



ASIIN Seal

Accreditation Report

Bachelor's Degree Programme
Electronics and Instrumentation

Master's Degree Programme
Computer Science

Provided by
Universitas Gadjah Mada

Version: 24 September 2024

Table of Content

A About the Accreditation Process.....	3
B Characteristics of the Degree Programmes	5
C Expert Report for the ASIIN Seal	9
1. The Degree Programme: Concept, Content & Implementation	9
2. Exams: System, Concept and Organisation.....	25
3. Resources	27
4. Transparency and Documentation.....	32
5. Quality management: quality assessment and development	34
D Additional Documents	37
E Comment of the Higher Education Institution (31.07.2024)	38
F Summary: Expert recommendations.....	39
G Comment of the Technical Committees	40
Technical Committee 02 – Electrical Engineering/Information Technology	40
Technical Committee 04 – Informatics/Computer Science	40
H Decision of the Accreditation Commission (24.09.2024)	42
Appendix: Programme Learning Outcomes and Curricula	43

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
Program Studi Elektronika dan Instrumentasi	Bachelor in Electronics and Instrumentation	ASIIN	29.03.2019-30.09.2024	02
Program Studi Magister Ilmu Komputer	Master in Computer Science	ASIIN	29.03.2019-30.09.2024	04
<p>Date of the contract: 23.03.2023</p> <p>Submission of the final version of the self-assessment report: 21.11.2023</p> <p>Date of the onsite visit: 22.-23.04.2024</p> <p>at: Universitas Gadjah Mada, Yogyakarta</p>				
<p>Expert panel:</p> <p>Prof. Dr. Ralf Müller, Friedrich-Alexander-University Erlangen-Nuremberg</p> <p>Prof. Dr. Paul Grimm, Hochschule Darmstadt University of Applied Sciences</p> <p>Jun.-Prof. Dennis Riehle, University of Koblenz</p> <p>Wilfridus Handaya, Industry representative</p> <p>Joanna Darmawan, student at Institut Teknologi Sepuluh Nopember</p>				
<p>Representative of the ASIIN headquarter: David Witt</p>				
<p>Responsible decision-making committee: Accreditation Commission for Degree Programmes</p>				

¹ ASIIN Seal for degree programmes

² TC: Technical Committee for the following subject areas: TC 02 - Electrical Engineering/Information Technology; TC 04 - Informatics/Computer Science.

<p>Criteria used:</p> <p>European Standards and Guidelines as of May 15, 2015</p> <p>ASIIN General Criteria, as of December 07, 2021</p> <p>Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering/Information Technology as of December 9, 2011 , Technical Committee 04 – Informatics/Computer Science as of March 29, 2018</p>	
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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
Bachelor in Electronics and Instrumentation	S.Si. / B.Sc.	- Electronics - Instrumentations and Control - Computer Systems	6	Full time	-/-	8 Semester	216 ECTS / 144 CP	August 1987
Master in Computer Science	M.Cs / M.Sc.	- Data Science - Computational Science - Computer Systems - Information Management	7	Full time	-/-	4 Semester	92.10 ECTS / 42 CP	August 1999

For the Bachelor's degree programme Electronics and Instrumentation the institution has presented the following profile on its website:

“Vision

In 2030, it will become a nationally leading and leading study program international community that develops electronics and instrumentation knowledge broadly and produces graduates who are highly competent, have good morals, and are able to play an active role in solving the problems of the nation's welfare imbued with cultural values based on Pancasila.

Mission

1. Develop international scale education in the field of Electronics and Instrumentation by making the best use of quality research results that are relevant to industry needs.
2. Carry out learning based on the latest research results and involve students in research.

³ EQF = The European Qualifications Framework for lifelong learning

3. Develop excellent research that can contribute to solving societal problems in the electronics and instrumentation fields.
4. Carry out community service by utilizing research results for technology development so that it can be put to good use to solve national problems and increase the role of electronics and instrumentation science in making a real contribution to society.

Objectives

1. Educating and preparing students to become graduates who are able to follow, absorb the latest scientific developments in Electronics and Instrumentation and technology as well as develop and apply them for the benefit of national development.
2. Produce graduates who are internationally competitive, such as working in international companies or continuing their studies at an international level.
3. Produce student research that contributes to solving community problems.
4. Educating students to take an active role in solving the nation's problems and increasing the role of electronics and instrumentation science in making a real contribution to society.

Strategy

In the 2021 curriculum, the strategy for achieving the learning outcome program is designed with arrange in such a way that all compulsory courses that provide basic competency provisions in electronics and instrumentation outside of academic activities related to final assignments (seminars and thesis) can be completed in the first 5 semesters of 100 credits. Thus, in the next 3 semesters, students have the freedom to determine their own completeness of undergraduate competencies according to the profession within the scope of the desired graduate profile. Lecturers are encouraged to plan lectures wherever possible using student-centered learning-based delivery methods while applying problem-based methods learning which is arranged in such a way that it can be achieved with all available communication media, both lecture classes, practicum laboratories and communication media in the network. Elective courses are provided side by side with the MBKM programs offered. Students are free to determine their choice of courses and/or programs MBKM is offered based on the terms and conditions that apply. The study program will issue a list of equivalent elective courses for each offered MBKM program subject.

University Values

The Electronics and Instrumentation study program is held based on universal values set by Gadjah Mada University, namely:

1. Pancasila values include the values of divinity, humanity, unity, democracy, deliberation, and justice.
2. Scientific values which include university values and the objectivity of science, academic freedom and academic forums, respect for reality and truth for civilization, benefit and common happiness.
3. Cultural values which include tolerance, human rights, and diversity.”

For the Master’s degree programme Computer Science the institution has presented the following profile on their website:

“Vision

To become an internationally excellence and innovative Master Program in the field of computer science, particularly in the development of intelligent computing and data science at the end of 2050.

Mission

The missions of the Master Program in Computer Science are:

1. Promoting the delivery of computer science education with a national perspective and international standards for undergraduate graduates in various fields of science.
2. Encouraging the implementation of innovative research activities, as well as integrated and collaborative scientific publications that meet international standards for faculty members and students.
3. Actively contributing to the development, dissemination and application of computer science through partnerships or services to the community at both national and international levels.

Education Objectives

The objectives of MP-CS are

1. Educate and produce scientists, academicians, manager-level professionals in Computer Science, who have a high academic ability, and produce advanced research products, both theory and application in the field of Computer Science, especially computational intelligence and data science.
2. Educate and produce scientists, academicians, manager-level professionals in Computer Science, who is capable of applying and developing basic knowledge in

Computer Science that can be used to enhance national and international excellence competitive.

3. Educate and produce scientists, academicians, manager-level professionals in Computer Science, who can handle continuing research.
4. Educate scientists and professionals using data and its technologies, both for industry, community, and government needs.
5. Develop and improve the students' knowledge and skills in the field of computer science, so they have the competence to carry out the task of teaching Undergraduate Program in Computer Science, and continuing education to the doctoral program."

C Expert Report for the ASIIN Seal

1. The Degree Programme: Concept, Content & Implementation

Criterion 1.1 Objectives and Learning Outcomes of a Degree Programme (Intended Qualifications Profile)

Evidence:

- Objective-module matrices
- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Websites
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts base their assessment of the learning outcomes on the information provided in the module descriptions and in the Self-Assessment Report of both degree programmes under review. For both programmes, the Universitas Gadjah Mada (UGM) has described Program Educational Objectives (PEO), Program Learning Outcomes (PLO), which are published on the programmes' website. By means of being published on the websites of the degree programmes, the PEOs and PLOs are easily accessible for students as well as other stakeholders. Furthermore, there are regular revision processes in place that take into account feedback by external and internal stakeholders. A minor curriculum adjustment is done every year whereas a major revision including consultations of stakeholders takes place every five years.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committees Informatics/Computer Science and Electrical Engineering/Information Technology, the module descriptions as a basis for judging whether the intended learning outcomes of the two degree programme as defined by UGM correspond with the competences as outlined by the SSC.

The experts note that the relationship between PEOs and ILOs has been established in a comprehensible and logical manner. The development of ILOs of the study programmes involves both internal and external stakeholders so that the curricula can be adapted and modified according to the needs of the industry and the graduates on a regular basis. For example, UGM regularly conducts surveys, through which the different stakeholders get the chance to assess the programmes and their main objectives and adapt them if necessary. Internal stakeholders include all of UGM members (students, teaching staff, and non-academic employees), while the external stakeholders include the industry, alumni, the government, and society.

For the Bachelor’s degree programme Electronics and Instrumentation, UGM defines the following intended learning outcomes:

	CPL/PLO		Description
1.	Attitudes and Values	[PLO1] Have attitudes and values	Students possess a set of universal and fundamental values and principles: universal ethics, patriotism and world peace, social and environmental sensitivity, pluralism and fair play, and rule of law.
2	Mastery of Knowledge	[PLO2] Foundational and theoretical knowledge	Mastering the foundation of knowledge and theoretical concepts in electronics and instrumentation, which includes electronics, embedded systems, instrumentation, electronic signals, electronic control, physical control, computer systems, computer networks, and intelligent systems.
		[PLO3] Applied knowledge	Mastering applied concepts in electronics and instrumentation, which include modeling and optimization methods for physical and electronic systems, instrumentation, system automation, robotics development, and cyber physical systems supported by intelligent systems.
3	Work ability	[PLO4] Problem solving skills	Able to apply basic, theoretical and applied knowledge that has been obtained, as well as absorb the latest developments through independent and group research to find constructive solutions to problems encountered in the form of systems or products.

4	Managerial Ability	[PLO5] Professional attitudes	Have good interpersonal, communication and learner skills. Specifically able to work together in a team and have a sense of responsibility for one's own work and be able to complete tasks to support the achievement of teamwork results; able to communicate with stakeholders from various backgrounds, use English, and write scientific papers according to the correct rules; have the skills to keep up with the latest developments in the field of electronics and instrumentation in particular and to deepen previously acquired knowledge in the context of lifelong learning.
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Furthermore, UGM defines the following potential graduate profiles for the Bachelor's degree programme: Academics, Research assistant, Engineer/Practitioner, and Technopreneur.

For the Master's degree programme Computer Science, UGM defines the following program educational objectives:

Code	Objectives
PEO-1	Educating and producing scientists, academics and professionals in the field of computer science, specifically in intelligent computing and data science, with high academic abilities.
PEO-2	Educating scientists and professionals who are able to apply intelligent computing and data science to meet the needs of society in various national and international sectors.
PEO-3	Enhancing students' understanding and skills so they have the capability to teach in the undergraduate computer science program and to continue their education to the doctoral level.

For the Master's degree programme Computer Science, UGM defines the following intended learning outcomes:

Elements	PLOs	Description
Attitudes and Values	[PLO1] Attitudes and values	Graduates possess a set of universal and fundamental values and principles, including universal ethics, patriotism and the promotion of world peace, sensitivity towards social and environmental issues, acceptance of pluralism and fair play, and adherence to the rule of law.
Knowledges	[PLO2] Foundational and Theoretical Knowledges	Graduates are able to demonstrate mastery of concepts, theories, methods, models, and algorithms in the field of computer science, with an emphasis on computational science, computer systems, and data analysis.
	[PLO3] Applied Knowledges	Graduates have the ability to apply concepts, theories, methods, models, and algorithms in the development of: computational science-based systems; computer system; or data analysis and visualization.
Working Ability	[PLO4] Problem Solving Skill	Graduates have the ability to analyze and formulate science and technology problems in the field of computer science to formulate and design alternative solutions through interdisciplinary or intradisciplinary approaches so as to produce creative, innovative and tested work.
Professional Ability	[PLO5] Professional Attitude	Graduates have a professional attitude which includes the ability to work independently or in groups, leadership, a sense of responsibility, effective communication both orally and in writing, and skills to follow developments in the field of computer science in the context of lifelong learning.

Furthermore, UGM defines the following potential graduate profiles for the Master's degree programme: Researcher and Lecturer in Computer Science, Data Scientist, Computational Scientist, Computer System Designer, Professional in Computer Science.

In the experts' opinion, the intended learning outcomes of both degree programmes are clear, plausible and allow students to take up an occupation, which corresponds to their qualification. They learn that the graduates of UGM are much sought after in the labor market. The representatives of industry emphasize the high quality of the graduates of all

programmes under review and students as well as graduates are satisfied with and well aware of their good job perspectives.

During the on-site visit, the experts are presented with written examinations and final theses to verify the achievement of the learning objectives and the intended learning outcomes, which they consider to correspond to EQF-6 for the Bachelor's degree and EQF-7 for the Master's degree.

In summary, the experts confirm that the Bachelor's degree programme Electronics and Instrumentation adequately reflects level 6 of the European Qualification Framework (EQF) and the Master's degree programme Computer Science adequately reflects EQF-7. The programme learning outcomes of both programmes are consistent with the respective ASIIN Subject-Specific Criteria of the Technical Committees of Informatics/Computer Science and Electrical Engineering/Information Technology. They aim at the acquisition of specific competences and are well-anchored, binding and easily accessible to all stakeholders.

Criterion 1.2 Name of the Degree Programme

Evidence:

- Self-Assessment Report
- Diploma Supplements
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts confirm that the English translation and the original Indonesian names of the degree programmes under review correspond with the intended aims and learning outcomes as well as the main course language.

Criterion 1.3 Curriculum

Evidence:

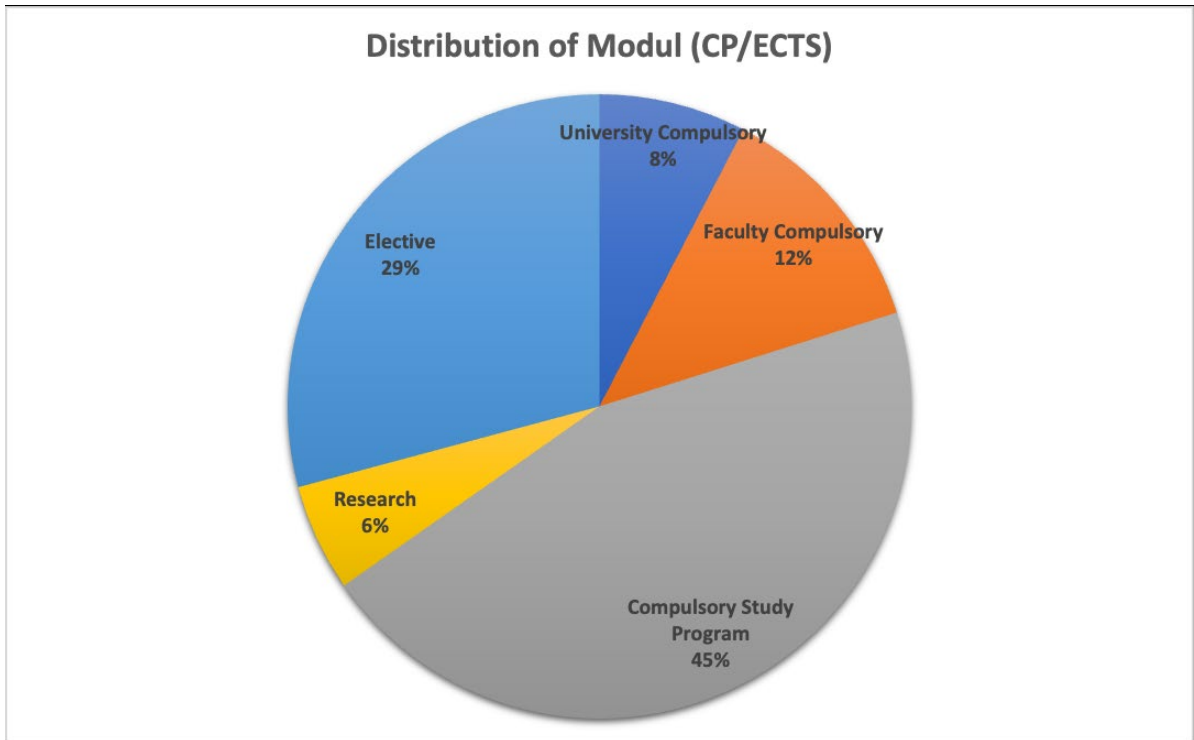
- Self-Assessment Report
- Study plan of the degree programmes
- Academic guidelines
- Module descriptions
- Objective-module matrices
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Both programmes are managed by the Department of Computer Science and Electronics. The curricula of both study programmes are reviewed by the experts in order to identify whether the described programme objectives and learning outcomes can be achieved by the available modules. Course descriptions as well as overviews and competence-subject matrices matching the general learning objectives and the module contents were provided for a thorough analysis. In the Self-Assessment Report, the university gives a detailed overview of how the competences acquired with the curricula presented correspond to the learning outcomes of SSC 02 and SSC 04 respectively.

The curricula of the two degree programmes are designed to comply with 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 government and the private sector. Regular changes are made to ensure that the curricula are up to modern standards. Besides the PEOs and PLOs defined by UGM itself, the curricula also take into account the Indonesian standards of higher education and the Indonesian national qualifications framework as well as the recommendations from industry.

For the Bachelor's degree programme Electronics and Instrumentation, the curriculum is structured for eight semesters and 144 Indonesian credits (equivalent to 216 ECTS) need to be achieved by the students. The modules of the programme are divided into the five areas "University Compulsory", "Faculty Compulsory", "Study programme compulsory coursework", "Elective coursework", and "Research work". Their distribution in the curriculum is shown in the following diagram:



In its Self-assessment report, UGM describes the structure of the Bachelor's degree programme as follows: "In the first semester, students must take only compulsory coursework, which consists of 4 credit points of university-mandated coursework, 14 credit points of faculty-mandated coursework, and 4 credit points of compulsory coursework. During the first semester, only BP-EI compulsory courses should be taken. This is because the first-year modules contain fundamental information that students must acquire prior to enrolling in more advanced modules. Beginning with the second semester, students may take elective modules in addition to the required modules specified for the corresponding semester. The total number of credit points must not exceed their permitted responsibilities, which are based on their performance from the previous semester. Moreover, students are advised to take only the compulsory courses for their degree programme, totalling 21 credits, in the fourth semester. This is because students already have adequate resources and are prepared to study material that focuses more on their BP-EI competence. The proportion of elective credit points exceeds the proportion of required credit points beginning with the fifth semester. This enables students to tailor their academic pursuits to their individual interests. At the beginning of each semester, each student selects elective modules with the assistance of his or her academic advisor. Students are advised to enrol in two research modules during the seventh semester: Undergraduate Thesis Proposal and Undergraduate Thesis. Consequently, the strategy of the learning outcome programme is designed so that all compulsory courses that provide basic competency provisions in electronics and instrumentation outside of academic activities related to final assignments (seminars and theses) can be completed in the first five semesters of 103 credit points. Over the course of the

next two or three semesters, students are free to determine the extent to which they have attained the required undergraduate competencies according to their chosen profession and within the context of the desired graduate profile. An internship is one of the compulsory courses. This course provides students with the opportunity to apply their knowledge while experiencing the ambiance and workload of the industry. In these courses, students spend one to two months working in an institution under the supervision of a lecturer and institution employees. After concluding the internship, students are required to submit a field report to the supervisor that details the internship's outcomes. Beginning with the fifth semester, this course is available.”

The expert group is very convinced of the structuring of the submitted curriculum and the corresponding content level of the Bachelor’s degree programme in Electronics and Instrumentation. This is also matched by the research activities of the professors and students, which also find influence in the individual modules. They are of the opinion that the curriculum is adequately structured to achieve the intended learning objectives. Furthermore, they can confirm that regular revisions and adjustments are made to adapt the curriculum to the latest developments in science and industry requirements. All relevant stakeholders are involved in this process.

For the Master’s degree programme Computer Science, the curriculum is structured for four semesters and 42 Indonesian credits (equivalent to 92.10 ECTS) need to be achieved by the students. The modules of the programme are divided into the four areas “Compulsory Coursework”, “Elective Coursework”, “Specialisation Compulsory coursework”, and “Research works”. Their distribution in the curriculum is shown in the following table:

Modul	Semester (CP / ECTS)				Total
	1	2	3	4	
Compulsory coursework	9 / 15.3	0 / 0	0 / 0	0 / 0	9 / 15.3
Elective coursework	6 / 10.2	6 / 10.2	6 / 10.2	0 / 0	18 / 30.6
Specialisation Compulsory coursework	0 / 0	6 / 10.2	0 / 0	0 / 0	6 / 13.5
Research works	0 / 0	2 / 8.0	1 / 4.0	6 / 24.0	9 / 36.0
Total					42 / 92.1

In its Self-assessment report, UGM describes the structure of the Master's degree programme as follows: "The MP-CS 2022 curriculum is designed to be completed in no more than four semesters [...]. Students can, however, complete their studies by the end of the third semester because research, repeating compulsory course modules, and repeating other elective course modules are completed in the fourth semester. During the first semester, students must complete all compulsory course modules (9 credit points) and 6 credit points of elective course modules. To ensure that students have a strong foundation in computer science before continuing to other modules, including research, all course modules must be completed in the first semester. Then, at the conclusion of the first semester, students choose between data science, computational science, computer systems, and information management. The selected specialisation must be compatible with the research topic of the thesis. Students are advised to take 14 credit points in the second semester, including 2 credit points for research modules, such as a Thesis Proposal, 6 credit points for compulsory specialisation coursework, and 6 credit points for electives. These electives should complement and relate to the research topic of the thesis. During the third semester, students must complete Seminar Thesis and 6 credit points of elective coursework. However, if the thesis is completed in the third semester, the student may be able to conclude their studies in three semesters. With a scientific foundation at the beginning of the semester, specialisation required modules in the second semester, and research modules in the third and/or fourth semester, the 2022 MP-CS curriculum can direct students to complete no more than four semesters."

The expert group is very convinced of the structuring of the submitted curriculum and the corresponding content level of the Master's degree programme in Computer Science. This is also matched by the research activities of the professors and students, which also find influence in the individual modules. They are of the opinion that the curriculum is adequately structured to achieve the intended learning objectives. Furthermore, they can confirm that regular revisions and adjustments are made to adapt the curriculum to the latest developments in science and industry requirements. All relevant stakeholders are involved in this process.

During the on-site discussions, the experts discuss with the teachers and especially with the industry representative how they assess the soft skills of the students. The Industry representatives particularly praise the students' analytical and technical skills. Overall, they think that the students have enough skills to start in a company. However, they also explain that there is still room for improvement, especially regarding the students' communication skills. They are of the opinion that the students should learn more how to share their ideas and become more confident communicating problems as well as ideas and solutions to

different kind of audiences. The students also state that they consider their presentation skills in particular to be in need of improvement. For example, they report that they still find it difficult to present the topic of their final thesis or their research proposal to a group of people in the corresponding course. Consequently, the peers recommend to strengthen the soft skills of the students through designated coursework or integration into existing coursework, in particular public speaking, communication, and presentation.

Furthermore, the industry representatives also underline that entrepreneurship of students could still be improved. They note that almost all students want to become employees and that there are only a few who want to become entrepreneurs and employers themselves. The students often have good ideas and, according to the industry representatives, would in principle be quite capable of running their own company, but lack a certain entrepreneurial spirit. The experts can well understand these comments from industry and therefore recommend strengthening students' entrepreneurship.

Mobility:

UGM has made commendable efforts to provide a range of international opportunities for its students. For example, they establish Double Degree programmes with international partners in Taiwan, host and visit international conferences, and provide assistance in participating in international competitions. "Additionally, [UGM] offers a financing program that allows BP-EI students to participate in internships and student exchanges. [...] Many classes are taught in English, including those in which English is used for group assignment presentations, class discussions, and homework." For the Bachelor's degree programme, the third year is the designated mobility window and students have the chance to go abroad for one semester. There is no fixed mobility window in the Master's degree programme. Master's students have the opportunity to complete electives and their thesis at external universities. "Furthermore, each student is required to produce a draft publication of the results of their thesis research in an international journal or conference. This encourages students to have international exposure through presentations at international conferences, MP-CS even provides financial assistance for these activities."

The experts recognise that the university offers a wide range of mobility opportunities and provides students with adequate support. Moreover, both curricula are designed in such a way that study periods abroad can be easily integrated. In addition, the university has adequate regulations for recognising external achievements. However, the experts note that the number of incoming and outgoing students is still relatively low. This is confirmed by both students and university representatives. However, discussions with students did not reveal any systematic problem caused by the UGM as to why they do not go abroad in

greater numbers. During the audit, the students state that they feel well informed and supported and have not yet heard of any problems. Regarding incoming students, the experts understand that the UGM must continue to establish itself as a location favoured by international students before these numbers will also increase.

To summarise, the experts are of the opinion that the UGM provides good conditions for international mobility in principle, but still has relatively low numbers, which is why they would like to recommend continuing to work on increasing the numbers of outgoing and incoming students (e.g. through more advertising, further cooperation, international networking).

Criterion 1.4 Admission Requirements

Evidence:

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

Preliminary assessment and analysis of the experts:

According to the Self-Assessment Report, “UGM is a state university so most of its academic process needs to comply with government regulations and procedures. For admission process, there are several regulations that govern how state universities admitted students, such as Peraturan Menteri Riset, Teknologi, dan Pendidikan Tinggi Republik Indonesia (Ministry of Research, Technology and Higher Education of Indonesia Regulation) No. 90 in 2017, no No. 60 in 2018, and no No. 6 in 2020. With the implementation of the inclusion policy, as stated in Law No. 8 in 2016, UGM accepts students with a variety of backgrounds, including those with disability.” The admission requirements and procedures are published on the university's website.

For the Bachelor's degree programme, UGM describes the admission regulations as follows: “New students are admitted to UGM through a nationwide selection administered by Higher Education Entrance Test Institute (LTMPPT), an independent national institution, and two independent examinations administered by UGM. There are two methods of national selection: selection based on high school performance/achievement (SNMPTN) and computer-based national tests (SBMPTN). The test administered by LTMPPT comprises tests that can determine whether prospective students will be able to complete their studies at tertiary institutions and examinations of prospective students' abilities to continue in certain

study programmes. Penelusuran Bibit Unggul (PBU) is an independent admission administered by UGM which selects applicants based on their achievements in arts, sports, and academics among other things, while Ujian Masuk (UM) is an independent admission administered by UGM based on the written test result of the applicants organised by UGM. The PBU and UM path is organised by the Directorate of Education and Teaching [...]. UGM provides an online application at [...] for its entrance process. Prospective students are required to follow the procedure on the online application and take the written and/or practice test held by the university.”

For the Master’s degree programme, UGM describes the admission regulations as follows: “Graduate admissions are managed by the university and use the same online application as UM path of undergraduate admissions. The prerequisite for the graduate programme is a bachelor's degree, as opposed to a high school diploma. It is not required for applicants to have a degree in the same field as the MP-CS. In addition to meeting the administrative requirements indicated on the MP-CS website [...], applicants must also pass the MP-CS written exam. The MP-CS also offers a one-semester curriculum, entitled Preparation class (Pra-S2), to prepare prospective students without a computer science background for the subject before they apply.”

In their assessment, the experts find the admission for both degree programmes under review rules to be binding, transparent, and based on UGM’s written regulations as well as state regulations. They confirm that the admission requirements support the students in achieving the intended learning outcomes. Regarding the credit for transfer students, adequate policies are in place.

Criterion 1.5 Workload and Credits

Evidence:

- Self-Assessment Report
- Study plan of the degree programmes
- Curriculum handbooks
- Module descriptions
- Discussions during the audit
- Students handbook

Preliminary assessment and analysis of the experts:

Based on the National Higher Education policy, the programmes under review use a credit point system called SKS. This system defines the workload for each credit unit as follows:

- a. "For lectures, discussions, or tutorials, 1 credit corresponds to 50 (fifty) minutes of face-to-face activities per week per semester, 60 (sixty) minutes of structured assignment activities per week per semester, and 60 (sixty) minutes of independent activities per week per semester.
- b. For learning processes conducted through seminars or other comparable forms, 1 (one) credit encompasses both independent and face-to-face activities, amounting to a total of 70 (seventy) minutes per week for each semester.
- c. For learning processes requiring 170 (one hundred and seventy) minutes of weekly engagement per semester, such as practicums, studio practises, workshop practises, field practises, research, community service, or other similar learning activities, 1 (one) credit is allocated."

The Bachelor's degree programme Electronics and Instrumentation is designed to be completed in 8 semesters. The curriculum consists of modules that typically range from 1 to 3 SKS credits. This structure allows for a diverse range of courses while maintaining a manageable workload for students. In its Self-Assessment report, UGM explains, that "a student's weekly workload is 51 hours. Because there are 16 weeks in a semester, each semester requires 816 hours of work. As a result, students will be required to work 1,632 hours per year. This annual workload meets ECTS workload requirements."

The Master's degree programme Computer Science is designed to be completed in 4 semesters. The curriculum consists of modules that typically comprise 3 SKS credits. In its Self-Assessment report, UGM explains, that "each semester encompasses 16 weeks, with 1 credit (CP) equivalent to 170 minutes of work per week. By undertaking 11 credits per semester, students fulfil an annual workload of approximately 997.3 hours. [...] Despite the fact that students take an average of 10-11 credits per semester, this number varies from semester to semester. [...] Students must enrol in 15 credits during their first semester, resulting in a 680-hour workload. The workload is the same in Semesters 1 and 2. As a result, 1,360 hours will be worked over the course of the first year. The total workload decreases in Semesters 3 and 4. [...] The Masters' Programme can be completed in as few as 2 (two) semesters and as many as 6 (six) semesters, according to Article 10 of the 2017 UGM Postgraduate Academic Guidelines."

During discussions with the students, the experts found that students are satisfied with the workload, which is transparent to them and does not present any insurmountable obstacles.

Overall, the credit system appears to the experts to be well-structured across all programmes, with appropriate weightings given to coursework, research, and thesis components. The variation in credit allocation between programmes reflects the different focuses

and requirements of each field of study. This system seems to provide students with a clear pathway through their studies while ensuring a balanced workload. The substantial credit allocation for theses and dissertations across all programmes underscores UGM's commitment to research and academic rigor in higher education. The experts consider the workload distribution to be appropriate and appreciate the students' positive feedback.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Module descriptions
- Samples of lecturer evaluation by students
- Websites
- Discussions during the audit

Preliminary assessment and analysis of the experts:

All degree programmes adopt outcome-based education as their main learning method, an approach that emphasises the continuity of the learning process innovatively and interactively. UGM further “recognize that student-centred learning offers an effective and optimal way in improving knowledge and skills of students. As such, the programmes have encouraged teaching staff to implement a student-centred approach in conducting their lectures that is called student-teacher aesthetic role-sharing (STAR). In the STAR approach, teachers have at least 3 roles: as sources of scientific knowledge, as facilitators of learning activities, and as learning partners for students. All the involved parties, in this approach, work together to develop a productive and enjoyable learning environment. Using STAR as the general approach, teachers in the programmes might further customise didactics and teaching methods according to the characteristics of each lecture and its students. Several types of lectures have been observed in the programmes: (a) lectures of fundamental knowledge (such as Electronic Circuits, Actuator Systems, Analysis of Algorithms, Mathematics for Computer Science, and Computation Theory), (b) lectures of more practical knowledge (such as Industrial Instrumentation, Digital Image Processing and Analysis, Operation Research, Software Development, Data Warehouse and Business Intelligence, Platform and Architecture of Big Data, and Robotics Programming), and (c) lectures of advanced knowledge (such as Advanced Robotics, Cryptology, Verification and Validation, Principles of Artificial Intelligence, and Modern Control Systems). In the lectures of fundamental knowledge, teachers often adopt collaborative learning and assign more exercises to students. In lectures of more practical and advanced knowledge, teachers often imple-

ment case-based learning and problem-based learning. The curriculum of the BP-EI programme also contains lectures of practical work where students complete all of their learning activities in laboratories. Learning by doing has become the emphasis of such lectures. Case-based learning and problem-based learning have also been implemented in these lectures. In doing so, teachers are helped by a lot of assistants in laboratories to provide students with direct, hands-on assistance when conducting practical work. Over the past two years, the Indonesian government has continuously promoted the implementation of project-based learning in higher education institutions. To further emphasise this policy, the government has also included the implementation of project-based learning as a key performance indicator (indikator kinerja utama or IKU in Indonesian language) in the evaluation of the quality of higher education institutions. In response, the programmes have formally requested that more teachers implement project-based learning, have closely monitored the implementation, and have attempted to offer incentives for the implementation. According to the annual report of the Dean of the FMNS, the programmes have successfully met the government's goals (as indicated by the number of lectures that have implemented project-based learning)." The university offers corresponding training and courses for all teaching staff to ensure and continuously develop their didactic skills. These courses are mainly offered in cooperation with the Centre of Academic Innovation and Study of the University. During the on-site discussions, teaching staff confirmed that they have access to numerous courses for further didactic training and that these are also frequently attended.

Furthermore, UGM states "that teaching staff are allowed to deliver a maximum of 40% of their lectures online and to deliver a minimum of 60% of their lectures in-person. The proportion of online lectures, in this case, is expected to be quite significant but does not exceed the proportion of in-person lectures. To support in delivering their lectures online, the University provides several online learning management systems, namely eLOK [...], SIMASTER [...], Google Classroom, and Microsoft Teams, and video conferencing software, namely Zoom, Google Meet, and Microsoft Teams, that enables them to administer their classes with greater structure and flexibility (including synchronous online meetings and asynchronous pre-recorded videos). The University also provides services and tools through an academic production house, managed by Directorate of Academic Studies and Innovation, to support teachers in creating their video learning materials." The experts are in favour of this innovative approach in principle and positively emphasise that teachers are supported in using modern tools in this way. However, they would like to point out that some students mentioned during the on-site discussions that it can be somewhat confusing when so many platforms and learning management systems are used and that it would be easier if there were a relatively standardised use of the same systems. This also applies to information

that is published on several platforms at the same time or even on different platforms. According to the students, this can be somewhat complicated in parts, which is why the experts also encourage the use of a standardised system for the publication of study-related information.

Both degree programmes under review make use of several different education methods for each course, such as lecturers, laboratory work, seminars or peer group presentations. In addition to teaching and learning activities, all programmes also support students' personal development activities through company visits, seminars, workshops, trainings as well as research and community development grants.

In summary, the experts can confirm that a variety of learning methods are used and that they are aligned with the intended learning outcomes. In the discussions with students, the experts learn that they are generally satisfied with the quality of teaching and learning in the programmes under review. Gathering systematic feedback on the quality of teaching and learning can be achieved through the course evaluation survey conducted at the end of each semester, which serves as a valuable source of information.

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

The experts consider criterion 1 to be fulfilled.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- Examination regulations
- Curriculum handbooks
- Samples of student’s work (projects, exams and thesis)
- Websites
- Academic Calendar

Preliminary assessment and analysis of the experts:

According to the Self-Assessment Report, student assessment at UGM is designed “to evaluate to which extent coursework learning outcomes have been attained. Exams are also used to assess student accomplishment and reflection of coursework material delivery's effectiveness. Assessment scores for the entire class are generated from the average score of individual students.” The assessment system is comprehensive, covering grades, mentality, skills, knowledge, and values. Evaluation methods are aligned with learning methods and course outcomes to ensure graduates develop integrated competencies.

The academic calendar, including examination schedules, is published on the UGM website, with specific course and exam schedules available on faculty websites. This allows students to prepare adequately for upcoming modules and examinations. Assessment methods vary and may include written exams, oral exams, practical skills tests, seminars, scientific papers, quizzes, or combinations thereof. Some courses incorporate pre-tests and post-tests to map student knowledge and monitor progress.

Examination dates and any changes are communicated through the respective programme websites and the digital academic portal (SIMASTER) system, ensuring up-to-date information for students. The university provides a week of study time before examination weeks, and regulations stipulate that teaching staff must submit grading results within two weeks after exams.

UGM has policies in place for students who miss examinations due to illness, emergencies, or official university activities. The university also facilitates examinations for students with

disabilities. Various forms of examination documentation are maintained both in hard copy and electronically through the Outcome-Based Assessment Information System (SIOBA).

Grading uses a letter system (A to E), with marks converted to a 4.0 scale for Grade Point Average (GPA) calculation. Students have the right to request explanations of their grades from teaching staff. For undergraduate programmes, remedial exams or make-up tests are available under certain conditions to improve GPAs.

Each student is assigned an Academic Supervisor to guide them through their academic journey. Thesis requirements vary by programme, with graduate programmes typically requiring publication or submission of research articles. The university provides detailed thesis writing guidelines and supervision to ensure quality and timely completion of final projects.

The experts note that the examination system at UGM is well-structured and transparent. The assessment methods align with intended learning outcomes, and the workload appears to be appropriately distributed. The university's policies for academic misconduct, including plagiarism, are clearly defined. Overall, the examination and assessment processes at UGM seem to support the academic goals of the programmes while maintaining fairness and accountability.

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

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Staff Development

Evidence:

- Self-Assessment Report
- Staff Handbooks
- Study plan of the degree programme
- Module descriptions
- Websites
- Discussions during the audit

Preliminary assessment and analysis of the experts:

At UGM, the academic staff structure varies across programmes. The following table presents the distribution in the programmes under review:

Academic positions	MP-CS	BP-EI	Both
Professor	4	3	4
Associate Professor	9	4	9
Assistant Professor	15	10	8
Lecturer	5	15	2
Total	33	32	

All teaching staff are graduates of reputable national and international universities, ensuring a high standard of expertise across all programmes. The teaching staff employed are divided into three qualification classes - Master's Degree, Doctoral Degree and Professor - , which are used in the two programmes as follows:

#	Education Degree	MP-CS Lecturer	BP-EI Lecturer	Lecturer of Both Programmes
1	Master Degree	0	16	0
2	Doctoral Degree	29	13	13
3	Professor	4	3	3
	Total	33	32	16

The student-teacher ratio is presented as follows:

Academic Year	2020		2021		2022	
	MP-CS	BP-EI	MP-CS	BP-EI	MP-CS	BP-EI
Lecturer	32	30	32	32	33	32
Student	129	395	143	332	145	429
Ratio	1:5	1:14	1:5	1:11	1:5	1:14

Staff-to-Student Ratios: UGM maintains impressive staff-to-student ratios that exceed national requirements. In the Bachelor's programme, the ratio is about 1:14 with 32 teaching staff to 429 students (requirement 1:60). The Master's degree programme has a ratio of 1:5 with 33 teaching staff to 145 students (requirement 1:20). These ratios ensure personalised attention and high-quality education across both programmes.

Staff Development: All new teaching staff undergo mandatory PEKERTI training. The Centre of Academic and Innovation Affairs (PIKA) monitors and improves academic development university-wide, while faculties organise additional training and workshops. In addition, UGM follows a merit-based selection system for recruiting new staff and has developed a five-year recruitment plan as well as a promotion plan for its staff. In its Self-Assessment report, UGM states, “[e]ach lecturer in DCSE is assigned to at least one research laboratory to assist research and degree programme development according to his/her major field.” There are five laboratories: Intelligent System Laboratory (IS), Algorithm and Computation Laboratory (AC), Software and Data Engineering Laboratory (SDE), Computer System and Networking Laboratory (CSN), Electronics and Instrumentation Laboratory (EI). “Each laboratory has its own strategic plan/roadmap and is responsible for supporting courses and student thesis subjects that are related to them. [...] Most lecturers undergoing doctoral study this year plan to achieve an assistant professor position in 2027. As for those who already achieve a doctoral degree and an assistant professor position can achieve a professor position. [The following table] explains the DCSE academic position roadmap in 2022 and 2027. This roadmap also aligns with laboratory necessities for conducting a laboratory research plan, community service, and academic activities.”

Academic Year	2022						2027					
	Laboratory Name	IS	AC	SDE	CSN	EI	Sum	IS	AC	SDE	CSN	EI
Professor	1	1	0	0	2	4	4	6	2	3	4	19
Associate Professor	1	5	2	2	0	10	4	5	7	2	5	23
Assistant Professor	4	3	4	3	5	19	2	1	1	2	9	15
Lecturer	4	3	4	2	11	24	0	0	0	0	0	0
Total	10	12	10	7	18	57	10	12	10	7	18	57

Research and International Engagement: All programmes encourage staff participation in national and international seminars, publications, and exchange programmes. The university facilitates visiting professorships and collaborative research projects across all disciplines.

Performance Evaluation and Workload: The Teaching Staff Performance (BKD) system is used across all programmes. “The standard workload of a lecturer is approximately between 18-24 ECTS each semester. The workload consists of teaching, research, community services, and administrative tasks. Thereby, both programmes exceed the minimum requirement of 12 credits set by the Ministry.

Quality Assurance and Continuous Improvement: All programmes undergo regular internal quality audits conducted by the Quality Management Unit (UMM). Standard Operating Procedures (SOPs) for educational processes are regularly evaluated and adjusted across all programmes.

The experts conclude that the teaching staff's composition, scientific orientation and qualifications, as specified in the Staff Handbook, are suitable for successfully implementing and sustaining the both degree programmes under review. However, they note that only a few external teachers are used in both programmes. This applies on the one hand to external (international) lecturers from other universities and on the other hand

to guest lecturers from industry. As the UGM is becoming more and more internationally orientated and also places a focus on research, the experts believe that it would make sense to work on attracting more international guest lecturers in order to further strengthen academic exchange. The same applies to an increased use of guest lecturers from industry, as these can also bring a broader perspective directly into teaching, from which the programmes can only benefit further. For these reasons, the experts recommend increasing both types of external lecturers.

In conclusion, UGM demonstrates a strong commitment to maintaining high-quality staffing levels and supporting ongoing professional development across both programmes. The university's comprehensive approach to staff management and development, tailored to the needs of each programme, contributes significantly to the success and sustainability of its diverse degree offerings. The experts confirm that the composition, scientific orientation, and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes.

Criterion 3.2 Funds and equipment

Evidence:

- List of laboratories and equipment
- Recapitulation of budget
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

As a state university, UGM's financial resources for the programmes under review come from two main sources: government funds, and tuition fees. Government funds finance routine expenses such as staff salaries and allowances, as well as research grants while operational and programme development expenses are primarily supported by student tuition fees. UGM provides the following table on all funding at the Department of Computer Science and Electronics in the last three years (in Euro):

Funding	2020	2021	2022	Average
Students' tuition fee	522,569	543,129	627,850	564,516
Research Grants (Government)	136,100	397,357	131,296	221,584
Employee salary (Government)	292,000	305,811	325,345	307,718
Other external source	46,116	30,840	35,635	37,530
Total	996,785	1,277,136	1,120,125	1,131,349

Financial management at UGM follows the university's Financial Management Information System (SIMKEU), and both internal and external audits ensure transparency. Advanced IT systems support academic and administrative activities, including SIMASTER, which manages data on learning, research, and staff development. The university provides robust internet infrastructure and software tools like Webex, Microsoft Teams, and Zoom Pro to facilitate online lectures and academic activities.

UGM maintains its equipment and facilities through a well-organised system where students and staff can report issues via online platforms or direct meetings. The Equipment & Logistics unit addresses minor problems, while major purchases and maintenance are budgeted in the Annual Work Plan and Budget (RKAT).

To enhance academic success, UGM has established cooperation with national and international universities for research collaboration, conferences, student and faculty exchanges, and joint degrees. The university also offers extensive facilities to support student activities, including sports venues, arts and stage facilities, dormitories, local transportation, libraries, health services, and various museums. Each study programme is equipped with specific laboratories that support practical learning and the attainment of learning outcomes, ensuring students have access to the necessary resources to achieve their educational objectives.

During the audit, the experts were shown advanced research laboratories with modern equipment. These laboratories are supported by technicians and are available for use by research staff and graduate students.

In the on-site discussions, students confirm that they are satisfied with the resources and laboratories available and believe that these are used beneficially in the various courses. However, they note that they can only use some software, such as Matlab, via the computers at the university and that no licences are provided for their personal computers. Alt-

though they state that there are always enough places at the university to use these software licences if needed, they would also like to be able to do this from their personal devices. The experts understand this wish of the students, but also recognise that the UGM provides enough resources to ensure that all students at the university are well equipped. Furthermore, they also understand that there are budget restrictions that make it difficult to provide for all students' private devices. Nevertheless, they would like to recommend that the university make the software used available to students for their personal computers as far as possible.

The experts confirm that the teaching and office facilities, libraries and computer labs which are adequate for all students and staff. In summary, the experts confirm that current funding allows standards to be maintained and additional instrumentation to be purchased if required, that UGM generally has sufficient workspace and laboratories, and that all laboratories are equipped with modern and sophisticated instrumentation.

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

The experts consider criterion 3 to be fulfilled.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions

Evidence:

- Module descriptions
- Websites

Preliminary assessment and analysis of the experts:

The students, as well as all other stakeholders, have access to the module descriptions via UGM's homepage. The more detailed syllabus is handed out to the students by the lecturers at the beginning of each semester. The syllabus includes a practical guideline and detailed description of the practical parts of each course.

In advance of the audit, the experts identified a number of inconsistencies, inaccuracies and translation errors in the submitted English-language module descriptions. These were identified by the experts and discussed during the on-site discussions. In response, the university revised all module descriptions so quickly that revised documents were submitted during the preparation of this report. These were again reviewed by the experts and found

to be complete and accurate. The experts can therefore confirm that the module descriptions of both programmes under review contain all the essential details, including information on the module coordinators, teaching methods, workload, credit points awarded, intended learning outcomes, content coverage, applicability, admission and examination requirements, as well as assessment methods and a comprehensive explanation of how the final grade is calculated.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Sample Transcript of Records
- Sample Diploma certificate
- Sample Diploma Supplement

Preliminary assessment and analysis of the experts:

The experts confirm that students receive a diploma and a diploma supplement upon graduation. The diploma consists of a diploma certificate and a transcript of records. The transcript of records lists all the courses taken by the graduate, the credits earned, the grades and the cumulative GPA. The Diploma Supplement contains information about the degree programme, including soft skills acquired and awards (extra-curricular and co-curricular activities).

Criterion 4.3 Relevant Rules

Evidence:

- Self-Assessment Reports
- Curriculum handbooks
- Academic Guidelines
- Examination regulations
- All relevant regulations as published on the university's website

Preliminary assessment and analysis of the experts:

The auditors confirm that the rights and duties of both UGM 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 experts after the comment of the Higher Education Institution regarding criterion 4:

The experts consider criterion 4 to be fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

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

Preliminary assessment and analysis of the experts:

UGM implements a continuous quality improvement process for its degree programmes through internal and external evaluations. The internal quality assurance system is managed by the Office of Quality Assurance (KJM), the Quality Assurance Unit (K3A) at the faculty level, and the Semester Coordination Team (TKS) at the department level.

Internal Evaluation:

- **Student and Alumni Feedback:** Students provide feedback on courses via an online questionnaire (EDOM), which is mandatory for account access on the SIMASTER platform. This feedback covers 12 categories and is shared with lecturers. Annual tracer studies and alumni surveys also contribute to this evaluation.
- **Internal Quality Audit (AMI):** Conducted annually by auditors appointed by KJM, AMI evaluates all aspects of the educational process. Auditors interview lecturers, students, administrative staff, and management to ensure learning objectives are met.
- **Student Involvement:** Students participate through EDOM, informal feedback, and representation in TKS. They also evaluate laboratory performance and equipment.

Results and Actions:

- The results of internal assessments are reviewed in Management Review Meetings (RTM) at the faculty level, involving key faculty members and the Quality Assurance

Unit. Corrective actions are initiated as required. The results of the student evaluations, along with the corrective actions derived from these evaluations, are discussed and shared with the students.

External Quality Assurance:

- **Accreditations:** The degree programmes are accredited by the Board of National Accreditation (BAN-PT) and ASEAN University Network Quality Assurance (AUN-QA).

Stakeholder Involvement:

- UGM regularly engages with partners from public institutions and private companies to discuss employer needs and curriculum changes. An advisory board, comprising alumni and industry representatives, assists in curriculum design and reviews. Feedback from these stakeholders ensures the curriculum remains relevant and up-to-date.

Continuous Improvement Cycle:

- **Annual Self-Evaluation:** Each study programme conducts an annual self-evaluation covering nine educational standards, integrated with SIMASTER.
- **Quality Assurance Guidelines:** SPMRU provides guidelines for quality assurance, ensuring tools are tailored to each programme's needs.
- **Internal Quality Audits:** Coordinated by SPMRU, these audits ensure compliance with academic standards set by UGM's academic senate. Results from these audits inform further improvements at faculty and university levels.

Selection and Training of Auditors:

- Auditors are selected to avoid conflicts of interest and undergo annual refreshment programmes to maintain audit quality and update regulations. Feedback on auditor performance is collected from auditees.

Review and Improvement:

- Management Review Meetings (RTM) evaluate actions taken in response to audit findings and stakeholder feedback. These meetings occur at both study programme and faculty levels, with results conveyed to the university level.

Alumni and Employer Surveys:

- Tracer studies and user surveys gather feedback from alumni and employers to assess the impact of education on career paths and workplace performance. Exit surveys at graduation periods capture students' experiences and achievements.

During the audit interviews, the experts want to know from the students whether they feel that their comments and evaluations are taken seriously and whether they are also informed about the results of the evaluations. In response, the students state that they feel that they are listened to and that their comments are taken seriously. They also feel safe to express criticism, as the surveys are conducted anonymously. However, some students note that they are not informed about the results of the evaluations afterwards. For this reason, the experts first plan to impose a requirement to close the feedback loop. However, the UGM can also provide evidence during the preparation of the report that the evaluation results are published on the website and are accessible to students. UGM states "the course evaluation results are compiled and analyzed by the study program and the teaching lecturers to establish a follow-up action plan. Furthermore, the results of these evaluations and the follow-up action plans are available for students and faculty through SIMASTER." Furthermore, they provide a publicly accessible link through which these results are available to all stakeholders. Based on this evidence, the experts refrain from arguing in favour of a requirement and are of the opinion that the university is taking adequate measures to close the feedback loop.

In summary, the expert group confirms that UGM's quality management system effectively identifies and addresses weaknesses in its degree programmes through a structured process involving all relevant stakeholders. This system ensures continuous improvement and alignment with stakeholder needs and industry standards.

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

The experts consider criterion 5 to be fulfilled.

D Additional Documents

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

No additional documents needed.

E Comment of the Higher Education Institution (31.07.2024)

The institution provided a statement as well as the following additional documents :

- Reviewed Module descriptions for both study programmes under review.

Regarding the course evaluations, UGM states the following:

For the Bachelor's degree programme: "Course evaluations for individual classes, courses, and program services are carried out using the EDOM system through SIMASTER and surveys. The results of these evaluations are compiled and analyzed by the study program and instructors to develop follow-up action plans. These evaluation results and the corresponding action plans are accessible to students through SIMASTER, and can also be found on the BPEI website at this link: BPEI Evaluation Results (https://dcse.fmipa.ugm.ac.id/?page_id=17761&lang=id). In addition, BPEI has provided a form at this link, BPEI Feedback Form, to gather additional feedback from students regarding the follow-up actions and improvements implemented by BPEI."

For the Master's degree programme: „The course evaluations for each class/course and program services have been conducted through the EDOM system via SIMASTER and survey. The course evaluation results are compiled and analyzed by the study program and the teaching lecturers to establish a follow-up action plan. Furthermore, the results of these evaluations and the follow-up action plans are available for students and faculty through SIMASTER. They can also be accessed on the MPC's website at the following link: Course Evaluation and Feedback Program Studi S2 Ilmu Komputer (https://dcse.fmipa.ugm.ac.id/?page_id=17750&lang=id). Additionally, MPC has created a form at the following link, Student Response, to collect further feedback from MPC's students on the follow-up actions and improvements made by MPC. “

F Summary: Expert recommendations

Taking into account the additional information and the comments given by UGM the experts 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 Electronics and Instrumentation	Without requirements	30.09.2031	–	–
Ma Computer Science	Without requirements	30.09.2031	–	–

Recommendations

For both degree programmes

- E 1. (ASIIN 1.3) It is recommended to increase the soft skills of the students, especially regarding presentation and communication skills.
- E 2. (ASIIN 1.3) It is recommended to strengthen the entrepreneurship of the students.
- E 3. (ASIIN 1.3) It is recommended to increase the number of outgoing and incoming students.
- E 4. (ASIIN 3.1) It is recommended to increase the number of international lecturers.
- E 5. (ASIIN 3.1) It is recommended to more involve guest lecturers.
- E 6. (ASIIN 3.2) It is recommended that the involved software is also available for the students' personal computers.

G Comment of the Technical Committees

Technical Committee 02 – Electrical Engineering/Information Technology

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the experts' assessment 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 and Instrumentation	Without requirements	30.09.2031	–	–

Technical Committee 04 – Informatics/Computer Science

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and is in favour of a minor editorial change to recommendation E6. Otherwise, the Technical Committee follows the assessment of the experts without any changes.

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ma Computer Science	Without requirements	30.09.2031	–	–

Recommendations

For both degree programmes

- E 1. (ASIIN 1.3) It is recommended to increase the soft skills of the students, especially regarding presentation and communication skills.
- E 2. (ASIIN 1.3) It is recommended to strengthen the entrepreneurship of the students.
- E 3. (ASIIN 1.3) It is recommended to increase the number of outgoing and incoming students.
- E 4. (ASIIN 3.1) It is recommended to increase the number of international lecturers.
- E 5. (ASIIN 3.1) It is recommended to more involve guest lecturers.
- E 6. (ASIIN 3.2) It is recommended that the involved software is also available for the students' personal use.

H Decision of the Accreditation Commission (24.09.2024)

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

The Accreditation Commission discusses the procedure and follows the assessment of the experts and the Technical Committees without any changes. The Accreditation Commission agrees to the editorial change to recommendation E6.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Subject-specific label	Maximum duration of accreditation
Ba Electronics and Instrumentation	Without requirements	–	30.09.2031
Ma Computer Science	Without requirements	–	30.09.2031

Recommendations

For both degree programmes

- E 1. (ASIIN 1.3) It is recommended to increase the soft skills of the students, especially regarding presentation and communication skills.
- E 2. (ASIIN 1.3) It is recommended to strengthen the entrepreneurship of the students.
- E 3. (ASIIN 1.3) It is recommended to increase the number of outgoing and incoming students.
- E 4. (ASIIN 3.1) It is recommended to increase the number of international lecturers.
- E 5. (ASIIN 3.1) It is recommended to more involve guest lecturers.
- E 6. (ASIIN 3.2) It is recommended that the involved software is also available for the students' personal use.

Appendix: Programme Learning Outcomes and Curricula

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Electronics and Instrumentation:

1. Attitudes:
 - a. Pancasila-minded and have an awareness of the interests of the nation.
 - b. Having responsibility, confidence, emotional maturity, ethics, and awareness of being a lifelong learner
2. Knowledge:
 - a. Mastering research methods and data analysis of research results in the field of electronics and instrumentation;
 - b. Able to design electronics-based systems and instrumentation;
 - c. Has knowledge in the field of electronics engineering and instrumentation;
 - d. Has practical knowledge in the field of electronics and instrumentation;
 - e. Has the ability and insight to start independent business in the field of electronics and instrumentation.
 - f. Mastering and able to apply basic concepts of knowledge in the field of electronics and instrumentation;
3. Special Skills:
 - a. Competent in the use of mathematical models and related software for research, engineering and practical purposes in Electronics and Instrumentation;
 - b. Able to analyze the measurement needs of physical quantities, and produce prototypes of systems related to the field of Electronics and Instrumentation;
 - c. Able to operate and maintain electronic and instrumentation based systems;
 - d. Able to utilize analytical method approaches in research and development in the fields of applied science, technology, engineering, science, and technology policy or management of science and technology;
 - e. Identify the need to become an entrepreneur in Electronics and Instrumentation.
 - f. Able to adapt to new developments in Electronics and Instrumentations

4. General Skills:

- a. Able to apply logical, critical, systematic and innovative thinking by utilizing information technology to produce solutions realized in scientific documents and implementation of areas of expertise with integrity.
- b. Able to develop networks, be adaptive, creative and contributive, provide supervision, evaluate and make decisions in order to show independent and group performance to apply knowledge to community life.

The following curriculum is presented:



According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Computer Science:

1. Attitudes:
 - a. Pancasila-minded and have an awareness of the interests of the nation.
 - b. Having responsibility, confidence, emotional maturity, ethics, and awareness of being a lifelong learner
2. Knowledge:
 - a. Having knowledge and understanding of concepts, theories, methods, models, and algorithms in the field of computer science, especially in computational science, computer systems, and data analysis.
 - b. Having the ability to apply concepts, theories, methods, models, and algorithms in the development of: computing science bases systems; computer systems; or data analysis and visualization systems.
3. Special Skills:
 - a. Having the ability to analyze and formulate science and technology problems in the field of computer science to formulate and design alternative solutions through an interdisciplinary approach so as to produce creative, innovative and tested works.
 - b. Having a professional attitude which includes the ability to work independently or in groups, leadership, sense of responsibility, effective communication both orally and in writing, and skills to keep up with developments in the field of computer science in the context of lifelong learning.
4. General Skills:
 - a. Able to apply logical, critical, systematic and innovative thinking by utilizing information technology to produce solutions realized in scientific documents and implementation of areas of expertise with integrity.
 - b. Able to develop networks, be adaptive, creative and contributive, provide supervision, evaluate and make decisions in order to show independent and group performance to apply knowledge to community life.

0 Appendix: Programme Learning Outcomes and Curricula

The following **curriculum** is presented:

COURSE MAPPING MASTER PROGRAM IN COMPUTER SCIENCE																										
	1st Semester	2nd Semester	3rd Semester	4th Semester																						
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