ASIIN Seal

Accreditation Report

Bachelor's Degree Programme
Mechanical Engineering
Naval Architecture

Provided by
Hasanuddin University

Version: 24 June 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]
	Mechanical Engineering	ASIIN	--	TC 01
	Naval Architecture	ASIIN	--	TC 01
Date of the contract: 2019-03-11 **Submission of the final version of the self-assessment report:** 2021-01-23 **Date of the onsite visit:** 7-9 April 2021 **at: online**				
Peer panel: Prof. Dr.-Ing. Otto Theodor Iancu, German French University Saarbruecken; Prof. Dipl.-Ing. Andreas Meyer-Bohe, University f Applied Science Kiel; Johannita R. Pramadi, Meratus Group; Faisal Hafizh (Student), Institute of Technology Bandung				
Representative of the ASIIN headquarter: Dr. Michael Meyer				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				
Criteria used: European Standards and Guidelines as of 15.05.2015				

[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 04 - Informatics/Computer Science; TC 05 - Physical Technologies, Materials and Processes; TC 06 - Industrial Engineering; TC 07 - Business Informatics/Information Systems; TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture; TC 09 - Chemistry; TC 10 - Life Sciences; TC 11 - Geosciences; TC 12 - Mathematics; TC 13 - Physics.

ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering as of 28.09.2012.	

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
Mechanical Engineering	B.Eng		Level 6	Full time		8 Semester	273 ECTS / 149 SKS	Autumn, 1960
Naval Architecture	B.Eng..		Level 6	Full time		8 Semester	246 ECTS / 145 SKS	Autumn, 1960

For the Bachelor's degree programme Mechanical Engineering the institution has presented the following profile in the self-assessment report.

graduates should be

- able to improve professional services in the field of mechanical engineering especially with an emphasis on solving problems in energy conversion, mechanical construction, and metallurgy.
- able to excel in the development of their fields of science including the ability to communicate scientifically and work with other disciplines.
- able to develop the prominence of his profession in a broader spectrum in the community.
- equipped with the basic ability to solve various community problems by means of scientific reasoning especially in mechanical engineering problems.
- able to apply mathematics and basic sciences to solve mechanical engineering problems
- able to apply knowledge and skill in mechanical engineering practice
- able to apply mechanical engineering principles to solve problems in mechanical engineering system

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

- able to analyze the problems in the mechanical system through the process of investigation, data analysis and interpretation
- able to conduct research that includes identification, formulation and analysis of problems using modeling, simulation on mechanical systems
- able to apply new technology in the field of engineering by considering technical standards, aspects of performance, reliability, applicability and sustainability
- able to utilize information technology and computational devices for designing, manufacturing and maintaining mechanical systems
- able to perform a managerial skill, effective communication and teamwork building in a professional career.
- able to act in a responsible manner, professional ethics and occupation health and safety awareness.
- able to perform high endure attitude (maritime continent culture) and continue to develop themselves through education, research, professionalism, and entrepreneurship both on a national and international levels.
- able to collaborate as a team, communicate effectively both oral and written in an academic and professional environment
- able to work in a responsible manner, professional and understand professional ethics and aware of health and safety occupation.
- able to demonstrate high endure attitude based on maritime continent culture in order to develop and adapt to future challenge as long life learner

For the Bachelor's degree programme Naval Architecture the institution has presented the following profile in the self-assessment report:

Graduate profiles are ship designer, ship production designer and engineer, marine inspector and surveyor, ship transportation planner, researcher and lecturer.

Graduates should

- be excellent/superior in ship design and in applying shipbuilding planning theory as well as sea transportation system planning.
- be adaptable and able to continue further study in the field of naval architecture as well as other engineering field.
- be able to develop science, technology and skill in the computational ship design.
- be responsible, have self-confidence, emotional maturity, ethic and personality as a lifelong learner.

- understand the concept and basic principles of mechanical, hydromechanical, design and production technology as well as the demand of water transportation services.
- understand the basic economical principle, mechanical and hydromechanical for designing ship through “the spiral design” process.
- understand the principle of shipbuilding management and production technology
- be able to conduct an analysis and formulate the theoretical concepts of designing, building, maintaining and repairing ship and other relevant floating structures procedurally.
- understand the principles of ship safety management
- be able to apply logical, critical, systematical and innovative thinking in terms of developing or implementing science and technology which consider humanities value according to the specific skills and independent
- be able to study the implication of science and technology development and application which consider the humanities value according to its skills which is based on the rules, procedures and scientific ethics in order to solve problems, create ideas or design and then establish scientific description of the study in the form of final year research report and uploading the report into the university website
- be able to make the right decision in the context of problem solving in naval architecture field which is based on the data and information analysis, maintaining and developing network, responsible for the achievement of the group study result and being able to independently study continuously while preventing plagiarism
- be able to apply science and ship technology in naval architecture and shipbuilding using the current computer software and hardware creatively and then presenting the design.
- be able to formulate engineering problem and its practical solution in the field of naval architecture without ignoring the condition and environmental constraints
- be able to technically assess floating structures by investigating and inspecting the structure using the current criteria and norms

C Peer Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

Evidence:

- Academic Handbook
- Self-Assessment Report
- Discussions with programme coordinators and representatives of the labour market

Preliminary assessment and analysis of the peers:
The study aims and intended learning outcomes of both programmes defined by the university correspond to learning outcomes relevant to level 6 of the European Qualifications Framework. Learning outcomes are accessible to students, staff members, and all interested stakeholders on the faculty web site. These objectives were discussed in staff meetings with the faculty team and students. The learning outcomes have been formulated additional referring to vision and mission of Hasanuddin University, the Indonesian Qualification Framework (IQF), National Standards for Higher Education and discussion results with internal and external stakeholders. The external stakeholders participated in discussion came from mechanical and shipbuilding industries, shipping companies, Indonesian Classification Society, government institutions associated with transportation and maritime regulation, ship design consultant, and Naval Architecture Study Program Consortium. Moreover, especially for Naval Architecture different benchmarks were used from overseas Universities (TU Berlin, TU Hamburg, Hiroshima University, Osaka University).

The peers referred to the Subject-Specific Criteria (SSC) of the Technical Committee for Mechanical Engineering and Process Engineering as a basis for judging whether the intended learning outcomes of the three Bachelor programmes as defined by ITB correspond to the exemplary constituted learning outcomes of the Technical Committee of Mechanical Engineering.

The peers comprehend that in both programmes students should gain extensive technical knowledge as to engineering, mathematics and natural science with a view to mechanical engineering enabling them to carry out scientifically substantiated work and act responsibly in their professional activities. They should be able to identify, formulate and solve

problems peculiar to mechanical engineering based on the application of established scientific methods Additionally, they should be able to analyse and assess products, processes and methods used in their discipline in order to choose and apply suitable methods of analysing, modelling, simulating and optimising. The peers see in both programmes as well that graduates should have the ability to conceive designs for machinery, devices, EDP programmes or processes and to develop them according to specified requirements. The graduates should also get an understanding of design methods and the ability to apply them in a competent manner. Finally, the peers comprehend that in the learning outcomes for both programmes appropriate soft skills with regard to communication skills and the ability to work in a team are mentioned. In Naval Architecture the mechanical engineering competences are specialised in ship building aspects and are widened to the subjects of transportation management with corresponding knowledge of economy.

These learning outcomes fits perfectly with the subject specific criteria for mechanical engineering. Out of the alumni surveys the peers learned graduates find jobs in governmental institutions and in the private sector in a appropriate time. Therefore, the Peers assert that graduates have good chances on the labor market with the described profile.

Criterion 1.2 Name of the degree programme

Evidence:

- Websites of the degree programmes
- Self-Assessment Report

Preliminary assessment and analysis of the peers:
The titles of both programmes are published on the subject specific webpages. The information about the programmes are published in Indonesian and English language. The panel confirmed that the names of all programmes reflect the intended aims and learning outcomes.

Criterion 1.3 Curriculum

Evidence:

- The study regulations define the curriculum and the single modules.
- The module descriptions inform about the aims and content of the single modules.
- Objective-Matrices provided in the Self-Assessment Report, Appendix 5
- Discussions with programme coordinators, lecturers, business representatives, students

Preliminary assessment and analysis of the peers:

The bachelor programme in mechanical engineering comprises 149 SKS with duration of four years. In the first year the curriculum focus on basic knowledge of mathematics, natural sciences and engineering (modules: chemistry, physics I and II, mathematics I and II, mechanical drawing, machining process, statistics and structure, engineering manufacture). Students will have a balanced mix of classroom-based, laboratory-based study, and early exposure in engineering design. Additionally, general studies are involved in the first year (modules: Indonesian language, civic education, religion, English language, maritime social culture, Pancasila) and students got first contacts with methods of scientific work.

The second part of the programs (Semesters 3-5) concentrate on the field specific knowledge of mechanical engineering (kinematic and dynamics, material engineering, machine elements, mechanics, materials and engineering mathematics, metallurgy, fluids mechanics, thermodynamics, heat transfer, computer programming and engineering measurement, fluid machinery, numerical methods, mechanical vibrations, control engineering, finite elements method). Additionally, the students become familiar with professional ethics and with engineering economy. The sixth semester contains courses deepen the mechanical knowledge with regard to mechanical system design, cooling machines and mechatronics and includes aspects of safety, health and environment as well as entrepreneurship.

The last year is focused on applications designing more advanced and complicated mechanical systems (power generation systems, machine maintenance) with practice elements in laboratories and an external internship. Additionally, students are trained in research methodology, pass the community service and write their final theses. In order to offer students the opportunity for individual specialisation five elective courses are included into the sixth and seventh semester.

The bachelor programme in naval architecture comprises 149 SKS with duration of four years. In the first year the curriculum focus on basic knowledge of mathematics and natural sciences as well as fundamental knowledge of specific basics in naval architecture (engineering drawing, introduction to naval architecture, material technology, mathematics I and II, physics I and II, engineering mechanics, ships design concepts, marine transportation systems). Additionally, general studies are involved in the first year (modules: Indonesian language, civic education, religion, English language, maritime social culture, Pancasila) and students got first contacts with methods of scientific work.

The second year deepened the fundamental knowledge in the fields of engineering mathematics, statistics, hydromechanics and contains the field specific basics (ship preliminary

design, wooden ships, ships hydrostatic, ship construction I, ship machinery installation, ship equipment, ship electrical systems).

These specific basics are deepened in the third year with regard to general arrangement and tonnage, construction, piping systems, ship resistance, ship vibrations, ship production technology, computer aides ship design, free board ad floodable length, ship strength, ship propulsion and ship stability. Also students get a more deepened overview about research methodology.

In the seventh semester students choose one out of four specializations.

- marine Structure and Strength concentrates on ship structure design and analysis.
- Ship Hydrodynamics concentrates on hydrodynamics performance of ship and model experiment and simulation.
- Ship Production Technology concentrates on ship production management and specification and costing shipbuilding.
- Marine Transportation concentrates on marine transportation supply-demand and port facilities and services, especially with regard to the geographical situation in Indonesia

Additionally, students can choose two elective courses for individual specifications. Within the last semester students pass an external internship, the community service and write their final theses.

From the point of view of the peers both programmes are structured very well. The curricula implement all the defined study aims and learning outcomes. Especially the panel appreciates the broad range of elective courses offered to the students. The peers also welcome that there are religious modules not only for the Islam religion but for all Indonesian religions as well. The committee gained the impression that the religion modules are in accordance with the principles of scientific research.

They also appreciate that the fundamental knowledge in mathematics, natural sciences and engineering are taught separately for each programme in order to allow programme specific examples even in these thematic fields.

They discuss the English skills of the students with the programme coordinators and doubt whether language courses with only 2 SKS are sufficient to enable students to read international scientific literature. Especially for naval architecture adequate language skills in English are essential as nearly all scientific literature in this field is written in English.

Out of the discussion with representative of the industry the peers got the impression that graduates of the programmes are very well prepared to the labor market regarding to their

field specific competences. On the other hand there still seems to be some lacks regarding intercultural communication and regarding the ability to work in teams although there are implemented several projects into the programmes. Therefore, for the peers it seems to be necessary to strengthen further the general communication skills (intercultural communication, English language skills) and team ability of the students.

Finally, the peers can understand the wish of the students to get trained more intensively to apply computer software and recommend to the faculty to offer more opportunities to the students.

Nevertheless, overall the peers come to the conclusion that the curricula of both programmes implement the intended learning outcomes in a very good manner. Aspects of sustainable development, climate change are handled in the curricula. From their point of view the curricula are linked to the actual field specific research discussions and to European and international methods.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- Study Guide
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Student admission policies and entry requirements follow the policies of Universitas Hasanuddin (Unhas) stipulated in the Rector's Decree Number: 1870 / H4 / P / 2009, Article 16 and also the Ministry Regulation of the Ministry of Research, Technology, and Higher Education (Ministry Decree No. 126 of 2016).

There are five different ways by which students can be admitted to a bachelor's degree programme at Hasanuddin University:

The National Entrance based on Student Academic Performance Records (SNMPTN) is a university admission path followed by 62 National Universities in an integrated system. Prospective students with outstanding academic achievements during the first 5 (five) semesters in senior high school and have consistently demonstrated academic excellence are offered the opportunity to become students in nationally selected national university study programmes

Students who are failed the first admission scheme (SNMPTN) can apply to the second entry option called SBMPTN. In this entry option, prospective students can apply one to three study programs at selected national universities. However, only one study program may be

accepted by students based on the graduation rate determined by the study program of the selected national university.

The third entry option is a Local University Entrance based on the outstanding performance of prospective students in various aspects, especially national-level achievements of students in the fields of sports, arts or science. In order to be eligible for this third entry option, all prospective students must first take the SBMPTN entrance examination as a result (SBMPTN test score) will be used together with each national-level achievement obtained for assessment.

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

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

The peers appreciate the announcement of the university to implement modules in English to increase the language skills especially regarding technical English and to offer more training in the application of sofware. They admit the existing support of the university via language courses beyond the curricula and the opportunities of student to train their team working skills in various extracurricular activities in student organisation. However, the panel underlines that they have to assess only the curricula of the programmes. As the announcements are not implemented yet, the panel confirms the requirement to strengthen the general communication skills (intercultural communication, English language skills) and team ability of the students. In addition, they still suggest a recommendation to increase the application as well as update and upgrade of software.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Discussions with programme coordinators, teaching staff and students

Preliminary assessment and analysis of the peers:
The structure of the programmes under review is clearly outlined on the subject specific website for each study programme. The programmes consists of modules, which comprise a sum of teaching and learning. The module descriptions are also published on the subject specific website. Based on the analysis of the sequence of modules and the respective module descriptions the peers concluded that the structure of both programmes ensures that the learning outcomes can be reached. The programmes also offers several elective courses, which allows students to define an individual focus. Based on the analysis of the curriculum and the module descriptions the peers confirmed that the objectives of the modules and their respective content help to reach both the qualification level and the overall intended learning outcomes.

In order to support the international mobility of students the faculty has established several student exchange programmes with international universities and offers organizational and financial support for students studying abroad.

In order to support the international mobility of students the faculty has established several student exchange programmes with international, mainly Japanese University. Nvertheless the peers get the impression that student mobility is focused on national institutions. They welcomed the bride line of activities offered to students like excursion, participation in scientific conferences the peers encourage the faculty to offer more opportunities for students to study abroad and to support them more intensively.

Criterion 2.2 Work load and credits

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Study Guide
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Based on the National Standards for Higher Education of Indonesia (SNPT), both programmes use a credit point system called SKS. In comparison to ECTS credit system, wherein 1 ECTS equals 25-30 hours of students' workload per semester, it is determined that 1 CSU is awarded for 170 minutes of student workload per week and the relation between the different kind of learning (contact hours, self-studies) is fixed. With a duration

of 16 weeks per semester one SKS correspond to 45,3 hours of student workload. For a bachelor's degree programme with 145 CSU the total time of study is round 6500 h in four years with an average of some 800 hours per semester. For bachelor's degree programmes a possible range from 140 to 150 SKS is defined by governmental regulations.

The panel members understand that both credit point systems, SKS and ECTS, are based on the student workload. While the SKS has a defined student workload of 170 Minutes per week within a semester of 16 weeks (45,3 h in total) there is a range from total 25-30 h per ECTS-Point. Nevertheless, even in the ECTS-System there has to be the same number of credit points for the same time of work. In consequence there cannot be a different ratio between SKS and ECTS for defined student workload as it is described for several modules of the bachelor programme of mechanical engineering. The peers find it necessary to define a common ratio between SKS and ECTS credit points for all modules in the programme.

The peers welcomed the Indonesian system wherein the student's workload per semester dependents on their average grades in the former semester. The students' individual study plans are indeed different from each other, but have to be approved by their academic advisors.

The peers also positively noted that the module handbook describes consistently in all modules the credit points and the workload distinguishing between contact time and time of self-study

Comparing to the objectives and the content of the courses the workload defined for the single modules seems to be realistic for the peers besides for the internships and the final theses. The students confirmed this impression.

For the internship 3 SKS are defined in both programmes independently how long students stay with the companies as the credit point are only awarded for the writing of the report and its presentation. From the point of view of the peers, credit point systems based on student workload should take into account all mandatory parts of a study programme. Therefore, they find it necessary to ensure that the workload and the credit points correspond for all mandatory elements of the programmes.

Regarding the final theses, the peers see adequate requirements and topics after reviewing several examples. But they doubt whether these requirements could be fulfilled by the students within the foreseen workload of only 4 SKS. The students confirm to the peers that they need regularly more time to write the final theses and that this would be one of the main reasons to extend the study time. In combination with failed exams it is comprehensible for the peers that students need 5 years in average to finish the programmes. From

their point of view, the workload for the final theses also must correspond to the defined credit points.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions

Preliminary assessment and analysis of the peers:
The staff members of UGM apply various teaching and learning methods like interactive lecture, small group discussion, demonstration, collaborative learning, discussion, case study, project based learning, laboratory practice, presentation and software simulation.

The peers appreciate the project based learning especially in the bachelor programme of Naval Architecture. In the third semester, students will work on the ship preliminary design project assignment, which includes determining the ship's main dimension, motor power, carrying capacity, stability estimation, etc. The execution of this project will also develop students' knowledge on ship design. In the fourth semester students work on project assignments including drawing line plans, calculations and drawing of the ship's hydrostatic curve. These assignment projects will use the predetermined ships project output of the third semester. In the fifth semester, students will work on assignment project for general plan drawing projects and ship tonnage calculations. This project assignment will be also based on the previous semester's project output.

As far as the peers could see the project based learning in the bachelor programme of Mechanical Engineering is not as strong as in the field of naval architecture but appropriate. Therefore, the panel sees in both programmes a distinct student oriented learning and teaching system. To further improve this didactical method the peers recommend to implement more interdisciplinary and holistic student projects which are supported directly from the industry

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Report
- Discussion with students

Preliminary assessment and analysis of the peers:
Hasanudding University offers a comprehensive advisory system for all students. Before entering the university an orientation week is held to introduce students to the university

environment and academic culture. It also provides students the chance to interact with each other. During this orientation week, a group of tutors is assigned to guide new students and give all information students need to adapt to the new academic environment. Every student will be supported by an academic advisor that will monitor their student's academic performance through Information Management System (SIM). The academic advisor not only give support regarding academic process but also deals with non-academic issues that may influence the performance of the students.

Students confirm in the discussion with the peers that the advisory system works very well, that they meet their academic advisors regularly and that they always may contact them personally for support or advice. In general, students stress that the teachers are open minded, communicate well with them and take their opinions and suggestions into account and changes are implemented if necessary.

The peers notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay. The students are well informed about the services available to them.

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

The peers appreciate that the university admits the advantage of academic mobility for the education of the students and that the faculty is discussion strategies how to offer more opportunities to study abroad and to support the students more intensively. As there was no time for the university to implement additional structures of support, the peers confirm their corresponding recommendation.

Regarding the workload, the peers appreciate the announcement of the university to recalculate the credit points for the final thesis. The announced 10 SKS seems to be appropriate to the needed workload to fulfil the current requirements for the theses. As the new calculation is not implemented yet, the panel confirms the requirement to ensure that the workload and the credit points correspond for all mandatory elements of the programmes (internship, final theses). Additionally, the peers confirm the requirement for the master's degree programme in mechanical engineering to ensure that there is one common ratio between SKS and ECTS credit point for all modules.

The peers additional appreciate the announcement of the university to implement more interdisciplinary and holistic student projects which are supported directly from the industry in order to train the interdisciplinary teamwork of the students. As those projects could not be implemented yet, the peers confirm the corresponding recommendation.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- Examination regulations

Preliminary assessment and analysis of the peers:
According to the Self-Assessment Report, the students' academic performance is evaluated based on their attendance and participation in class, their laboratory works and reports, assignments, homework, project works, presentations, mid-term exam, and the final exam at the end of each semester. In general, exams are written tests. But in several courses also oral presentations of lab reports or homework are required. Also group discussions and practical exams in courses with high laboratory practice are conducted. In several courses students have to pass laboratory practice before entering the final exam. The form and length of each exam is mentioned in the module descriptions.

The written exams can be multiple choice, quizzes, or essays. In addition, there are oral exams. The students are informed about mid-term and final exams via the Academic Calendar. The final grade is the result of the different activities in the course.

If a student fails, he has to repeat the entire module in the following semesters; it is not possible to retake just parts of the course or to just retake the final exam.

The students appreciate that there are a several short exams instead of one big exam and confirm that they are well informed about the examination schedule, the examination form, and the rules for grading. From the point of view of the students the requirements in the exams are hard but fair.

The peers also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples. The requirements in the exams, projects and theses correspond for the auditors with the qualification level of the two programmes.

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

As the university do not comment this chapter the panel confirms its preliminary assessment that the criterion is completely fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self Assessment Report
- Staff handbook
- Discussions with programme coordinators and teaching staff

Preliminary assessment and analysis of the peers:
At Hasanuddin University, 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 depend on the academic position.

According to the Self-Assessment Report, the teaching staff involved in the bachelor programme of mechanical engineering consists of 28 full-time teachers (4 professors, 10 associate professors and 14 assistant professors). In the bachelor programme of naval architecture 2 full professors, 11 associate professors and 6 assistant professors are involved.

The peers learned that the government finance determine the number of staff for each programme based on the number of students.

All members of the teaching staff are obliged to be involved in teaching/advising, research and community service. As the peers learn during the audit, all teachers have a workload between 12 and 16 lecture hours per week. However, the workload can be distributed differently between the three areas from teacher to teacher. In all labs a special lab staff for supporting the student practice is involved.

The university support research activities of the teaching staff by giving incentives for publishing scientific articles in reputable international journals, financing participations on national and international scientific conferences and giving grants for research projects.

In order to improve cooperation in research projects the Mechanical Engineering Department organizes national and international scientific seminars such as the National Seminar on Materials Engineering, Manufacturing Systems and Energy Conversion and The International Symposium on Smart Materials and Mechatronics. In these conferences all lecturers are involved.

The peers appreciate that Hasanuddin University strives to improve research projects of the teaching staff further on, despite the already established activities. Giving the teaching staff more time for research activities e.g. by implementing sabbaticals could be a step in this direction.

Over all the peers see a appropriate network of the university and the department with national and international research institutions. But from their point of view, especially the cooperation with the industry still could be improved although there are already several projects regarding commission work in the labs of the faculty for several companies. In order to enhance contacts with the industry further on the peers recommend to establish an advisory board and to organize seminars with students and companies. Also more topics for the final theses out of the industry could be take into account more often.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- Staff handbook
- Discussions during the audit

Preliminary assessment and analysis of the peers:
Hasanuddin University encourages the training of its academic and technical staff, so it has developed a programme for improving the didactic abilities and teaching methods. One part of the capacity-building programme focuses on subject-specific skills, whereas other training courses are intended to further improve the teachers' didactic skills and to introduce new teaching methods. There are financial resources available for staff members to go abroad for a limited time and to take part at conferences or other events in order to stay up to date with the scientific development in their area of expertise.

The peers discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme, their opportunities to further improve their didactic abilities and to spend some time abroad to attend conferences, workshops or seminars; even a sabbatical leave is possible.

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

Criterion 4.3 Funds and equipment

Evidence:

- Self-Assessment Report
- Discussions with programme coordinators and teaching staff
- digital visit of the laboratories, lecture rooms, and the library

Preliminary assessment and analysis of the peers:

The peers were explained that financial sources for Hasanuddin University is originated from government funding, society funding, and tuition fees. The operational funds were distributed to the Faculties based on a specific formula depending on the number of students. The salary for staff members included a basic salary from government and incentives depending on additional efforts of staff members. The management of Hasanuddin University stressed that even if the contributions from private businesses decreased to zero due to bad economic developments, the university would still be capable to maintain its operations. The financing of the equipment is ensured also by external funds (third party money).

The peers were convinced that the financial means were sufficient and secured for the timeframe of the accreditation. The equipment of the labs ensures to conduct the programmes in the defined way.

The peers wonder that the students complain about a lack of literature in Indonesian language. At least for naval architecture nearly all relevant international literature is written in English. The appeal of the students confirms for the peers the necessity to improve the English skills of the students.

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

The peers appreciate that the university planning to enhance contacts with the industry further on and that it is even discussed to implement an advisory board. Nevertheless, the panel confirms its former recommendation corresponding to this topic, as the implementation could not take place yet.

As the university do not give any comments on sabbaticals the peers confirm the corresponding recommendation as well.

In general the panel assesses the criterion as completely fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module descriptions

Preliminary assessment and analysis of the peers:
The students, as all other stakeholders, have access to the module descriptions via UGM's homepage. More detailed syllabus is handed out to the students by the lecturers at the beginning of the semester.

After studying the module descriptions, the peers confirm that they include all necessary information about the persons responsible for each module, the teaching methods and work load, the awarded credit points, the intended learning outcomes, the content, the applicability, the admission and examination requirements, and the forms of assessment and details explaining how the final grade is calculated.

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 both degree programmes are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all necessary information about the degree programme. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, cumulative GPA, and mentions the seminar and thesis title.

Criterion 5.3 Relevant rules

Evidence:

- Self-Assessment Report
- All relevant regulations as published on the university's webpage: www.ugm.ac.id

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

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

As the university do not comment this chapter the panel confirms its preliminary assessment that the criterion is completely fulfilled.

6. Quality management: quality assessment and development

Evidence:

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

Preliminary assessment and analysis of the peers:
The auditors discuss the quality management system at Hasanuddin University with the programme coordinators and the students. They learn that there is a well-structured continuous process in order to improve the quality of the degree programmes and it is carried out through internal and external evaluation.

Internal evaluation of the quality of the degree programmes is mainly provided through student and alumni surveys. The students give their feedback on the courses by filling out the questionnaire online. There are several categories in the questionnaire (e.g. schedule, course materials, workload, and motivation). A compilation of the students' feedback is sent to the respective lecturers. As the students point out during the discussion with the peers, there is also the possibility to give a direct and informal feedback to the teacher.

The results of internal quality assessments are evaluated on faculty level attended by the dean, vice deans, heads of departments, heads of laboratories, degree programme managements and the Quality Assurance Unit.

During the audit, the peers learn that the results of the surveys are accessible by the students and the members of the teaching staff. If there is negative feedback, the Dean talks to the respective teacher, analyses the problem, and offers guidance. The auditors gain the impression that the students' feedback is taken seriously by the faculties and changes are made if there is negative feedback.

In summary, the peer group confirms that the quality management system is suitable to identify weaknesses and to improve the degree programmes. All stakeholders are involved in the process.

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

As the university do not comment this chapter the panel confirms its preliminary assessment that the criterion is completely fulfilled.

D Additional Documents

No additional documents are needed

E Comment of the Higher Education Institution

The university submits a detailed comment on the report of the peers.

F Summary: Peer recommendations

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Mechanical Engineering	With requirements for one year	--	30.09.2026
Ba Naval Architecture	With requirements for one year	--	30.09.2026

Requirements

For both programmes

A 1. (ASIIN 2.2) Ensure that the workload and the credit points correspond for all mandatory elements of the programmes (internship, final theses).

A 2. (ASIIN 1.3) Ensure to strengthen the general communication skills (intercultural communication, English language skills) and team ability of the students.

For Mechanical Engineering

A 3. (ASIIN 2.2) Ensure that there is one common ratio between SKS and ECTS credit point for all modules.

Recommendations

For both programmes

E 1. (ASIIN 4.1) It is recommended to enhance the cooperation with the industry e.g. by establishing an advisory board, organizing seminars with students and companies and more topics for final theses should come from industry.

E 2. (ASIIN 2.3) It is recommended to implement interdisciplinary and holistic student projects supported from the industry.

E 3. (ASIIN 2.2) It is recommended to improve the international mobility of the students.

E 4. (ASIIN 1.3) It is recommended to increase the application as well as update and upgrade of software.

E 5. (ASIIN 4.1) It is recommended to implement sabbaticals for the teaching staff in order to support research activities.

G Comment of the Technical Committee 01- Mechanical Engineering/Process Engineering

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	Subject-specific label	Maximum duration of accreditaiton
Ba Mechanical Engineering	With requirements for one year	--	30.09.2026
Ba Naval Architecture	With requirements for one year	--	30.09.2026

Requirements

For both programmes

A 1. (ASIIN 2.2) Ensure that the workload and the credit points correspond for all mandatory elements of the programmes (internship, final theses).

A 2. (ASIIN 1.3) Ensure to strengthen the general communication skills (intercultural communication, English language skills) and team ability of the students.

For Mechanical Engineering

A 3. (ASIIN 2.2) Ensure that there is one common ratio between SKS and ECTS credit point for all modules.

Recommendations

For both programmes

E 1. (ASIIN 4.1) It is recommended to enhance the cooperation with the industry e.g. by establishing an advisory board, organizing seminars with students and companies and more topics for final theses should come from industry.

E 2. (ASIIN 2.3) It is recommended to implement interdisciplinary and holistic student projects supported from the industry.

E 3. (ASIIN 2.2) It is recommended to improve the international mobility of the students.

E 4. (ASIIN 1.3) It is recommended to increase the application as well as update and upgrade of software.

E 5. (ASIIN 4.1) It is recommended to implement sabbaticals for the teaching staff in order to support research activities.

H Decision of the Accreditation Commission

The Accreditation Commission discusses the procedure and follows the assessment of the peers and the technical committee without any changes.

The Accreditation Commission awards the applied seal as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Mechanical Engineering	With requirements for one year	--	30.09.2026

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditaiton
Ba Naval Architecture	With requirements for one year	--	30.09.2026

Requirements

For both programmes

A 1. (ASIIN 2.2) Ensure that the workload and the credit points correspond for all mandatory elements of the programmes (internship, final theses).

A 2. (ASIIN 1.3) Ensure to strengthen the general communication skills (intercultural communication, English language skills) and team ability of the students.

For Mechanical Engineering

A 3. (ASIIN 2.2) Ensure that there is one common ratio between SKS and ECTS credit point for all modules.

Recommendations

For both programmes

E 1. (ASIIN 4.1) It is recommended to enhance the cooperation with the industry e.g. by establishing an advisory board, organizing seminars with students and companies and more topics for final theses should come from industry.

E 2. (ASIIN 2.3) It is recommended to implement interdisciplinary and holistic student projects supported from the industry.

E 3. (ASIIN 2.2) It is recommended to improve the international mobility of the students.

E 4. (ASIIN 1.3) It is recommended to increase the application as well as update and upgrade of software.

E 5. (ASIIN 4.1) It is recommended to implement sabbaticals for the teaching staff in order to support research activities.

A Fulfilment of Requirements

Requirements

For all degree programmes

A 1. (ASIIN 2.2) Ensure that the workload and the credit points correspond for all mandatory elements of the programmes (internship, final theses).

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: The university re-calculated the credit points and defined more credits for the internship and the final projects. From the point of view of the peers the workload correspond now to the defined credit points.
TC 01	fulfilled Vote: unanimous Justification: The Technical Committee follows the assessment of the peers without any changes.

A 2. (ASIIN 1.3) Ensure to strengthen the general communication skills (intercultural communication, English language skills) and team ability of the students.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: The university implemented smaller projects in several modules with teamwork and presentations. Additionally some field specific modules are taught in English.
TC 01	fulfilled Vote: unanimous Justification: The university has changed the learning method in several courses by implementing more project based teaching methods including group work and presentations in order to train communication skills and team abilities.

For Mechanical Engineering

A 3. (ASIIN 2.2) Ensure that there is one common ratio between SKS and ECTS credit point for all modules.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: The university submitted new documents wherein the ration between ECTS and SKS is defined consistently.
TC xx01	fulfilled Vote: unanimous Justification: The Technical Committee follows the assessment of the peers without any changes.

Decision of the AC Programmes on 24.06.2022:

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Mechanical Engineering	All requirements fulfilled	--	30.09.2026
Ba Naval Architecture	All requirements fulfilled	--	30.09.2026

Appendix: Programme Learning Outcomes and Curricula

The following **curriculum** is presented for the bachelor programme mechanical engineering:

Table A3.1 Course in Semester I

Code	Course	CP	ECTS
008U0032	Concept of science, technology and arts	2	3.63
009U0032	Indonesian Language	2	3.63
025U0032	Basic Chemistry	2	3.63
011U0032	Civic Education	2	3.63
016U0033	Basic Mathematic I	3	5.44
020U0033	Basic Physic I + Practice	3	5.44
101D2113	Basic Mechanical Drawings + Task	3	5.44
102D2113	Machining Process	3	5.44

Table A3.2 Course in Semester II

Code	Course	CP	ECTS
18Y01111002	English Language	2	3.63
18Y01110702	Maritime Social Culture Insight	2	3.63
18Y01110-02	Education of Religion	2	3.63
103D2122	Mechanical Drawing (computer based) + Practice	2	3.63
18Y02110603	Basic Physic II + Practice	3	5.44
18Y02110303	Basic Mathematic I (II)	3	5.44
18Y01111201	Pancasila (Nationality)	2	3.63
104D2124	Engineering Manufacture + Practice	4	7.25
105D2123	Statics and Structure	3	5.44

Table A3.3 Course in Semester III

Code	Course	CP	ECTS
206D2115	Kinematic and Dynamic + Practice	5	9.07
207D2113	Material Engineering	3	5.44

208D2114	Machine Element	4	7.25
209D2114	Engineering Mathematics	4	7.25
210D2114	Mechanics and Strength of Materials	4	7.25

Table A3.4 Course in Semester IV

Code	Course	CP	ECTS
211D2123	Physical Metallurgy + Practice	3	5.44
212D2125	Fluids Mechanics + Practice	5	9.07
213D2124	Thermodynamics	4	7.25
214D2124	Heat Transfer	4	7.25
215D2122	Computer Programming	2	3.63
216D2123	Engineering Measurement	3	5.44

Table A3.5 Course in Semester V

Code	Course	CP	ECTS
317D2113	Fluid Machinery + Practice	3	5.44
318D2112	Numerical Method	2	3.63
320D2112	Professional Ethics and Labor Law	2	3.63
321D2113	Mechanical Vibration + Practice	3	5.44
322D2112	Control Engineering	2	3.63
323D2112	Finite Element Method	2	3.63
324D2112	Engineering Economics	2	3.63

Table A3.6 Course in Semester VI

Code	Course	CP	ECTS
325D2122	Occupational Safety and health and Environmental	2	3.63
326D2128	Mechanical System Design + Task	8	14.51
327D2122	Technopreneurship	2	3.63
328D2123	Cooling Machines + Practice	3	5.44
319D2112	Mechatronics	2	3.63
**	Elective I	2	3.63
**	Elective II	2	3.63

Table A3.7 Course in Semester VII

Code	Course	CP	ECTS

429D2118	Power Generation System + Practice	8	14.51
430D2112	Research Methodology	2	3.63
431D2112	Machine Maintenance	2	3.63
**	Elective III	2	3.63
**	Elective IV	2	3.63
**	Elective V	2	3.63

Table A3.8 Course in Semester VIII

Code	Course	CP	ECTS
432D2132	Internship	2	3.63
433D2134	Community Service Program	4	8.53
434D2134	Final Project	4	8.53

The following **curriculum** is presented for the bachelor programme naval architecture: