	Computer Application and Programming	3	3
8	18B01C308	Agricultural Microbiology	2	3
9	18B01C309	Enterpreneurship	3	3
10	18B01C310	Agroclimatology	2	3
	SUM		**24**	
1	18B01C401	Teacher Profession	3	4
2	18B01C402	Learning Planning	3	4
3	18B01C403	Learning Media	2	4
4	18B01C404	Agricultural Industrial System	2	4
5	18B01C405	Food Security	2	4
6	18B01C406	Post-Harvest Fisiology	3	4
7	18B01C407	Sanitation and Agricultural Waste Handing	2	4
8	18B01C408	Fluid Mechanics	2	4
9	18B01C409	Management of Coastal and Marine Areas	2	4
10	18B01C410	Aquaculture Technology	3	4
	SUM		**24**	
1	18B01C501	Learning Strategy	2	5
2	18B01C502	Learning Evaluation	2	5
3	18B01C503	Research Methodologi and Scientific Writing	3	5
4	18B01C504	Statistics	2	5
5	18B01C505	Fishing Technology	3	5
6	18B01C506	Agricultural Machinery and Equipments	3	5
7	18B01C507	Agricultural Processing and Preservation Technology	3	5
	SUM		**18**	
1	18B01C601	Micro Learning	2	6
2	18B01C602	Experimental Design in Engineering Research	2	6
3	18B01C603	Packaging and Storage Techniques	2	6
4	18B01C604	Food Analysis	3	6
5	18B01C605	Economics and Engineering Management	2	6

6	18B01C606	Seminar	1	6
	SUM		**12**	
1	18B01C701	Field Experience Programme	4	7
2	18B01C702	Community Service Programme	3	7
3	18B01C703	Industrial Practice	3	7
	SUM		**10**	
1	18B01C801	Thesis	4	8
	SUM		**4**	
	SUM		**132**	

Table 2. The Structure of elective courses for the 2018 Agricultural Technology Education Study Program Curriculum

No.	Course Code	Course Title	Credits	Semester
AGRICULTURAL ENGINEERING SPECIALIZATION				
1	18B01C508	Hydroponic Technique*	2	5
2	18B01C509	Agricultural Machinery Design*	2	5
3	18B01C510	Agricultural Robotics*	2	5
4	18B01C511	Agricultural Building Construction*	2	5
5	18B01C512	Agricultural Production Machinery*	2	5
6	18B01C513	Drainage and Irrigation Techniques*	2	5
7	18B01C607	Pump and Compressor*	2	6
8	18B01C608	Power in Agriculture*	2	6
9	18B01C609	Drying Technique*	2	6
10	18B01C610	Physical Characteristics and Biology of mechanic Materials*	2	6
11	18B01C611	Agricultural Electricity and Energy*	2	6
12	18B01C612	Agricultural product Processing Machinery Design*	2	6
FOOD TECHNOLOGY SPECIALIZATION				
1	18B01C514	Evaluation of Agricultural Product Nutrition**	2	5

2	18B01C515	Fermentation Technology**	2	5
3	18B01C516	Technology of Herbal Processing**	2	5
4	18B01C517	Quality Management and Food Regulation**	2	5
5	18B01C518	Food Fortification Technology**	2	5
6	18B01C519	Agricultural Product Processing Technology**	2	5
7	18B01C613	Fungsional Food Development**	2	6
8	18B01C614	Enzyme Technology**	2	6
9	18B01C615	New Product Processing Technology**	2	6
10	18B01C616	Toxicology**	2	6
11	18B01C617	Sensory Evaluation**	2	6
12	18B01C618	Agricultural Waste Untilization Technology**	2	6
AQUATIC SCIENCE SPECIALIZATION				
1	18B01C520	Fish Feed***	2	5
2	18B01C521	Fish Disease***	2	5
3	18B01C522	Planktonology***	2	5
4	18B01C523	Aquatic Ecology***	2	5
5	18B01C524	Marine Biology***	2	5
6	18B01C525	Project Evaluation and Business Planning***	2	5
7	18B01C619	Aquatic Conservation***	2	6
8	18B01C620	Ichtyology***	2	6
9 10	18B01C621	Oceanography***	2	6
11	18B01C622	Water Quality***	2	6
12	18B01C623	Information System and Personnel Management***	2	6
13	18B01C624	Fishing Ground Analysis***	2	6
14	18B01C625	Management of Fish Processing Industry***	2	6