



ASIIN Seal Accreditation Report

Bachelor's Degree Programme
Mathematics Education

Master's Degree Programme
Mathematics Education

PhD Programme
Mathematics Education

Provided by
Universitas Sriwijaya

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for ¹	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ²
Pendidikan Matematika Program Sarjana	Bachelor Program in Mathematics Education	ASIIN	-	12
Pendidikan Matematika Program Magister	Master Program in Mathematics Education	ASIIN	-	12
Pendidikan Matematika Program Doktor	Doctoral Program in Mathematics Education	ASIIN	-	12
<p>Date of the contract: 10.11.2022</p> <p>Submission of the final version of the self-assessment report: 29.09.2023</p> <p>Date of the onsite visit: 27.–28.02.2024</p> <p>at: Palembang Campus und Indralaya Campus</p>				
<p>Expert panel:</p> <p>Prof. Dr. Hans-Georg Weigand, University of Würzburg</p> <p>Dr. Meiliasari, S.Pd., M.Sc, Universitas Negeri Jakarta</p> <p>Alexandra Dreiseidler, Emil-Fischer Gymnasium in Euskirchen</p> <p>Namirah Fatmanissa, PhD student at Universitas Negeri Surabaya</p>				
<p>Representatives of the ASIIN headquarter: Dr. Andrea Kern</p>				
<p>Responsible decision-making committee: Accreditation Commission for Degree Programmes</p>				
<p>Criteria used:</p> <p>European Standards and Guidelines as of May 15, 2015</p>				

¹ ASIIN Seal for degree programs

² TC: Technical Committee for the following subject areas: TC 12 - Mathematics.

<p>ASIIN General Criteria, as of December 10, 2015</p> <p>Subject-Specific Criteria of Technical Committee 12 – Mathematics as of December 9, 2016</p> <p>ASIIN Additional Criteria for Structured Doctoral Programmes as of March 15, 2021</p>	
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B Characteristics of the Degree Programs

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 Program in Mathematics Education	S.Pd. (Sarjana Pendidikan/ Bachelor of Education)	-	6	Full time	-	8 Semester	145 credits are equivalent to 230.04 ECTS	annually in August / 1984
Master Program in Mathematics Education	M.Pd. (Magister Pendidikan/ Master of Education)	-	7	Full time	-	4 Semester	36 credits are equivalent to 90.72 ECTS	annually in August / 2006
Doctoral Program in Mathematics Education	Dr. (Doktor / Doctor)	-	8	Full time	-	6 semester	42 credits are equivalent to 117.6 ECTS	Annually in August / 2016

Universitas Sriwijaya (Sriwijaya University, UNSRI) is a state university established in 1960 located South Sumatra. Next to its several campuses in Palembang, the university operates a second campus in Indralaya, approximately 32 km away from Palembang. The Indralaya campus is mainly reserved for bachelor studies offering a large area for facilities including the central library, student activity center, and dormitories for students and guests. Education of master and doctoral students takes place in the Bukit Besar Campus in Palembang. UNSRI manages ten faculties: the Faculty of Economics, Faculty of Law, Faculty of Engineering, Faculty of Medicine, Faculty of Agriculture, Faculty of Teacher Training and Education, Faculty of Social Science and Political Science, Faculty of Mathematics and Natural Science, Faculty of Computer Science, and the Faculty of Public Health. It currently offers 116 study programs with more than 35,000 students and 1,000 lecturers. According to the national institutional accreditation, UNSRI has received the highest level of “excellence.”

UNSRI describes on its webpage that the university aims to produce graduates, who can carry out development in accordance with national needs. This requires a combination of changes in regional and global situations in addition to advancements in science, technology, arts and sciences. Thus, UNSRI defined in its current vision “To become a leading and research-based university that excels in various fields of science and technology.” Moreover, it determined the following mission: “Organizing and developing higher education in

³ EQF = The European Qualifications Framework for lifelong learning

an effort to produce educated people who can apply, develop and/or create science, technology and/or art.”

The representatives of the rector’s office explain during the on-site visit that UNSRI has initiated the process to become an independent autonomous university in 2024. One aim is to develop an internationalization strategy, which includes international accreditation as well as a higher number of student exchange programs. According to the QS ranking, UNSRI reached the 127th rank, while is placed among the top 20 universities in Indonesia.

UNSRI considers its bachelor, master and doctoral program in Mathematics Education as very strong programs. All three study programs are placed at the Faculty of Teacher Training and Education (FKIP).

For the bachelor study program Mathematics Education, the institution has presented the following vision and mission in the self-assessment report:

„Vision: To become a leading, research-based Mathematics Education Study Program that excels in the fields of mathematics and technology education.

Mission:

1. Organizing teaching programs in an effort to produce graduates who can apply, develop, and/or create mathematics and technology education.
2. Organizing and developing research in the field of mathematics education, technology to improve the quality of research-based mathematics learning.
3. Organizing and developing community service by applying research results to realize community welfare and progress.
4. Organizing the development and guidance of students' reasoning, talents, interests and welfare.
5. Implement and develop collaboration with other institutions at national and international levels.
6. Creating a professional and accountable ICT-based study program management system.”

For the master study program, Mathematics Education the institution has presented the following vision and mission in the self-assessment report:

„Vision: To become a superior and leading research and technology-based Mathematics Education Study Program.

Mission:

1. Organizing a Masters in Mathematics Education program in an effort to produce graduates who can apply mathematics and technology education.
2. Organizing and developing research in the field of mathematics education to improve the quality of research-based mathematics learning.
3. Organizing and developing community service by applying research results to realize community welfare and progress.
4. Implement and develop collaboration with other institutions at national and international levels.”

For the doctoral study program *Mathematics Education*, the institution has presented the following vision and mission in the self-assessment report:

„Vision: Excelling at the national level and able to compete internationally in the fields of Realistic Mathematics Education (RME) research.

Mission:

1. Organizing educational activities and realistic mathematics education to produce graduates who can think critically to solve problems in mathematics education (realistic)
2. Carrying out research activities to discover new concepts or theories in mathematics education (realistic) and publish the findings at national/international conferences and reputable national or international accredited journals.
3. Organizing community service activities as a form of dissemination of new developments in mathematics education that is oriented towards improving the quality of education following developments and community needs.
4. Establishing collaboration in (realistic) mathematics education with stakeholders and doctoral programs at other universities both domestically and abroad.”

C Expert Report for the ASIIN Seal

1. The Degree Programme: Concept, Content & Implementation

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

Evidence:

- Self-assessment report
- Webpage UNSRI <https://unsri.ac.id/en>
- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- UNSRI Curriculum development guide
- PEO-PLO matrix
- Objective-module matrix
- Diploma, Diploma Supplement, and Transcript of Records of each study program
- Discussion during the audit

Preliminary assessment and analysis of the experts:

All three study programs under review are managed by the Faculty of Teacher Training and Education (FKIP). While the bachelor program *Mathematics Education* is the oldest outside of Indonesia's main island Java, the doctoral program Mathematics Education is the only one on Sumatra Island. UNSRI describes in its self-assessment report that for each study program, a curriculum development team is responsible for monitoring the quality of the study program. This includes the implementation of the university's vision and mission, national standards such as the Indonesian Qualification Framework and other national standards of higher education as well as governmental regulations regarding schools and teachers. In addition, the development of study programs at UNSRI refers to the Indonesian Mathematics Educator Education Study Program Association standards in their development. Every five years, UNSRI conducts a review of each study program involving internal and external stakeholders. It actively engages with alumni, the broader community, international experts and external entities such as schools, regulators and users/employers. The interaction takes place in workshops and via questionnaires. The study programs combine four key elements: attitude, knowledge, general skills, and specific skills. UNSRI proves

guidelines for the development of study programs in its curriculum development guide, which clearly defines the involved parties in the different states of the creation and improvement of a study program and its curriculum. The experts confirm that this document combines the information on how to define an adequate graduate profile for a study program, as well as its graduate learning achievements. UNSRI further outlines that it remains in contact with employers and alumni and conduct tracer studies to reflect on the experience of alumni on the job market.

In the self-assessment report and on its webpage, UNSRI issued the following program educational objectives (PEOs) for the bachelor program Mathematics Education:

1. Having academic ethics, character education values, in developing oneself both formally and non-formally.
2. Having knowledge of mathematics, learning mathematics, and research in learning mathematics using appropriate technology.
3. Able to implement knowledge of mathematics and educational concepts in internship, learning and research of mathematics education in schools.

With the following program learning outcomes (PLOs), UNSRI wants to ensure that the PEOs are achieved by the students at graduation.

PLO 1	Having good morals, ethics and personality in completing tasks as a mathematics educator.
PLO 2	Able to communicate research results and ideas about mathematics education in writing and orally based on the values of honesty and responsibility.
PLO 3	Internalizing the spirit of independence, struggle, entrepreneurship, and communication skills, as well as being responsible as a mathematics educator.
PLO 4	Having knowledge of mathematical concepts in solving mathematical problems and supporting further studies.
PLO 5	Having an understanding of the basic concepts of educational philosophy, approaches, methods, models, media, evaluation/assessment, and general knowledge to support mathematics learning and teacher competence in teaching practice in schools.

PLO 6	Having an understanding of research methodology and scientific publications in the field of mathematics education.
PLO 7	Able to apply mathematical knowledge logically, critically and systematically in solving problems.
PLO 8	Able to apply innovative educational and mathematics learning concepts in teaching practice at school independently or in groups.
PLO 9	Able to design innovative mathematics learning tools following educational concepts and school curriculum.
PLO 10	Able to utilize technology in solving mathematics and learning problems.
PLO 11	Able to conduct research in mathematics education following scientific principles and publish the results honestly and validly.

UNRSI states in its self-assessment report that the students reach qualifications at graduation, which allow them to work as mathematics educators in secondary schools, researchers in mathematics education, managers, or leaders of educational units such as school principals. UNSRI gives the following details on the qualification profile of the bachelor program *Mathematics Education* in its self-assessment report:

Graduate Profiles	Description
Mathematics Educators	Capable of teaching mathematics at secondary and high schools and other non-formal institutions.
Mathematics Education Researchers	Capable of conducting research in mathematics education.
Educational Leaders	Capable of leading educational institutions and organizations such as school principals or professional organizations.

UNRSI defines the following PEOs for the master program *Mathematics Education* in its self-assessment report and online presence:

1. Having professional responsibility and academic ethics in carrying out their duties and work.

2. Able to develop knowledge and technology in the field of mathematics education to produce innovative work through research activities with an interdisciplinary and multidisciplinary approach.
3. Able to solve problems in the field of mathematics education by using innovative research results logically, critically, and creatively.

Moreover, the following PLOs are published:

PLO 1	Able to be responsible, disciplined, collaborative, and maintain academic ethics in completing assigned tasks.
PLO 2	Mastering and be able to develop mathematical knowledge.
PLO 3	Mastering pedagogical and didactic theory and assessment in the field of mathematics education.
PLO 4	Mastering development research methodology in the field of mathematics education.
PLO 5	Able to critically analyse current issues in mathematics education using an inter and/or multidisciplinary approach.
PLO 6	Able to solve various mathematics education problems using an inter and/or multidisciplinary approach.
PLO 7	Able to publish research results.
PLO 8	Able to apply technology in mathematics education

UNRSI explains in its self-assessment report that the master program *Mathematics Education* is designed to allow graduates to become professionals as educators in the mathematics education program at a higher education institution or in specialized roles such as school principals. UNRSI adds the following details in its self-assessment report:

Graduate Profiles	Description
Mathematics Education Educators	Capable of teaching mathematics at secondary level or higher and other non-formal institutions.
Mathematics Education Researchers	Capable of designing and conducting research in mathematics education and writing journal papers.
Mathematics Education Developers	Capable of developing educational and research programs.

Mathematics Education Consultants	Capable of providing advice and consultation in the field of mathematics education.
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UNSRI determined the following PEOs for the doctoral program *Mathematics Education* in its self-assessment report on webpage:

1. Upholding moral and human values, as well as showing an attitude of responsibility, discipline, independence, and maintaining academic ethics towards the tasks given.
2. Able to develop knowledge and new technology in realistic mathematics education through research to produce original, creative and tested work.
3. Able to solve problems in the field of realistic mathematics education using innovative research results using inter, multi, or transdisciplinary approaches.

UNSRI combines the PEOs to the following PLOs:

PLO 1	Able to appreciate cultural diversity, morals, academic ethics, as well as other people's original opinions or findings.
PLO 2	Able to develop/design theories of learning mathematics using local contexts that are beneficial to society and science and able to gain national and international recognition.
PLO 3	Able to design and carry out scientific activities in the field of mathematics education based on research results.
PLO 4	Able to analyse, apply and evaluate factual, conceptual, procedural and metacognitive knowledge related to mathematics learning problems.
PLO 5	Able to solve science, technology and/or arts problems in the field of mathematics education through an inter or multidisciplinary approach.
PLO 6	Able to compose a dissertation in the field of mathematics education based on scientific principles that the academic community can access.
PLO 7	Able to prepare inter, multi, or transdisciplinary research, and/or experiments in the field of mathematics education and the resulting innovations in the form of dissertations, and papers that have been published in reputable international journals.

PLO 8	Able to demonstrate academic leadership in management, development, research and organizations under their responsibility.
PLO 9	Able to develop and maintain collegial and peer relationships within their own environment or through collaborative networks with research communities outside the institution.

According to the self-assessment report, UNSRI considers that graduates from the doctoral program *Mathematics Education* reach qualifications suitable for advanced careers, potentially reaching the position of a full professor in mathematics education. UNSRI describes the following details:

Graduate Profiles	Description
Professional Lecturers	Capable of teaching mathematics at university level and other non formal institutions and guiding students' research at all levels of higher education.
Professional Researchers	Capable of leading and conducting innovative research projects independently in the field of mathematics education and can communicate it in the form of seminars and publications in accredited national journals and reputable international journals
Designers/Innovators	Capable of developing and designing programs in the field of mathematics education and creating innovation in solving problems.
Educational Leaders	Capable of leading educational institutions and working together with stakeholders.

UNSRI describes in its self-assessment report that reviews of the study programs PEOs and PLOs are conducted in a five-year interval. During this process, the university assesses to which degree the desired competences were reached by the students as well as their study duration. In addition, UNSRI investigates if the PLOs and PEOs continue to match the current demands in society the labor market and the most recent developments in the field of expertise. In this process, UNSRI engages with stakeholders, alumni, and the broader community in workshops. In these collaborative events, UNSRI aims to ensure that quality and relevance of the study programs meet the demands of students and users. The experts

inquire how students contribute to the development of the study programs. The representatives of the rector's office describe that they aim for a stronger involvement of students once they have reached more independence by being an autonomous university. In their opinion, the strongest contribution of students to the university development is due to their feedback in evaluations, which they consider in their discussions.

The representatives of the rector's office confirm to the experts that UNSRI considers the opinion of internal and external stakeholders in their development of the study programs. This is specified in a rector's degree. The internal stakeholders include students, lecturers and the administrative staff while external stakeholders consider the feedback of partners in industry and research, all well as graduates and alumni. Once major revisions are planned, UNSRI usually invites the different stakeholders to workshops to discuss their demands on the study program. To such workshops, UNSRI invites the program coordinators, lecturers of the program, alumni, students as well as external stakeholders such as industry partners and partners from other universities. The last workshop for the bachelor program took place in 2021, which revealed that students need more competences in pure mathematics to teach in the classroom. In addition, stakeholders remarked that students should have improved problem-solving skills and are competent in the application of technology in the classroom. In all three cases, the content of the lectures was adapted to address the stakeholders' suggestions for improvement. The program coordinators describe that the last major changes in the curriculum of the master's program were also done in 2021. In a stakeholder workshop, they discussed the content and skills in applied mathematics and statistics as well as didactics. Based on their comment, UNSRI developed the new PLO 2 and 3 and consequently adapted the curriculum. Moreover, the representatives of the rector's office highlight that the PhD program was created in collaboration with the Utrecht University, discussion the aim of the study programs as well as the curriculum. In their last revision, they addressed the content of mathematics in the curriculum. As various stakeholders had requested, they transferred all lectures in mathematics to the electives creating modules called "Topic in..." The students now choose the elective matching the content of their thesis to discuss advanced knowledge and new developments in this area. The program coordinators add that the revision of the PhD program included further the head of the Indonesian Mathematics Education Society as an external stakeholder. Several of the industry representatives confirm to the experts in the discussion during the on-site visit that they were invited to different curriculum review events. In turn, they also invited members of UNSRI to support them in updating their curriculum at school. They consider that their feedback was implemented into the revision of the study programs.

The experts meet with the industry partners, who represent high schools, senior high school, vocational schools, universities, and entrepreneurs in education. They confirm to

the experts that the study programs provide the students with qualifications allowing them fulfill their responsibilities in their jobs. The teachers in school exhibit good skills in mathematics as well as in teaching. In addition, they often contribute ideas to improve the education at their schools or take on roles in school management. Some teachers at the school invite lecturers from UNSRI to conduct research in their school, deepening the connections of alumni. Next to their teaching abilities, the industry representatives further emphasize the students' soft skills and social competences. Moreover, the experts learn that UNSRI informs their industry partners on new developments in teaching methods offering trainings and workshops. Thus, the industry representations really appreciate the collaboration with UNSRI.

The experts approve UNSRI's established strong national and international collaborations. However, especially considering the number of international partners in research and education, the experts identify potential to improve. The experts emphasize that UNRSI has ongoing long-term partners; however, a higher diversity of partners in a global perspective could support the development of the study programs.

The experts conclude that UNSRI has defined objectives and learning outcomes (the intended competence profile) for the three study programs under review. They are transparently anchored and published and thus are available to students, lecturers and interested third parties. In the experts' opinion, the objectives and learning outcomes reflect the targeted academic qualification level, are feasible and equivalent to the relevant exemplary learning outcomes specified in the applicable SSC (academic classification).

The experts are convinced that graduates with the intended competence profile can take up a professional activity corresponding to the level of qualification (according to the European Qualifications Framework).

The experts acknowledge that UNSRI considers the relevance of the objectives and learning outcomes for both the labor market and society in regular reviews; they confirm that this process involves the relevant stakeholders (in particular from higher education and professional practice) and, if necessary, the objectives are revised accordingly.

Criterion 1.2 Name of the Degree Programme

Evidence:

- Self-assessment report
- UNSRI document and offered study programs (including official English translation)
- Official state decree to initiate the study programs

- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- Diploma, Diploma Supplement, and Transcript of Records of each study program

Preliminary assessment and analysis of the experts:

After studying the submitted documents and the discussions, the experts acknowledge that the names match the intended objectives and learning outcomes as well as the teaching and learning content of each study program. The experts observe that the names of the study programs are consistently used in all official documents issued by the government and the university. Documents in Bahasa Indonesia and English always refer to Pendidikan Matematika and/or *Mathematics Education*. The experts confirm that this translation is also in line with the international community and therefore has global recognition. At graduation, students receive the academic title of Sarjana Pendidikan (S.Pd.; Bachelor of Education) for the bachelor program, Magister Pendidikan (M.Pd.; Master of Education) for the master program, and Doktor (Dr.; Doctoral) for the doctoral program in Mathematics Education.

Criterion 1.3 Curriculum

Evidence:

- Self-assessment report
- Webpage UNSRI <https://unsri.ac.id/en>
- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- Objective-module matrix
- Curricular overview of each study program
- Module handbook of each study program
- List of activities regarding student mobility
- Sriwijaya University Academic and Students Guidelines, Academic Year 2021/2022
- Discussion during the audit

Preliminary assessment and analysis of the experts:

Structure and content of the study program

UNSRI documents that the bachelor program *Mathematics Education* is an eight-semester study program requiring at least 145 Indonesian credits at graduation representing 230.04 European Transfer and Accumulation System (ECTS) credit points. One active semester is scheduled for 20 (twenty) weeks including teaching and learning time, Mid-term Exam

(Ujian Akhir Semester), Final Exam (Ujian Akhir Semester), quiet period (masa tenang), grade improvement period (remedial), and the time to post students' final score.

The design of the study program requires students to first learn the basics as prerequisites for later semesters, where students gain advanced knowledge and skills. The curriculum comprises general courses, courses in mathematics and courses in pedagogy. The study program considers compulsory (38 courses) and elective courses (22 courses). In addition, the bachelor program offers students the possibility to take part in a national off-campus learning project called Merdeka Belajar Kampus Merdeka (MBKM). This allows students to spend up to 20 Indonesian credits outside of their university, attending lectures at national and international universities or taking part in internships in industry, research and community service projects. All students need to take part in an internship ("School Experience" in the seventh semester, four credits). In the eighth semester, students work on a final project (six credits).

The master program Mathematics Education is a four-semester program with a minimum of 36 Indonesian credit points equal to 90.72 credit points. The study program comprises 30 compulsory courses and offers the students to select six elective courses. Students study four courses in the first and the second semester, followed by three courses in the third semester. In the final semester, students work on their master thesis, which equals the amount of six Indonesian credits or 15.12 ECTS credits.

The doctoral program Mathematics Education has a standard duration of six semester. Students need to complete 42 Indonesian credits or 117.6 ECTS credits to graduate. Students must complete 40 credits of compulsory modules and select electives with a workload of two credits. The students need to complete courses in the first and second semester, while the remaining time is reserved for research and data collections. The study program considers a mandatory internship in the third semester, which students spend at schools and/or universities to conduct experiments and surveys. The fourth, fifth and sixth semester contain various courses related to the dissertation project of the students.

The program coordinators explain the details of the MBKM program of the bachelor program to the experts. UNSRI has adapted the curriculum of the bachelor program Mathematics Education for the national MBKM program (Independent Learning-Independent Campus or Merdeka Belajar-Kampus Merdeka program). At UNSRI, students can spend up to 20 CPs (one entire semester) within the MBKM program. The conversion of off-campus activities is managed by a rector's degree and varies depending on the different activities. All activities have to be further assessed and converted into grades. The program coordinators discuss the conversion with the students prior to them spending time outside the campus. The program coordinators further mention that not all courses can be converted

to off-campus activities. To decide, which courses can be converted, a team of lectures discusses each specific case. UNSRI further supports the students from Mathematics Education to spend internships in companies and the private sector. Suitable internships are advertised by UNSRI's career development center. Students are required to submit their application internally, followed by a test. As examples for the private sector internships, which have previously accepted students from Mathematics Education, the program coordinators mention start-ups in Education, cosmetic industry companies and the international internship program SEA Teachers. The students confirm to the experts that internships mainly take place in the bachelor program. There, students have a mandatory internship, which they spend in schools to get their first teaching experience ("School Experience"). In addition, bachelor students oversee tasks in school administration and school management. Internships are not common in the master program Mathematics Education. In the doctoral program, students also take part in an internship at a schools or universities to collect research data. In this case, they observe students and/or conduct experiments. Students can also take part in international internships in the doctoral program, for example at their collaboration partner such as Utrecht University. The government supports these research internships. The experts further discuss the MBKM program with the bachelor students. The students have never experienced problems to convert off-campus activities to credit points.

The experts discuss various questions on the content of the lectures with the program coordinators. These include the number and content of courses, in which students learn to develop teaching materials as well as the different courses preparing students to teach in the classroom. The program coordinators add that bachelor students spend two periods at schools during the "Educational Internship" and "School Experience". While students visit schools to observe and learn as preparation during "School Experience", students attend schools to get their first opportunities to teach in the "Educational Internship." The experts further acknowledge that students at UNSRI learn different digital technology and software during their studies. This includes MATLAB and Geogebra. The experts continue this discussion with the industry representatives focusing on the use of digital media in teaching. Overall, the industry representatives confirm to the experts that the students are capable of integrating various digital learning tools in their lectures, including social media (e.g. youtube) to software such as Geogebra or scratchpad. They add that students once visited their school during their community service and developed an app in the context of their local culture, which is widely appreciated. The experts conclude that the students are well-prepared for the application of digital technology in the classroom.

Moreover, the experts inquire how the students train their mathematical skills. The students describe that every course in mathematics integrates exercises. These exercises can

either be homework for them to practice what they have learned or exercises in class to discuss their solutions. The results of the exercises they received as homework are discussed in the following lecture. It is common to require the submission of the homework to an online platform, where lecturers can share feedback on their skills on an individual. The students from the master program add that they also take part in exercises in their mathematical courses. For them, they mainly receive homework, which they have to submit online for correction. In the opinion of the students, the study program gives them sufficient opportunities to practice their competences in the different fields of mathematics. Based on the students' explanations, the experts approve the situation at UNSRI.

According to the module handbook, several courses in the bachelor program are offered in English and Bahasa Indonesia. The program coordinators clarify to the experts that currently none of the modules in the bachelor program is fully organized in English. They consider the English proficiency of the bachelor students might not be suitable for entire classes in English. However, students are often encouraged to speak English because the learning materials are in English. The experts question why UNSRI has deleted English in all curricula and how it ensures that students reach sufficient levels at graduation. The representatives of the rector's office admit that their strategies aim to become an excellent university, which includes also students with good English skills. Nevertheless, the course was deleted based on a rector's degree because all students need to prove their English competences. The university conducts its own English test during the enrollment process after the students are accepted at UNSRI. Students, who pass this English test with the required score, are released from taking English courses. However, if students perform poorly, they have to participate in obligatory English courses on campus (English language school). For the graduation, UNSRI requires a successful English test. In this way, the university ensures that each student reaches a sufficient level of English at graduation. The representatives of the rector's office add that each Faculty requires different scores; for the Faculty of Teacher Training and Education, the English score is 400 for the bachelor program and 450 for the master program. They recognize that these English courses are outside the curriculum and that English is challenging for some students. However, the students have eight semesters to improve their English competences during their bachelor studies and four semesters during their master program. In addition to these English courses, the lecturers are also encouraged to use English in the classroom and in reading materials. They specify that courses in English only take place in the doctoral program, where they currently have four lectures in English. In addition, most books and reading materials are in English. The experts further learn that students have to pay for the English courses at the language school. The experts discuss the English qualifications also with the students. According to the bachelor

students, there are few courses in English, such as Discrete Mathematics in the sixth semester. In this course, students have to give a presentation in English to demonstrate their English skills. The students state that they are interested in improving their English and therefore appreciate the English lectures. Although the students from the bachelor program consider it challenging, they would accept more courses in English. The students confirm that most of the book references are in English, therefore, they already have contact to English literature in their field of study. In the discussion with the experts, the students admit that they know students, who struggle in English and had to take the English courses at their university language center. In these courses, students train their skills in English speaking as well as the basics. In their opinion, they consider that the service justifies the extra payment the university charges to support the students in their English training. The industry representatives agree to the need for good English in teaching. They consider that the students need more experience in order to be able to present the content of a lecture fluently. They highlight that the number of school teaching in English is increasing and UNSRI should prepare graduates qualifying also to work there.

Furthermore, the experts question the type of research students need to complete in the bachelor, master, and doctoral program. The program coordinators state that the level of research in each program follows the Indonesian Qualification Framework of the government. This requires each student to conduct research, including bachelor students. On a bachelor level, students mainly work on a review or a model, which they implement or apply. Students are required to describe all variables, test them in schools and analyze these results. In their opinion, this is a research-based learning approach, often also labelled as “small-scale research.” In contrast, master students work on their research objective, often developing products such as learning materials or media. Students in the doctoral program are deeper involved in theory; they design original experiments in relation to a new theory. In most cases, they develop something new or apply a new context to an existing theory to reach new results. The experts further question the students how they are introduced to scientific writing and scientific literature. The students in the bachelor program state that scientific writing is addressed in three different courses in their curriculum starting from the sixth semester. Students in the PhD program describe that research is the main part of their doctoral studies. They take part in several courses in the first semester focusing on scientific writing and research methods. All students confirm that they have access to scientific databases.

The experts further discuss the curriculum of the doctoral program *Mathematics Education*. The program coordinators explain to the experts that the curriculum previously contained courses in mathematics, but these courses are now all classified as elective. The only compulsory courses in their curriculum are on research methods including publishing as

well as philosophy in mathematics education. All these courses take place in the first semester. In the second semester, students select the elective course matching their thesis topic to gain advanced knowledge and have the opportunity to discuss new developments in the field. The program coordinators ensure that elective courses in the doctoral program are opened also if only one student registers for the course to ensure everyone can develop their personal expertise. In the doctoral program, elective courses are often project-based or research-based; therefore, the lecturer meets with the students around four times before the students work on their assignments during the remaining semester. In the end, the students are asked to present the results of their assignment in front of the class.

Overall, the students confirm that the study programs provide them with adequate competences to proceed in their studies. Their academic advisor gives them counsel for choosing their electives; however, there were so far no courses where they missed knowledge. The students admit that they consider certain courses as challenging, including e.g. "Calculus." In this case, UNSRI offers study groups, where they can discuss the content with the lecturers in addition to the classes. All students are invited to join these study groups, although they are not mandatory.

Furthermore, the industry representatives suggest to the experts that students should be made aware of the different types of schools and their curricula. The curriculum the students learn focuses on (senior) high school and covers less the content of the curriculum in vocational schools, which require topics such as budget development and allocation. In addition, industry representatives from schools using the Cambridge curriculum mention that they have similar concerns but highlight that UNRSI graduates are quick to adapt. In case of the international curriculum, students would also need to consider knowledge on mechanics. However, overall, the industry representatives are content with the teaching skills of the UNSRI graduates and interns.

The experts additionally acknowledge that the curriculum at UNSRI does not adequately give the students training on teaching students with disabilities. The industry representatives confirm that students are now well informed how to include students with disabilities at schools into their lectures. Teachers should be aware of how to adapt in the classroom to the needs of students with physical and mental disabilities. Therefore, the experts suggest UNSRI should provide more attention to this topic and cover various learning methods to accommodate the needs of all students adequately.

Moreover, the experts miss collaborations between the Department of Mathematics and the Department of Mathematics Education. At UNSRI, the Department of Mathematics operates under the Faculty of Mathematics and Natural Science, while Department of Math-

ematics Education is under the Faculty of Education and Teacher Training. The experts observe that there are no joint lectures in any of the degree programs, including the lectures on scientific mathematics. Furthermore, the experts also note that this includes also elective courses. The experts, therefore, consider UNSRI should establish a deeper collaboration between these two departments. This should be done on the teaching level, however the lectures of both departments could also benefit from a collaboration on research level.

In conclusion, the experts consider the English content and requirements as a central topic in their discussions during the on-site visit. The experts acknowledge that UNSRI has taken the first steps to ensure students have good competences in English when entering UNSRI; however, the experts consider that UNSRI should support the development of students' English proficiency also in the classroom. Moreover, they form the opinion that general English courses do not sufficiently prepare the students for English literature and conversation in their field of expertise. Therefore, the experts suggest increasing the use of English progressively through the semesters, teaching the students also the subject-specific English terminology. In addition, students should be encouraged to speak English in the classroom during certain activities or modules in order to advance their conversation skills. This should especially build their confidence for talking about mathematics problems in English using the correct terminology. This will also qualify the students to find employment in international schools and organizations and engage in international collaborations. Furthermore, students should be encouraged to write their thesis in English, especially in the master and doctoral program. This should also foster collaboration with external partners, particularly in an international level.

Furthermore, the experts summarize that the curricula of all three study programs under review enable students to achieve the intended learning outcomes. UNSRI has defined the learning outcomes of each module, which, in total, enable the achievement of the overarching programme objectives. The experts approve that students take part in internships, which are well-integrated into the curricula of the bachelor and doctoral program. In these cases, UNSRI assumes responsibility for the quality of the internship in terms of its content and structure. Overall, the experts form the opinion that each module represents a well-matched unit of teaching and learning. The structure of the curricula allows the students to build on their knowledge, skills and competences acquired in each module. Moreover, the experts approve that students can select electives to develop their individual focal points.

Student mobility

According to the self-assessment report, UNSRI offers several student exchange programs. On the bachelor level, students have the option to take courses outside UNSRI with the MBKM program, where they can join international universities and companies for exchange programs. The independent student exchange is part of the MBKM activities and connects students to partner universities. Additional programs consider the “Campus Teaching” and “Certified Independent Study and Internship (MSIB)” supporting the students to gain teaching experience.

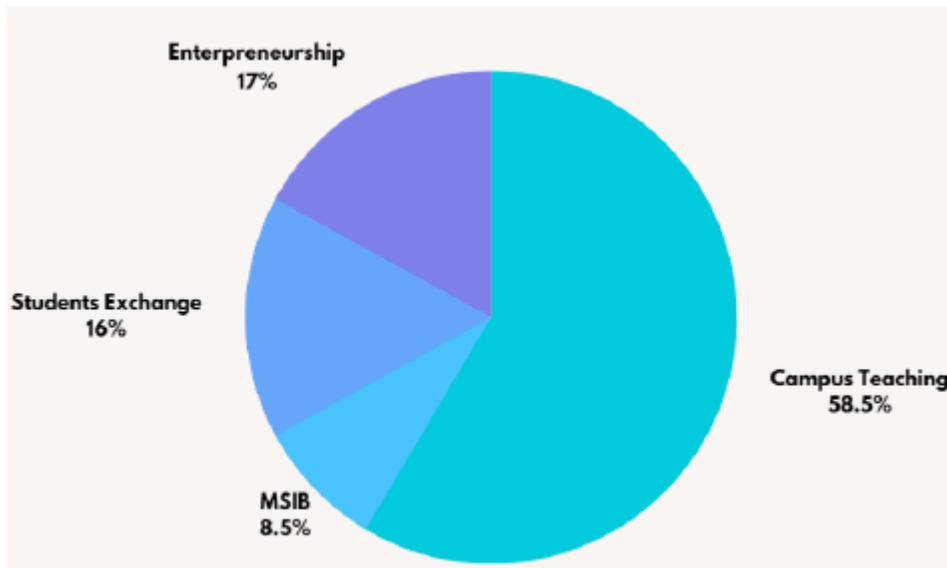


Figure 1 depicts the different activities of the bachelor students in Mathematics in the MBKM program (source: self-assessment report)

Moreover, UNSRI is part of the Seateacher Student Exchange Program. This program allows students to provide teaching experiences in Southeast Asian schools. Students from the bachelor program Mathematics Education are currently taking part in teaching in schools in the Philippines.

The representatives of the rector’s office describe to the experts that the main option for bachelor students to spend time outside UNSRI is within the MBKM program. At UNSRI, students are allowed to take up to 20 CPs outside their own university (one full semester). They add that UNSRI also offers scholarships for student exchange projects.

The experts note that students from all three study programs are aware at UNSRI conducts summers schools with Utrecht University. Students usually spend two weeks in Utrecht. The application requires a CV, a motivation letter (essay) and an additional test. Their lecturers encourage them to participate in this selection; the academic advisor provides additional support. The study program coordinators need to make the final decision. Collaboration partners from Utrecht University confirm that they organize summer schools for master and doctoral students. These summer schools take place annually and contribute

to ongoing research projects. The funding is organized from the Netherlands and from Indonesia to support students housing and travel costs.

The participation of international conferences and events is organized similarly. The experts appreciate the support from the university to participate in these events, including the support from administrative services and the financial report from the university covering transportation and accommodation. Bachelor students further highlight the opportunity to take part in the SEA Teacher program, where they are currently applying to spend time in the Philippian schools. In this case, the organization will provide air tickets and pocket money to the students.

The teaching staff confirms to the experts that each lecturer applies for grants at UNSRI. There are funding schemes to support students, which also includes money for student mobility. Research funding for projects with external partners, like in the Netherland or Brunei, reserves money for lecturers and students to travel. However, these grants are competitive.

The experts strongly approve UNSRI's support for students to join mobility programs. However, the experts remain uncertain about the criteria the students are chosen. Thus, the experts suggest developing criteria for the selection and transparently communicating these to the students when grants and scholarships are offered.

In addition, the experts suggest to support potential incoming students to UNSRI, especially in the master and doctoral programs. This should include sufficient information for international students on the webpage, including registration criteria. Further, module handbooks and some lecturers should be provided in fully in English. Additional strategies to attract foreign students should further be developed.

Moreover, the expert suggest to establish a higher number of international collaborations offering student exchange program. Although the experts approve of the already existing strong partnerships, a stronger diversity would allow more students to find suitable exchange programs matching their interests and needs.

The experts approve that UNSRI supports students in their international student mobility through an appropriate framework. This includes guidelines for mobility, recognition of qualifications and support services.

Periodic revision of the curriculum

UNSRI describe in its self-assessment report that many changes in the curricula were made in the last major revisions. In the discussion, the program coordinators highlight to the experts that the adjustment due to the MBKM program were the most important changes in the bachelor program. In addition, the content and learning methods were updated to include project-based and case-based learning to shift the teaching to student-centered learning. This includes also a stronger focus on developing learning media.

In the master program, they focus on improving the content based on the feedback of stakeholders. As an example, they mention the module “Innovation in Mathematics Learning” where they can discuss new development in Mathematics Education with their students. They further rearranged the curriculum to increase the content of applied mathematics and statistics in the program, which resulted in a high number of new courses. In addition, the program coordinators added several new elective courses to meet the new developments in this field like mathematical modelling and statistics.

The program coordinators describe to the experts that the doctoral program was developed in 2016, followed by a first revision in 2021. This revision was limited mainly to one course that needed to be revised because it contributed to a longer study duration. The program coordinators meet with stakeholders in a workshop, which resulted in the introduction of elective courses in the different fields of mathematics (“Topic in...”). Students now have to select only one course in the area of the doctoral thesis, which therefore supports their personal expertise.

In the doctoral program, they stated to focus to a higher degree on online teaching and learning.

After reviewing the submitted documentation and the discussions during the on-site visit, the experts learn that a curriculum evaluation team is responsible to coordinate the update of the curriculum every five years. The team develops a draft of a new curriculum focusing on the scientific vision and mission of the study program, the results of surveys (e.g. tracer studies) and a development of the PEOs and PLOs. The review involves the study material of the study programs, the content and credit number of modules, and the assessment methods. The draft of the new curriculum is first discussed within the faculty before it is discussed in curriculum workshops with stakeholders. UNSRI describe in its self-assessment report that it invites faculty heads, department heads, department secretaries, all lecturers from the Mathematics Education program, as well as relevant parties including education office heads, school principals, alumni, and students to various workshops. Final approval takes place at the Faculty Senate Meeting and the Rector of UNSRI.

Smaller revision of the curriculum can be implemented every two years.

The experts confirm that UNSRI ensures periodically reviews of the curriculum with regard to the implementation of the program objectives; these curricular changes are documented. This review also includes whether the structure and content of modules to support students' graduation on time. The experts further appreciate that development in the field and external feedback are seriously integrated in the curriculum reviews at UNSRI.

Criterion 1.4 Admission Requirements

Evidence:

- Self-assessment report
- Guidelines for online admission
- Webpage UNSRI <https://unsri.ac.id/en>
- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- Sriwijaya University Academic and Students Guidelines, Academic Year 2021/2022
- Discussion during the audit

Preliminary assessment and analysis of the experts:

According to the self-assessment report, UNSRI accepts students for the bachelor program Mathematics Education according to three different admission opportunities.

1. National Selection Based on Achievement (NSBA)
2. Computer-Based Written Exam - Test-Based National Selection (TBNS)
3. Joint Entrance Screening Exam (JESE)

All applicants are required to have completed a high school or vocational high schools in order to enter UNSRI. Whereas the admission processes (1) and (2) are handled by the Indonesian government, the admission (3) is organized by UNSRI. Within the NSBA, outstanding students at schools can directly enter university. The government collects data based on school and students databases following several criteria. Of all bachelor students, 20 percent are selected based on the NSBA admission.

Most students take part in the computer-based national TBNS test, where students have to perform exams in basic subjects. UNSRI accepts a quota of 50% of all its bachelor students through this entrance scheme.

In addition, UNSRI organizes its own entrance tests within the JESE scheme. A total of 30% of all UNSRI students enter their bachelor studies through this admission program. UNSRI

has submitted documentation presenting the guidelines for who is eligible to enter this entrance scheme.

Specific regulations are in place for international students, which are managed by the International Service Cooperation Office at UNSRI. Foreign applicants are required to register at the International Service Cooperation Office, which will inform them on all regulations and opportunities for international students. The application will be considered in collaboration with the Academic and Student Affairs Bureau. UNRSI supports foreign students after acceptance with official matters, including among others visa issues and residence.

UNRSI describes the admission requirements for the master program Mathematics Education in its self-assessment report. Students can be admitted under the following four pathways:

1. Regular Selection: Intended for prospective students with their own funding.
2. Collaboration Selection: Intended for prospective students with funding from Universitas Sriwijaya's collaboration partners.
3. International Selection: Intended for prospective students of foreign nationality.
4. Test-Free Selection: Intended for prospective students who are alumni of Universitas Sriwijaya with the predicate Cum Laude.

All applicants have to hold either a bachelor degree in Mathematics or Mathematics Education. In addition, the applications are required to collect letters of reference from different lecturers to receive more information on the applicant's academic abilities, skills, social skills, and achievements from the perspective of the recommender. The students also needs to hand in a research proposal. All documents will reviewed by the Postgraduate Program of UNSRI. Potential applicants will be invited for an interview to gain a deeper insight into the research proposal and the student's skills and character. Admission regulations are evaluated annually to ensure students have sufficient potential to successfully complete the program.

Likewise, the application to the doctoral program Mathematics Education following identical four pathways for admission:

1. Regular Selection: Intended for prospective students with their own funding.
2. Collaboration Selection: Intended for prospective students with funding from Universitas Sriwijaya's collaboration partners.
3. International Selection: Intended for prospective students of foreign nationality.
4. Test-Free Selection: Intended for prospective students who are alumni of Universitas Sriwijaya with the predicate Cum Laude.

Comparable to entering the master program, doctoral students' applications need to contain documentation of their previous knowledge and degree (certificates and transcripts of records), letters of recommendation as well as a research proposal. Potential candidates are further interviewed to observe their competences and motivation.

The experts are further interested in the numbers of applications UNSRI received for the bachelor, master and doctoral program Mathematics Education annually. The representatives of the rector's office explain that they receive around 1,500 applications very year for the bachelor program of which they can accept 100. The master program is limited to 25 students, although additional students are possible in collaboration with the Ministry of Education, Culture, Research, and Technology. Currently, the number of students in the master program is 20 on average. They operate in two classes, one in the morning and the second in the evening/afternoon to allow part-time students to study next to their jobs.

For the doctoral program of Mathematics Education, only two out of five applicants are accepted. Since the initiation of the PhD program in 2016, they had in 50 students in total, of whom 20 have already graduated. The program coordinators add that the numbers of applications are increasing by the year. Currently, the numbers of new application range between five and ten doctoral students per year. The teaching staff remarks that the number of accepted students is determined by the number of professors, who can supervise them.

The representatives of the rector's office further explain to the experts that the admission tests to the bachelor Mathematics Education is identical to the test in bachelor Mathematics. Since UNSRI accepts students only based on these three schemes, there is no difference between students of the education and science programs. At the bachelor level, the three admission schemes ensure that the students have the general competences to enter UNSRI. In the master and doctoral program Mathematics Education, however, UNSRI actively checks the students' competences and qualifications. By thoroughly checking the documents required for the submission and undergoing an interview, the program coordinators consider being able to select potential students. Nevertheless, the experts remark that students with a bachelor in Mathematics can enter the program Mathematics Education. The program coordinators explain that there is no difference between students from the Mathematics and Mathematics Education bachelor background in the master program. In their experience, they have never encountered issues with missing competences in the master program in pedagogy. They add that master students can take their electives in the field of education to compensate any missing skills. Upon the question of the experts, the program coordinators state that these elective courses in the field of education are not compulsory. In addition, the students learn pedagogy and didactics in the master program as well. The admission of students to the master program Mathematic Education, who have

no background in pedagogy, remains unclear to the experts. The students report to the experts that they have never had any problems with missing competences in any of the study programs under review. Yet, none of the students present has a bachelor in Mathematics. The teaching staff clarifies that the students are encouraged to take their electives in the field of education to compensate their missing qualifications. However, the experts highlight that the suitable elective course “Designing learning product and classroom observation” takes place in the third semester, which is too late. Students already have to take classes on education in the first semester; therefore, UNSRI risks that the students enter these courses without the prerequisite knowledge in education. Since students with a background in mathematics enter the master program *Mathematics Education* on a regular basis, the experts consider that UNSRI needs to ensure that these students catch up on the pedagogy content as soon as possible. The experts remark that UNSRI needs to rethink its strategy of compensation of missing competences in pedagogy in the master program and develop opportunities for these students to take adequate courses during their first or second semester.

The representatives of the rector’s office confirm to the expert that UNSRI accepts transfer students. The regulations are part of their Academic and Students Guidelines in chapter 3.7.1.7 “Transfer Student Grades and Credit Recognition.” Accordingly, UNSRI considers the completed work at their original university. Students have to submit a “grade transfer proposal” to the Rector through their Faculty/Program. The Rector decides on the degree of the alignment of the course learning outcomes match the learning outcomes for the program the students will transfer. UNSRI limits the transfer to degree programs with a strong overlap and require a justification for the transfer. The representatives of the rector’s office emphasize, however, that they try to make the transfer process as quick and easy as possible.

The experts discuss with the admission with the doctoral students. The students describe that they apply for the study program by submitting a research proposal together with their certificates. If they pass the inspection of the administration, they are invited to an interview with representatives of the department to discuss their research plan and motivation. One requirement for acceptance is a GPA higher than 3.2. Students, who have already completed their master at UNSRI can proceed to the PhD level without the regular selection.

The experts confirm that UNSRI has issued admission requirements and procedures, which are binding and transparent. They ensure that students are in principle able to successfully graduate from the programme. The experts observe that rules for the recognition of qualifications achieved externally are clearly defined. Nevertheless, the experts emphasize that UNSRI should ensure that students entering the master program Mathematics Education

are provided sufficient opportunities to compensate their missing qualifications in the field of education and teaching.

Criterion 1.5 Workload and Credits

Evidence:

- Self-assessment report
- Sriwijaya University Academic and Students Guidelines, Academic Year 2021/2022
- Decision of the Rector of Sriwijaya University Number 0021/UN9/SK.LP3MP.BD/2022
- Module handbook of each study program
- Curricular overview of each study program
- Results of students' workload analysis
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The experts acknowledge that UNSRI is using a credit-point system to express the workload of the students. UNSRI follows the Indonesian system and defines a different workload for one credit point in the bachelor, master and doctoral programs. This system considers the higher importance of self-study and structured assignment in the higher academic degree programs.

As defined in the Academic Guidebook, one credit in all undergraduate programs at UNSRI represents the workload of 170 min divided into 50 min face-to-face time, 60 minutes for structured assignments and 60 min self-study. UNSRI documents in its self-assessment report how the workload is converted to the European Credit Transfer and Accumulation System (ECTS). UNSRI defines in a rector's decree that one ECTS credit in the bachelor studies equals the workload of 25 hours. Therefore, the university explains in its self-assessment report: "One credit unit equates to 14 meetings (excluding mid-term and final exams), which equals 14 x 170 minutes, or 2380 minutes, equivalent to 39.67 hours. Following the Rector's Decree regarding credit conversion to ECTS, 1 credit is rounded up to 1.6 ECTS since $39.67/25 = 1.5867$." Exceptions occur regarding modules with different credit weight allocations due to a distinct assessment method. These modules include "Educational Internship", "Introduction to School Fields" and "Thesis."

Following the definition of the Academic Guidebook, the module handbooks and the curricular overview, the bachelor program Mathematics Education with 145 Indonesian credits converts to 230.04 ECTS credits. The distribution to each semester is as following:

Semester	sks	Workload (minutes)	Workload (hours)	ECTS
1	19	$19 \times 170 \times 14 = 45220$	753.66	30.14
2	19	$19 \times 170 \times 14 = 45220$	753.66	30.14
3	20	$20 \times 170 \times 14 = 47600$	793.33	31.73
4	24	$24 \times 170 \times 14 = 57120$	952	38.08
5	23	$23 \times 170 \times 14 = 54740$	912.33	36.49
6	24	$24 \times 170 \times 14 = 57120$	952	38.08
7	10	$10 \times 170 \times 14 = 23800$	396.66	15.86
8	6	$6 \times 170 \times 14 = 14280$	238	9.52
Total	145	345100	5751.64	230.04

Figure 2. Overview of the workload in the bachelor program Mathematics Education (source: self-assessment report).

In the master program *Mathematics Education*, one credit equals 270 minutes consisting of 50 minutes face-to-face, 100 minutes of structured assignments, and 120 minutes of independent study. According to the self-assessment report “One credit unit equates to 14 meetings (excluding mid-term and final exams), which equals 14×270 minutes, or 3780 minutes, equivalent to 63 hours.” As a result, the workload of 36 Indonesian master credits equals 90.72 ECTS credits.

UNSRI presents the following overview for each semester:

Semester	sks	Workload (minutes)	Workload (hours)	ECTS
1	11	$11 \times 270 \times 14 = 41580$	693	27.72
2	11	$11 \times 270 \times 14 = 41580$	693	27.72
3	8	$8 \times 270 \times 14 = 30240$	504	20.16
4	6	$6 \times 270 \times 14 = 22680$	378	15.12
Total	36	136080	2268	90.72

Figure 3. Overview of the workload in the master program *Mathematics Education* (source: self-assessment report).

In the doctoral program *Mathematics Education*, one credit point is equivalent to 300 minutes. This include 50 minutes face-to-face, 100 minutes of structured assignments, and 150 minutes of independent study. Consequently, one credit unit equates to 14 meetings (excluding mid-term and final exams), which equals 14×300 minutes, or 4200 minutes, equivalent to 70 hours as defined in the self-assessment report. The doctoral program comprises of 42 Indonesian credit points therefore equals 117.6 ECTS credits.

Semester	SKS	Workload (minutes)	Workload (hours)	ECTS
1	12	$12 \times 300 \times 14 = 50400$	840	33.6
2	6	$6 \times 300 \times 14 = 25200$	420	16.8
3	6	$6 \times 300 \times 14 = 25200$	420	16.8
4	6	$6 \times 300 \times 14 = 25200$	420	16.8
5	6	$6 \times 300 \times 14 = 25200$	420	16.8
6	6	$6 \times 300 \times 14 = 25200$	420	16.8
Total	42	176400	2940	117.6

Figure 4. Overview of the workload in the doctoral program *Mathematics Education* (source: self-assessment report).

The experts approve that UNSRI has further defined in its Academic Guidebook how externally obtained credit points are transferred to the study programs. In this process, the individual workload of each course based on the lesson plans is considered.

UNSRI further presents surveys to the experts asking students in the bachelor, master and doctoral program on *Mathematics Education* about their opinion of the courses' workload.

On a scale of 1 to 4, students from all study programs rated consistently above 4, demonstrating a high agreement of the listed and real workload.

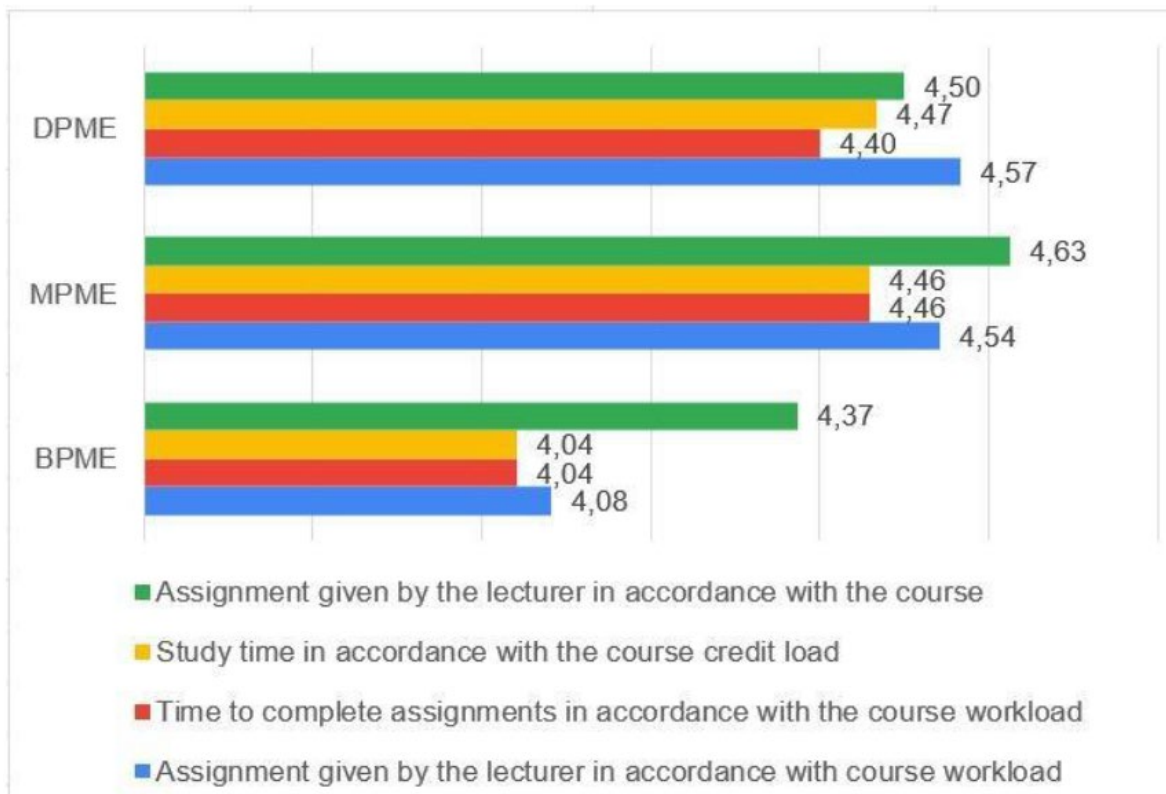


Figure 5. Results of the last survey of students opinion on the course workload on a scale of 1 to 5 (source: self-assessment report).

Comparable surveys were also conducted on the workload on the undergraduate thesis. The experts notice that these survey results document a higher mismatch concerning the workload of the bachelor thesis.

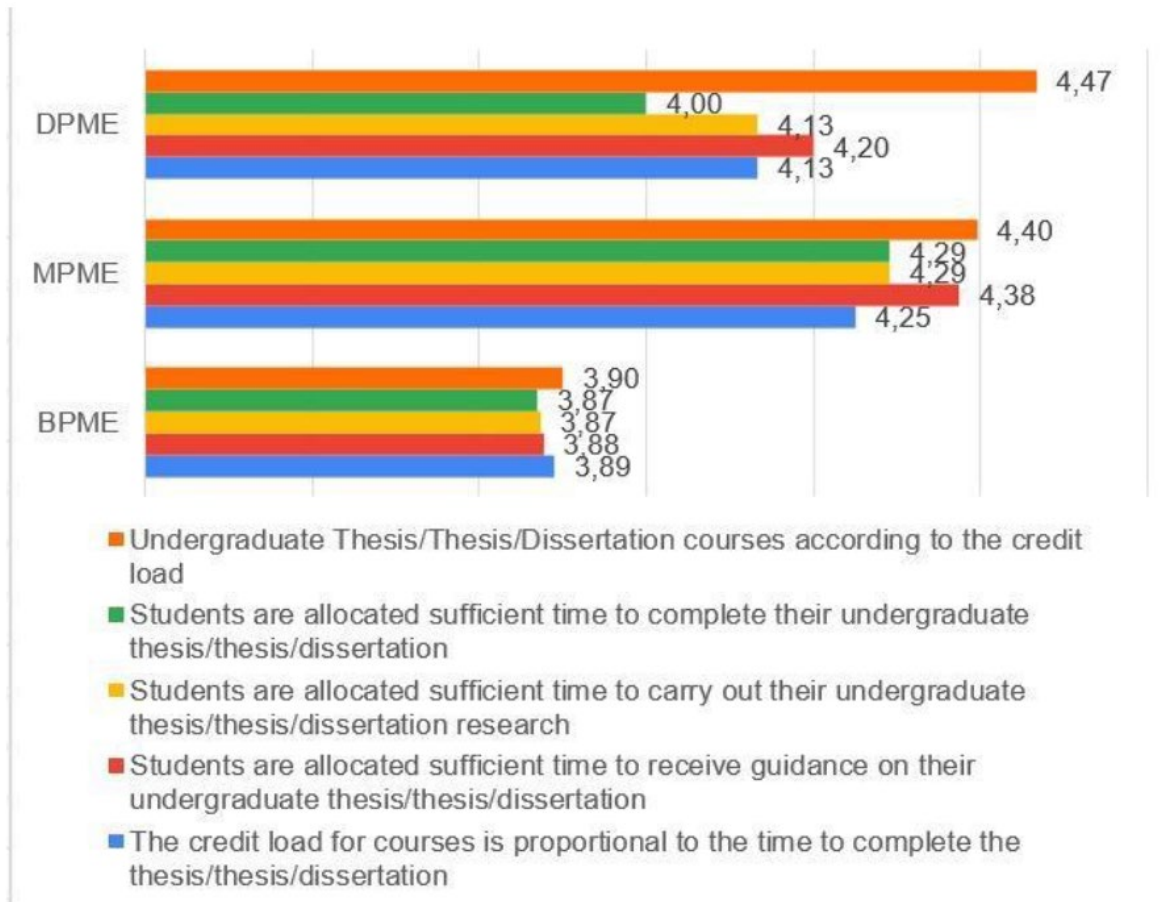


Figure 6 Results of the student satisfaction regarding the alignment of course workload for the bachelor, master and doctoral thesis. (source: self-assessment report).

During the on-site visit, the program coordinators confirm that students do not have any problems to manage the high workload of the study programs. They assure the experts that they consider the results of the students' feedback to improve their study programs, which includes consideration of the students' workload to review the curriculum and its content. The program coordinators add that the workload is part of the survey distributed at the end of the semester.

The students confirm in the discussion with the experts that the workload of some semesters can be challenging; however, they consider the workload suitable overall. Upon the questions by the experts, the students confirm that they receive a questionnaire at the end of each semester, which contains questions on the workload. The students further describe that they receive a notification once the results of the survey are published, which they can access online on their university system. Communication on changes on the modules often takes place via WhatsApp groups. However, the students do not receive general surveys, which might question the overall workload of the study program or the students' workload of one semester.

The experts continue to ask on the workload of the doctoral students. The program coordinators admit that students have to attend mandatory classes; however, these classes are in relation to their doctoral thesis. In total, students attend four courses in the first semester, focusing on research methods, scientific integrity, and philosophy. In the second semester, the students attend three courses plus one seminar. The seminar “Proposal Seminar” asks the students to present the research project for their doctoral studies.

The experts summarize that UNSRI measures the workload of the students in class; in contrast, the students’ workload outside the classroom is not monitored. This leads to the fact that students cannot complete all assignments due to the overload. The experts identify this as an issue, which needs to be improved as soon as possible. Therefore, the experts demand UNSRI to develop a mechanism, which reviews the total workload of the students in each course including the time spend on self-study (reading assignments, projects, exercises, homework, etc.). This should also include the time spend on research for the final projects. Based on the collected data, UNSRI should readjust the workload of the students in each module. In addition, the experts suggests creating surveys on the total workload in each semester, complementing the information for each module. This should avoid peaks of workload in certain semesters due to a high number of courses.

In summary, the experts approve UNSRI’s definition of the student workload and its conversion to ECTS credit points. The experts confirm that all compulsory components of the study programme are included and that credits are awarded for every module based on the respective workload. The experts note that the workload is regularly monitored whether the credits awarded for each module correspond to the actual student workload and whether the distribution of the workload across all semesters enables graduation within the standard period of study. Students are involved in these processes and adjustments are made. Nevertheless, the experts note that the defined student workload might not match the students’ workload in reality. Therefore, the experts highlight that UNSRI needs to develop a mechanism to monitor the student workload outside of the classroom to avoid a higher workload that awarded with credit points.

Criterion 1.6 Didactic and Teaching Methodology
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Evidence:

- Self-assessment report
- Module handbook of each study program
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI outlines in its self-assessment report that teaching methods are essential to ensure the success of students in achieving the PEOs and PLOs of the study programs. UNSRI describes that it effectively supports all instructors and program coordinators with instate-ments and professional development in designing teaching and learning methods that are efficient, conducive to learning, and yield high learning outcomes. UNSRI encourages the use of student-centered learning and digital applications in learning. Lecturers are required to transparently document the contribution of each teaching methods to achieving the learning outcomes of the module. Based on the governmental regulations, all study pro-gram contain research-components introducing the students to new developments in their field of study. UNSRI ensures that all lecturers in their study programs receive training in applying problem-based learning, case-based learning, team-based projects, curriculum development, hybrid learning, evaluation techniques, multi-media resource creation, and diverse relevant additional skills. The experts acknowledge that all lecturers in the study programs under review work in the field of education and are naturally experts in teaching methods and education. Nevertheless, they support UNSRI's emphasis on modern teaching and learning methods.

The program coordinators confirm to the experts that they apply various didactic methods in their study programs. They aim to teach the students competences in mathematics as well as pedagogy. The students receive training on how to teach in the bachelor and master programs before they design content on how to teach in the doctoral program. Regarding the various teaching methods in the programs, UNSRI follows the regulation of the Indone-sian Qualification Framework. In the three study programs under review, the aim to follow the demanded 50% percent of case-based and project-based methods. In the doctoral pro-grams, students mainly receive examples, which they need to analyze and discuss. The teaching staffs remarks to the experts that there are structured and unstructured assign-ments in their classes. Structured assignments are developed in reference to the PLOs while unstructured assignment are problems that the students need to solve (in or outside of the classroom). Upon the questions of the experts, the lecturers admit that they do not monitor how much time students spend on independent assignments, which the experts consider as difficult (see criterion 1.5). Moreover, the teaching staff explains that UNSRI has issues a policy, which calls for all lecturers to include research-based materials in their lectures to connect research and education.

The teaching staff of the doctoral program *Mathematics Education* adds that they also ap-ply flipped classroom method. One example is the module "Learning Design in RME" (Re-alistic Mathematics Education), where students receive materials several days in advance in the university e-learning management system. In this case, students study the materials

by themselves before discussing them as a group. Students are further divided into “selling tasks” and “jumping tasks” to argue between application of the knowledge and the reasoning level. After the course, students need to write an essay on their solution and submit it for review.

The program coordinators describe to the experts that they apply team teaching at UNSRI in all courses. At the beginning of each semester, the team meets their impressions from the last semester and potential improvements. In addition, UNSRI organizes workshops with external experts to review their teaching methods. The teaching staff adds that they consider it very important to reflect on their teaching methods critically. Therefore, they often discuss on the use of (new) teaching media and teaching methods in their teaching teams. This also includes regular updates on the selected cases they integrate into their lectures and other updates on exercises.

The experts acknowledge the need to include project-based, case-based, and research-based learning into the classroom. However, they want to emphasize that UNSRI should consider to focus on a diversity of teaching methods in each course. The experts consider that a variety of teaching and learning methods one course and among the semester is the most beneficial way to empower all students in their learning. Therefore, the experts continue to state that UNSRI should remain critical towards the strong focus on project-based and case-based learning in all courses.

In conclusion, the experts acknowledge that UNSRI integrates a variety of teaching methods and didactic means to promote achieving the learning outcomes and support student-centered learning and teaching. The experts confirm that students receive a solid introduction to independent scientific work as an integral part of the study programs. Furthermore, the experts appreciate that UNSRI regularly reviews whether the utilized learning and teaching methods support the achievement of the programme objectives.

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

Add criterion 1.1. and 1.3.

The experts appreciate the strong existing collaboration between UNSRI and its international partners. However, they experts consider that UNSI should continue to seek new partners in research and education with foreign universities to strengthen their programs. The experts decide on the recommendation E1.

Ad criterion 1.3.

UNSRI describes in its statement that each student has to pass an English test to qualify for the study programs; the English scores depend on the level of the study programs to allow UNSRI to ensure that students indeed have sufficient qualifications. The experts respect UNSRI's statement. Nevertheless, they consider that UNSRI should also support its students during their studies to improve their English proficiencies inside the classroom. Therefore, they continue to recommend E2 to promote student English skills. Therefore, the experts appreciate mentioned upcoming initiatives such as English Conversion Week or scientific discussions on recent publications in English in the master and doctoral programs. However, they emphasize that they encourage students to write their entire thesis in English (not only the abstract), especially for dedicated master students and doctoral students.

Moreover, the experts emphasize that the curriculum of all three study programs does not contain sufficient content on how to teach and assess students with disabilities in the classroom. They appreciate that UNSRI does take care of students with mental and physical disabilities on campus; however, they consider that each student should learn the basics on how to handle and respects such students in the classroom themselves. Therefore, content needs to be clearly visible, especially for curriculum of the bachelor program. The experts continue to issue the recommendation E3.

UNSRI describes in its statement that collaborations between the Department of Mathematics and the Department of Mathematics Education already exist and present new evidences. The experts acknowledge this new information, but continue to recommend E4. They are convinced that a collaboration in research and teaching of the both departments will benefit both sides and strengthen their position at UNSRI.

Ad criterion 1.4.

According to UNSRI's statement, a new curriculum will be implemented to ensure that students without background in pedagogy can compensate their missing skills early during their master studies. The experts acknowledge the intent and support UNSRI's decision. However, until the new curriculum is in place, they decide on the requirement A3.

Ad criterion 1.5.

The experts approve UNSRI's statement to closely monitor the students' workload for self-studies. They support UNSRI to ensure that the workload of assignment and research for final thesis is feasible and matches the number of awarded credit points. The experts decide on the requirement A1 to enforce their statement.

Ad criterion 1.6.

UNSRI acknowledges the experts comments to improve their teaching methods. The experts appreciate their statement but decide on the recommendation E5 for a higher diversity of teaching methods in all three programs under review.

2. Exams: System, Concept and Organization

Criterion 2 Exams: System, Concept and Organization

Evidence:

- Self-assessment report
- Sriwijaya University Academic and Students Guidebook, Academic Year 2021/2022
- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- Module handbook of each study program
- Examples of exams provided during the on-site visit
- Discussion during the audit

Preliminary assessment and analysis of the experts:

According to UNSRI's self-assessment report, all examinations are based on the regulations of the rector's office (Regulation of Rector of Sriwijaya University No. 5 of 2020 about Education Standards of Sriwijaya) and are outlined in the Academic and Students Guidebook. While preparing each course, the team of lecturers design the exam instrument, such as the exam form, purpose, time, problems, and the rubric of the exam. At UNSRI, assessments are usually structured in a mid-term exam, final exam and assignments, but variations take place. The teaching team forwards their draft to the program coordinator to make the final decision. This results in updates of the module handbooks and accompanying materials of the module. Students receive the information with the learning materials of their course and are informed in their first lecture on the assessment details. Mid-term exams usually take place in the 8th week of the semester whereas the final exam is held on the 16th meeting of each course. During the semester, the Quality Assurance Unit on the level of the study program observe the students' progress to achieve the learning outcomes including monitoring assessments.

During the on-site visit, the program coordinators explain that the mid-term and final exams take place within one week. Lecturers organize the exam schedule themselves and inform the students at the beginning of the semester to have the opportunity to make changes. After the exams, students receive the results with feedback to help the students

to improve. In addition, the lecturers will also announce, who has to retake the exam (final exams only). For retaking exams, UNRSI reserves another week. The program coordinators admit that there are certain courses with a higher failure rate of students. For example, in “Number theory” 10% of the students do not pass their first try; but usually manage to improve in their second test. In “Modeling and Simulation”, around five percent of all students fail the course; however, most students have problems in the mid-term exam and improve afterwards. The teaching staff adds that it is aware of the problems of the students in “Calculus” and “Real Analysis.” To divert the weight of the final exam the teachers started to give points to students in each class in their continuous assessment. The points of the students are entered in a shared online document, which the students can access at any time. This allows the students to observe their progress. Students are further grouped according to their performance in green, yellow, and red. When students receive exercises, students with different skills are put into one team to work on the task. The teaching staff expects that this system benefits students, who still struggle in the content in these lectures. The best students further receive certificates. However, the teaching staff remarks that this system is specially for these two lectures in which students have problems.

The experts note that the examination forms are not well documented in the module handbooks, especially regarding the assessment criteria. The program coordinators state that written exams still represent the majority of the examination form, although oral exams are implemented in courses as well. Especially in the bachelor program, UNRSI operates different small-sized classes to compensate the larger number of students. To make the examinations of the different classes comparable, UNRSI chooses to distribute the same exams exam questions in the different groups. The lecturers describe that they discuss the assessment methods in advance to the course. If there are any changes during the semester, the students are informed at least several weeks in advance. In the master program, written tests and projects are also the main form of assessment. In these cases, a written report/protocol can replace the written exams at the middle or the end of the semester. Comparably to the bachelor program, the lecturers inform the students at the beginning of the course on the assessment criteria according to the module handbook and lesson plan. During the doctoral program, the majority of examinations are written in the first semester followed by project-based assessments. Presentations commonly replace the mid-semester exam while a report or draft article replaces the final exam. The students confirm that the majority of examinations are written, which remains similar in the bachelor, master and doctoral program. Doctoral students have a higher number of oral examinations after passing the first semesters since they need to give presentations on their research proposal and research progress. Bachelor students add that they also have oral examinations, where they need to describe their solutions (e.g. in “Calculus”). The master students report that

they also have project-based assignments, where a report substitutes one written examination. The students confirm further that they are not aware of any problems when retaking exams. They describe to the experts that UNSRI has further implemented a system to complain about the examination score. Therefore, they have to submit a form to the administration, which will start an investigation with the program coordinators. Students add that it is most common to address lecturer first before submitting an appeal. They confirm that all information is posted on their webpage, which makes it accessible to every student. The teaching staff explains to the experts that students in the master program Mathematics Education mainly receive written tests. The lecturers add that the weighing of the final grade usually differs by considering 45% for the final exam, 25% for the mid-term exam and 20% of quizzes. In their opinion, students fail only the mid-term exam or quizzes, but pass the final exam. They name “Algebra”, “Group Theory” and “Ring Theory” as challenging modules for the students.

The teaching staff further makes the experts aware that changes of the assessment criteria take place during the semester, but are communicated to students. They add that students receive the information on the assessment methods of each course directly in the classroom. In addition, they establish a WhatsApp group for each course in which they are distributing information and discussing problems. Although the experts acknowledge this flexible approach on the assessment methods described during the on-site visit, the experts consider it not sufficiently transparent to the students. In their opinion, students need to be aware of the assessment methods when signing up for the module to be able to plan their semester according to their needs and available time. A change in the assessment method therefore poses a threat for students to complete this course; thus prolonging their studies. The experts therefore clearly state that the assessment methods need to be defined in the module handbooks to allow the students to prepare for the course. Changes during the semester need to be avoided.

The program coordinators describe to the experts that the work for the master thesis takes place in the fourth semester. However, the majority of students can already start to work on their thesis in the third semester. Currently, students have no problem to finish their thesis in time, whereas several students finished in three semester in the last year.

The experts further address the topic of writing the doctoral thesis. The program coordinators explain that currently, each PhD student in Indonesia has to complete a monograph. However, they are aware of the development to switch to a dissertation by publication instead and consider it. As a first step, they encourage all students to write their thesis in English, publish their research in international journals, and use only English in the classroom. Upon the experts’ questions, the program coordinators confirm that there are no English doctoral thesis until now at UNSRI. The students are required to prepare an English

abstract instead. However, since several students work on projects involving external partners from abroad, these students are going to write their thesis in English. The experts support that there is an increasing demand on English doctoral thesis, which support international collaboration and dissemination of the research results. Furthermore, the experts highlight that a dissertation by publications would reduce the workload of the doctoral students. Currently, they have to work on research publications next to working on a monograph, which takes much time of their doctoral studies. Reducing the task to publications instead would allow the students to spend more time on research and presenting their research results to the scientific community.

In conclusion, the experts observe that the presented exams during the on-site visit assess the degree to which the defined learning objectives have been achieved. They confirm that UNSRI relates the exams to specific modules and provides students with feedback on the competencies that they have acquired. Students in the bachelor program Mathematics Education are to write on a compulsory final project, which represents in its extent a bachelor thesis on EQF level 6. The experts further consider that the presented master thesis during the on-site visit clearly match the EQF level 7 while the doctoral thesis are on EQF level 8. The experts approve that students in the doctoral thesis engage in writing of scientific papers.

The experts learn in the different discussion round during the on-site visit that UNSRI integrates various types of exams, which are specified for each module. There are transparent rules for make-up exams, non-attendance, cases of illness as well as compensation of disadvantages in the case of students with disabilities or special needs. The experts highlight the importance of determining the final assessment methods prior to the start of the module and recommend UNRSI to avoid changes of assessment methods unless in case of special events. The experts consider that the number and distribution of exams ensure an adequate workload as well as sufficient time for preparation. Examinations are marked according to transparent criteria. The experts appreciate that exams are reviewed annually at USNRI to verify if they adequately determine the achievement of the learning objectives, whether the requirements are appropriate to the level of the degree programme and whether students have sufficient time for preparing and conducting the exams.

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

UNSRI highlights in its statement that the assessment methods are defined in module handbook; only in rare cases, these assessment methods are changed. However, this process requires the approval of all students involved. The experts appreciate this new information and do not issue and requirements or recommendations in this regard.

However, they continue to recommend students to consider writing their master and doctoral thesis in English. Furthermore, the experts suggest UNSRI to consider allowing doctoral students to graduate writing a dissertation by publication rather than a monograph. This should only be considered for students, who are publishing at least several publications during their doctoral studies. The experts issue the recommendation E8.

3. Resources

Criterion 3.1 Staff and Staff Development

Evidence:

- Self-assessment report
- Staff handbook
- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- List of guest lecturers in the last five years
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI describes in its self-assessment report that all teaching staff is employed as civil servants since they are still in transition to become an autonomous university. The National Civil Servant Candidate Recruitment Committee coordinates new staff members, who posts new listing online on their webpage for all Indonesian national universities. The need for new staff members is communicated by the program coordinators to the dean, who proposes it to the rector. The rector submits an official proposal to the ministers for review.

In total, there are 23 lecturers involved in the teaching of the bachelor, master, and doctoral program *Mathematics Education*. Out of those, 11 are also eligible to teach in the master and the doctoral program. To teach in the postgraduate program, they have to have completed a PhD and have reached the rank of a professor, associate professor or assistant professor. According to the government of Indonesia, all lecturers have to engage in teaching, research and community service (Tri Dharma Perguruan Tinggi or three pillars of Indonesian higher education). Lecturers receive funding for research and community service from the university as well as external national and international bodies.

Every member of the teaching staff undergoes the employee performance evaluation annually, which also serves to identify challenges they might face. UNSRI states in its self-assessment report that it aims to determine and resolve obstacles for each employee to

ensure that they are able to perform their assigned tasks. Positive revisions can result in incentives for the lecturers. The workload of each lecturer is closely monitored based on an online system. All teaching is organized in teams, which allows the lecturers to share the workload within one module. UNSRI conducts a review of the workload each semester to ensure the workload is evenly distributed. Furthermore, the results of the students' questionnaire have a direct impact on the lecturers' performance report.

The program coordinators highlight that several of their staff members are highly involved in the development of Mathematics Education in Indonesia. The experts approve that lecturers are for example, the vice president of the Indonesian Mathematical Society and country representatives for Indonesia at the upcoming International congress on Mathematics Education in Sydney. In addition, the experts acknowledge that UNSRI hosts two journals on mathematics education. The students explain to the experts the reputation of these two journals in Indonesia is high and that they often publish in both. Even though one journal focuses on articles in Bahasa Indonesia, this journal is also a listed journal in Indonesia (SINTA). Among the industry partners, representatives from international universities further confirm that they have a long and ongoing research collaboration in mathematics education based on Memorandum of Understanding. The experts conclude that UNSRI does engage in various scientific projects, giving opportunities for students at different levels to join research teams. Nevertheless, the experts notice cooperations between the Department of Mathematics Education and the Department of Mathematics. In order to deepen the research in terms of scientific mathematics, the experts suggest to increase their research and to strengthen it by joint research projects. The experts are convinced that developing scientific objects in research in Mathematics and Mathematics Education will create a platform for integrating modern research topics into the classroom. This could also lead to joint supervision in final thesis, especially on master and doctoral level.

The experts notice that the workload of each lecturer was increasing during the previous years. The program coordinators confirm that this is a temporary problem since several colleagues are currently staying outside of UNSRI. Once they return, the workload will decrease again. The teaching staff confirms that they can manage their workload at the moment. The experts also raise this topic with the teaching staff. The lecturers commend that they teach four courses each semester on a regular basis. However, since they teach these with one team and do not have to attend each lecture, the workload is less than teaching an entire course. One lecturer summarizes that they teach six courses for the bachelor and master program but it requires only a workload of around twelve hours per week. They point out that most lecturers teach in the bachelor, master and doctoral program. Nevertheless, they confirm to the experts that they have enough time to conduct research. They add that they also have sufficient time to dedicate to student supervision. The supervisor

is chosen based on the topic of the thesis; however, each lecturer is limited to two master students. They meet with their students once a week to discuss their progress in the master program. Supervision in the doctoral program is less rigid, since each student has several supervisors/promoters. According to the lecturers, doctoral students have to hand in reports regularly to demonstrate their progress. Since many of the doctoral students perform their research outside of UNSRI, personal meetings are less frequent.

During the on-site visit, the experts learn that UNSRI organizes training for their teaching staff. Young lecturers are obligated to attend two courses, which cover all basics in teaching, including various teaching and assessment methods as well as developing study plans. Further courses are organized two to three times per semester by lecturers of the faculty to teach the remaining staff members. Additional free workshops are offered at university level, such as proposal and publication writing. The lecturers add that there are additional courses to improve their English proficiency, such as courses for speaking English with native speakers. The lecturers further mention that they participate in an international conference each year, but point out that these also includes international conferences in Indonesia. In addition, the experts learn that the lecturers of Mathematics Education further hold annual training sessions and workshops to develop the faculties' competences in academic English, scientific article writing, training on using software like LaTeX, R, Geogebra, and nVivo.

The experts further inquire how UNSRI supports staff members, who want to continue to earn a PhD themselves. The program coordinators state that UNSRI generally supports its staff in their further education. Currently, one staff member is at Delft University for their doctoral studies, one is at the Indonesia University of Education (Indonesian: Universitas Pendidikan Indonesia) while four more study here at UNSRI. All of them received external funding for their doctoral project. However, UNSRI does also support lecturers, who want to continue their studies at their own university, which the experts would recommend. This fellowship includes funding for six full semesters and can be awarded on competitive basis. The teaching staff confirms UNSRI' support in forms of scholarships for lecturers, who want to continue their education. Moreover, UNSRI further provides evidence documenting the participation of several staff members in staff mobility programs.

The experts summarize that they consider the composition, professional orientation and qualification of the teaching staff suitable for successfully delivering the three study programs under review. They acknowledge that the research and development of the teaching staff contributes to the desired level of education. In addition, the experts appreciate that UNSRI provides various opportunities for lecturers to develop their professional and didactic skills as well as their scientific expertise. The experts emphasize that UNSRI closely monitors the workload of each lecturer to identify challenges on an individual basis.

Criterion 3.2 Funds and equipment

Evidence:

- Self-assessment report
- Visit of the campus facilities during the on-site visit
- Discussion during the audit

Preliminary assessment and analysis of the experts:

According to the representatives of the rector's office, UNSRI is a public university; therefore, its main source of income is the government and tuition fees from students. A third source for funding comes from collaboration partners such as the local government and private companies (in research and other activities). They state that UNSRI spends at least 15% of their entire budget on research.

The representatives of the rector's office add that the FKIP receives its funding mainly from the university. They explain that that the governmental funding obliges them to produce teachers for the society. The faculty also offers the professional project for teacher development (PPK), which all teachers at public schools need to complete. This program is very important to UNSRI since they received up to 2,000 students last year.

The funding inside FKIP is distributed based on their budget training information system. This computer-based system allows everyone to enter their personal budget requirements for the upcoming year, which will be balanced against the financial restrictions and general needs. All academic staff members are required to have at least one research project. The representatives of the rector's office add that UNSRI provides specific lecturers' research grants, which can be acquired on a competitive basis. Furthermore, all lecturers are encouraged to have external funding including funding to spend time abroad. UNSRI further offers funding to scholars to update their qualifications in education. Moreover, UNSRI provides funds for the doctoral program Mathematics Education according to the representatives of the rector's office. The program coordinators specify that they receive almost 100 million IDR annually to cover for their research activities for students, including publications. The teaching staff confirms that most funds they receive are within the university funding schemes. Next to pure research grants, they can also apply for grants for doctoral and master students with which they can support their students.

The representatives of the rector's office further mention that the lecturers compete on a national level for funding outside of UNSRI. Several people of the team in Mathematics Education have previously been successful with national applications. These larger projects

offer opportunities for master and doctoral students to work in one research project. In this project, they could further support the students to join summer schools in Europe. In addition, they were previously successful in acquiring international funding in a joint project with Utrecht University. This project included funding for teacher exchange and joint publications. Currently, they have a similar collaboration project with the Universiti Brunei Darussalam, including student and teacher exchange.

The experts have the opportunity to visit both campus during the on-site visit and observe its facilities. They approve the main library as well as the study lounge at the Indralaya Campus. Moreover, they support that students can develop and test learning materials digitally and with a hands-on approach (Mathematics Education Laboratory). The experts consider the microteaching laboratory a positive addition to the study program, which allows students to practice, record and observe their own teaching skills and the skills of others.

The experts discuss the facilities and available equipment with the students, who show a high satisfaction. They highlight the computer rooms as well as the available software such as Geogebra or SPSS. UNSRI further provides tutors in the computer laboratories to support student learning. In their opinion, UNSRI has provided them everything they need to finish their studies and conduct their research. Furthermore, they are satisfied with the access to digital literature as well as with the library on campus. The doctoral students approve that they have a working space on campus, where they can work on their thesis.

According to the teaching staff, UNSRI also offers facilities to support people with disabilities. Currently, they do not have any students with disabilities in any of the Mathematics Education study programs. Although the students are open to apply, the experts notice that UNSRI has not yet taken any measure to develop strategies to support students with mental or physical disabilities on campus, including FKIP.

Although the experts notice several opportunities for students to receive grants and scholarships at UNSRI, they consider the selection criteria are not made transparent. The experts suggest offering these grants and scholarships on a competitive basis to guarantee the best students are selected to participate in research projects and student mobility. These results should also be transparently explained to students upon request.

The experts conclude that UNSRI supports the three study programs under review with financial resources. These are used for equipment, software and further aspects to ensure the delivery of the study programs.

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

Ad criterion 3.1

UNSRI describes in its statement that collaborations between the Department of Mathematics and the Department of Mathematics Education already exists and presents new evidences. The experts acknowledge this new information, but continue to recommend E4. They are convinced that a collaboration in research and teaching of the both departments will benefit both sides and strengthening their position at UNSRI.

Ad criterion 3.2.

The experts appreciate UNSRI's statement regarding the campus facilities and support for students with disabilities. They consider that UNSRI's support is adequate; therefore, no recommendations or requirements are issued.

The experts further review the newly presented evidences documenting the transparency for distributing scholarships and grants for mobility. After reviewing these documents, the experts remain uncertain for transparency is ensured for students and lectures. The experts continue to review and clearly document their selection processes and criteria to ensure the highest level of transparency. The experts emphasize grants offered on a competitive basis allowing all students and staff to participate equally. Therefore, the experts decide on the recommendation E6.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions
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Evidence:

- Self-assessment report
- Module handbook of each study program
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI offers module descriptions to each module of all study programs under review. The module handbook compiles the information of one study program; each module description is prepared by the responsible lecturer(s). It contains the module name, the semester,

contact person, lecturer(s), language(s), relation to the curriculum, type of teaching, contact hours, workload, credit points, and requirements according to the examination regulation. Furthermore, each description lists the recommended pre-requisites, learning outcomes and their corresponding PLOs, content study and examination requirements, forms of examination, employed media, assessment, and evaluation, reading list, and the date of the last amendments. In addition to the module handbook, the students receive a weekly plan, which are distributed internally on the program's platform.

After studying the module descriptions, the experts confirm that all necessary information is included in the module handbooks. Further, the module descriptions are accessible to all students and teaching staff. They remark that it would be suitable if the module handbooks would be easily accessible on the webpage of the study program for download for (potential) students and stakeholders.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-assessment report
- Examples of certificate of each study program
- Examples of Diploma supplements of each study program
- Examples of Transcript of Records of each study program

Preliminary assessment and analysis of the experts:

The experts confirm that UNSRI issues a diploma (degree certificate) is issued together with a diploma supplement shortly after graduation. All documents are provided in English and Bahasa Indonesia. The Diploma supplement gives additional information on the study program, including the standard duration, academic level and grading system. It briefly and concisely lists the program learning outcomes as well as the students' achievements, activities and awards.

These documents provide information on the student's qualifications profile and individual performance as well as the classification of the degree programme with regard to the respective education system. However, the experts notice that the Transcript of record should be updated. Although the grade of the individual modules as well as the students' grade point average are listed, the document does not contain any information to the ECTS credit point calculation. The experts emphasize that the presentation of ECTS credits for each module is beneficial in the international context. Furthermore, the experts suggest

UNSRI to integrate statistical data as set forth in the ECTS Users' Guide is included to allow readers to assess the individual mark.

Criterion 4.3 Relevant Rules

Evidence:

- Self-assessment report
- Webpage UNSRI <https://unsri.ac.id/en>
- Webpage of FKIP <https://unsri.ac.id/web-fakultas/en/6>
- Sriwijaya University Academic and Students Guidebook, Academic Year 2021/2022
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI provided with its submission several guidebooks, which summarize all necessary information regarding the responsibilities and duties of students and staff. The Academic and Student Guidebook contains information regarding the university, faculty, and study program as well as the admission regulations. It explains to students their internal management system as well as the responsibility of important people such as the students' academic advisor. They further have access to guidelines for writing their final thesis and student services. Additional guidelines for writing bachelor, master and doctoral thesis are provided. Lecturers further receive guidelines on curriculum development as well as quality assurance.

Although UNSRI describes that it publishes its admission regulation on its webpage, the experts have trouble to find the desired information. The experts learn that there is a separated webpage for UNSRI admission; but neither the link nor the information was accessible to them online.

The experts further ask the representatives of the rector's office, if UNSRI have a centralized information system to distribute its documents internally. According to the representatives of the rector's office, all documents are shared on the webpages for the study programs. All information is available in Bahasa Indonesia and English. Surveys are usually shared within the quality assurance group of the faculty, who operate their own webpage. In addition, UNSRI has established SIMAK, a student system. Next to basic information on the university, it contains offers targeting students such as career development opportunities.

During the on-site visit, the program coordinators admit that there were problems with the webpage recently due to a hacking attack. They aim re-create the entire webpage and continue to improve it.

The experts conclude that UNSRI has issues rights and duties of both the higher education institution and students, which are clearly defined and binding. The experts approve the well-structured guidebooks for students and staff. All relevant course-related information is available in the language of the degree programme and accessible for anyone involved.

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

The experts appreciate UNSRI's statement to improve their Transcript of Records. Until new documents are provided, the experts continue on the requirement A2.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Self-assessment report
- UNSRI Quality Manual 2014
- Results of several student surveys
- Discussion during the audit

Preliminary assessment and analysis of the experts:

In the discussion with the representatives of the rector's office, the experts also raise various topics regarding the quality assurance policy. They describe that the quality assurance at UNSRI applies different instruments to collect feedback from students. One method is the student satisfaction survey at the end of the semester. All students are required to take part in the questionnaires. According to the program coordinators, the methods of conducting these surveys are comparable in the bachelor, master and doctoral program. After they collect and analyze the data, the results are discussed within the quality assurance unit at the level of the study program. Further discussions take place with the Dean of the Faculty, with whom they develop plans to implement improvements. As one example of the last student surveys, they mention that the students complained about the student

services at UNSRI. In addition, students desired effective teaching as well as case- and project-based methods in their lectures. Their main concern was missing explanations their problem and underlying demands from the (industry) partners. Currently, they are still developing strategies to improve these problems. However, the lecturers are already encourage to give longer and more detailed explanations at the beginning of project-based and case-based programs. Once a problem is identified on the program level, it will also be reflected to the lecturer(s) involved. In addition, all information will be posted on their website, which is also available for students.

The representatives of the rector's office confirm that negative evaluations/feedback will have consequences. On the program level, the Dean of each Faculty is responsible to make decisions based on the feedback of various stakeholders. The program coordinators emphasize that there were no negative surveys yet regarding the teaching methods or single lecturers. Therefore, they have not developed a clear strategy yet. Nevertheless, they would address the issue directly.

The experts further rise the issue of the average time span students need to finish their studies. According to the self-assessment report, average study time in bachelor program is 3 years and 6 months, in master program it is 2 years and 2 month, and doctoral program, students take 3 years and 10 months to finish. The experts notice a significant drop in the study duration, especially in the bachelor program. The program coordinators explain that the restructured the students' semester plan by offering a higher number of modules in the middle of the program to support the students' learning process. In addition, the contributions of the academic advisors to the students' learning was increased. In the master program, a challenge was that students switched the topic of their master thesis. Due to a better supervision, students make better-informed decision early on in their studies, which allows them to finish faster. In addition, they tried to find larger projects, where students can discuss together while working on their own research.

Furthermore, the representatives of the rector's office mention that the dropout rate in bachelor study programs is less than one percent. In the bachelor program, the main reason to drop out is that the students are successful in receiving scholarships at other universities and transfer. In rare cases, the students cannot be reached anymore. The program coordinators add that it is more common in the master program to drop out. Those, who decide to drop out of the master program, usually find a job before graduation and never finish their thesis. In the doctoral program, the dropout rate is zero since many students already have a job. If they get a new job, they usually continue to finish their studies taking longer than full-time students do.

The experts also request more information on the Internal Academic Quality Audit. The program coordinators describe that these audits are conducted by auditors from different faculties of UNSRI. UNSRI offers the auditors instruments and criteria to review an entire study program. In this review, students from each semester take also part. Internal auditor team which assesses aspects of organizational governance, the realization of curriculum implementation and learning, the realization of research implementation, the realization of community service implementation, human resources, learning infrastructure, graduates and alumni, student services, administrative and financial services.

Despite UNSRI's in depth analysis of the student workload based on the end-semester evaluations, the experts suggest adding additional surveys to collect the students' feedback. Particularly, students should be asked at different phases of their studies about the opinion of the study programs (e.g. after the first year or at graduation) to collect the general of students during this study phase. In addition, students could be asked on the experience of their studies considering an entire semester in addition to single modules. In this way, the students' workload could be analyzed in an entire semester giving additional information to single modules. Additional surveys could also be distributed for various stakeholders. Furthermore, the experts notice that the student questionnaires should focus in more detail on the workload during the self-study period. In the discussions, the students comment that they are occasionally unable to finish their homework due to their high workload. Since the teaching staff could not provide a clear statement how it measures the workload outside of the classroom, the experts observe that there is room for improvement in this regard.

In addition, the experts learn that UNSRI measures the achievement of the study programs PLOs at the end of each semester. UNSRI has initiated study program quality control groups, who is responsible for this review. Accreditation serves as external quality control previously achieved by the National Accreditation Agency for higher Education (BAN-PT) in Indonesia.

In summary, the experts confirm that the study programs are subjects to internal quality assurance each semester. The experts see evidence that students take part-in end semester evaluations, which are integrated to ensure continuous improvement of the modules and the study program. The experts note that large reviews of the study programs takes place every five years and involves various internal and external stakeholders. Thus, UNSRI has defined processes and responsibilities for the further development of the programs. Nevertheless, the experts consider that the student surveys should be improved. The experts suggest that the questionnaires include questions on the workload outside the classroom to ensure that assignments and homework does not exceed the awarded credit

points. Furthermore, the experts consider that general surveys on student satisfaction outside the modules could provide additional useful information on the students' opinion of campus facilities and student services.

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

The experts review the newly submitted documentation regarding student surveys. They appreciate that UNSRI has previously conducted various quality assurance processes involving students. They acknowledge that UNSRI wants to improve their questionnaires including questions on student workload in the entire study program in their student satisfaction survey. The experts support this approach with the recommendation E7.

D Additional Criteria for Structured Doctoral Programs

Criterion D 1 Research

Evidence:

- Self-assessment report
- Curricular overview of the doctoral program Mathematics Education
- UNSRI Academic and Student Affairs Guidelines
- Examples of doctoral thesis during the on-site visit
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI describes in its self-assessment report that the doctoral program Mathematics Education is a structured program with a strong focus on research. After students complete a basic set on courses in the first semester on research methods, research ethics and publication writing, they continue with their own research. In the second semester, students have to pass a "Prelium" examination, which ensures they have reached all necessary qualifications to proceed with their studies. Students have to present their research topic within the "Dissertation Proposal Seminar" as a first phase of their dissertation project. The students present the project and presentation in front of an examination panel, who will continue to give suggestions to conduct the research proposal.

The experts also discuss the involvements of doctoral students in publishing their research work. The program coordinators state that it is a national requirement in Indonesia for students to publish to finish their PhD. A main journal for dissemination at UNSRI is the Journal on Mathematics Education, which is a Scopus indexed journal based at the Department of Mathematics Education. The journal is published in English in fully fulfilled the governmental requirements for research dissemination in doctoral programs. Moreover, UNSRI hosts a second journal in Mathematics Education focusing on publications in Bahasa Indonesia (“Jurnal Pendidikan Matematika”). The experts are content with the number of publications of the doctoral students in this study program. However, they are interested how students are supported in the publication of their research to avoid unnecessary delays in their graduation. The program coordinators remark that the fastest student managed to finish their studies in two and a half years (instead of three years). Still, they admit that the requirement for at least one English publication causes a delay in graduation for other students. Therefore, supervisors explain to the students right at the beginning what they need to accomplish in order to graduate. They highlight that the publication is the biggest milestone to pass before graduation and thus should not be postponed for too long. Moreover, supervisors support their students in writing their publications. The students confirm that they are aware of the requirement to publish. They add that they need to publish at least in a Q2 journal or a SINTA 3 journal in English. The industry representatives highlight that doctoral students at UNSRI are highly skilled in writing research papers. They consider that UNSRI offers them a suitable education to become researchers in the field of Mathematics Education with adequate skills to publish. Nevertheless, the industry partners remark that more students should be encouraged to write their final thesis in English to facilitate their collaboration. The experts support this statement; in their opinion, doctoral thesis should be written in English if feasible.

The experts acknowledge UNSRI’s strong focus on research in the doctoral program and their encouragement of students to publish their research. In this regard, the experts suggest UNSRI to consider allowing dissertations by publication in the future instead of a monograph. They consider that this would further encourage students to publish multiple scientific works during their doctoral studies. It should allow them to spend more time on writing scientific articles than writing a monograph, which often has little impact beyond the university.

In conclusion, the experts state that the core component of doctoral training at UNSRI is the advancement of knowledge through original research. They are convinced that graduates acquire advanced, cutting-edge knowledge and are able to demonstrate, on the level of internationally recognized scientific research, a deep and comprehensive understanding of their research field. Their doctoral research requires the students to design and carry

out an original research project at the forefront of the discipline and contribute to the advancement of science. The experts approve UNSRI's support for visiting conferences and summer schools to adequately present the results to different audiences.

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

The experts consider UNSRI's statement regarding the research and dissertation. The experts continue to express their opinion in the recommendation E8. Since there are several students within the program, who are actively publishing their research during their studies, the experts consider it an extra work to demand publications as well as a monograph for these students. In their opinion, this creates a high workload for the students. For those students, the experts recommend a system similar to Europe or other countries, where students are allowed to combine their publications in one large work, which qualifies them for graduation. Within this system, students are encouraged to publish their scientific work, which has a positive impact on UNSRI and the students. However, monographs should always be an alternative for students who prefer to write only one publication.

Criterion D 2 Duration and Credits

Evidence:

- Self-assessment report
- Curricular overview of the doctoral program
- Statistical data on graduation time
- Discussion during the audit

Preliminary assessment and analysis of the experts:

At UNSRI, the doctoral program *Mathematics Education* is a six-semester study program. According to the Indonesian credit point system, the program has 42 credit points, which are converted to 117.6 ECTS credit points. Students have to complete 40 credits in compulsory courses as well as two credit points of elective courses in order to graduate. The arrangement of the courses considered the research activities of the students. Students have to complete four courses in the first semester, followed by two compulsory courses, a mandatory examination, a seminar and one elective course in the second semester. The third semester considers an internship, which students spend at schools or universities to collect their research data. In addition, they attend the course "Dissertation Product Prototyping"

where students design research tools and applications. The fourth, fifth and sixth semester are reserved for research, seminars and writing of publications and thesis.

The program coordinators discuss with the experts that the study duration of the doctoral program strongly varies. While students have succeeded to receive their PhD within five semesters, other took ten semesters to complete their studies. During the last five years, duration until graduation was three years and eight semesters, which is acceptance in the opinion of the experts.

The experts confirm that the program under review is a structured doctoral program, which students can complete within an appropriate duration. UNSRI has presented a convincing conversion of Indonesian credit points to the ECTS system. Overall, the experts consider that the doctoral program *Mathematics Education* represents a suitable workload, which allows the students to conduct research and advance their knowledge in scientific writing. Nevertheless, the experts highlight the importance of writing a doctoral thesis in English as well as the need for good publications. Therefore, they continue to suggest UNSRI to proceed to evaluate the possibilities to allow optional dissertations by publications next to the regular monograph. This structure is considered to support students in the dissemination of their research results and maximizes the time spend on research and writing on scientific publications.

Criterion D 3 Soft Skills and Mobility

Evidence:

- Self-assessment report
- Statistical data on student mobility
- Statistical data on development programs
- Discussion during the audit

Preliminary assessment and analysis of the experts:

According to UNSRI's self-assessment, it considers the hard and soft skills of the students essential to become a successful professional in the field. Especially at a doctoral level, the ability to communicate in the field of expertise in the academic environment and the society is important. Therefore, UNSRI offers professional and personal development for doctoral candidates. Basics are integrated in the compulsory courses of the doctoral program such as "Learning design in RME" or "Dissertation product prototyping." The intention is to create graduates, who are excellent in the research, lecturing and produce learning tools.

During the on-site visit, the program coordinators describe to the experts that they consider the main soft skills doctoral students need to master at graduation are related to research. This includes writing scientific publications, scientific integrity as well as proposal writing. In addition, the lecturers/supervisors guide the students to attend international conferences, seminars, and workshops. They urge the students to visit at least one international event during their studies to present their research. This year, several lecturers and students are going to the 15th International Congress on Mathematical Education in Sydney, Australia. Other plan to join the PME (International Group for the psychology of Mathematics Education) Annual Conference in Auckland, New Zealand. The program coordinators add that the supervisors support their students directly, which includes a budget for travelling to conferences. Only in rare cases, the students apply for external funding to attend. In addition, UNSRI organizes an international seminar every two years, which is a good change for students to present their research and submit results in the proceeding volume.

The program coordinators further emphasize that they strongly collaborate with the Utrecht University. They organize a joint summer course annually, in which master and doctoral students participate. In addition, UNSRI has a strong collaboration with Universiti Teknologi Malaysia as well as the Universiti Brunei Darussalam, where students participated in research. Students, who collaborate with international partners, are especially encouraged to spend them outside UNSRI. Moreover, the university currently searches for new partners to expand their network and offer more opportunities to their students.

The experts conclude that UNSRI offers several opportunities for personal and professional development to its doctoral students. This includes support structures for professional development, training in transferable skills, and preparation for career choices. The experts approve UNSRI's support for academic mobility and international collaboration within an integrated framework of cooperation between universities and other partners.

Criterion D 4 Supervision and Assessment

Evidence:

- Self-assessment report
- Advisory Committees Application Form
- Guidebook for Writing Thesis and Dissertation for Masters and Doctoral programs
- Discussion during the audit

Preliminary assessment and analysis of the experts:

During the on-site visit, the experts question UNSRI's strategy in supervision for doctoral students. The program coordinators explain that there are two requirements to become

the supervisor of a doctoral student. Each supervisor needs to hold a PhD themselves; in addition, they either have to be a professor or of have a significant publication record as a first author. Currently, they have three people in their staff entitled to be the supervisor of doctoral students. The program coordinators clarify that students have one main supervisor at UNSRI as well as a first and second promotor as a second and third supervisor. The third supervisor can be people from outside UNSRI. The large majority of these external supervisors are from collaborating universities and associated universities of the students. Several doctoral students are already lecturers at other universities across Indonesia and prefer to conduct their research close to their university. In these cases, one external supervisor is chosen from their affiliated university. Other students work within collaboration projects with universities outside of Indonesia and thus have a foreign promotor. However, the program coordinators state that it is not mandatory to have any external promoters. Students have to submit an advisory committee application form to confirm their team of promoters. The doctoral students confirm that they occasionally have external supervisors/promotors. They describe to the experts that they can select the external supervisors themselves, but that they have to be approved by the study program.

UNSRI further outlines in its self-assessment report that the guiding phase of the supervisor/promotors starts after the students' completion of the candidate qualification exam ("Prelium"). Students have access to the process of dissertation writing in the Guidebook for Writing Thesis and Dissertation for Masters and Doctoral programs. Supervision and guidance in the scientific work takes place with regular face-to-face meetings as well as virtual meetings. The students confirm to the experts that they receive sufficient guidance in their research. They consider that their supervisors are available to discuss their progress and can be reached when problems occur. At least four times a year, the doctoral students meet with their supervisors for official progress meeting. UNSRI further distributes online surveys to evaluate the satisfaction of the students of the doctoral program Mathematics Education. The presented results demonstrate a high student satisfaction to the experts with the organization and supervision of the study program.

UNSRI further describes in its self-assessment report that the assessment of the dissertation manuscript starts with an open defense. The students have to give a presentation on their thesis in front of five examiners including their supervisor and promotors. The remaining members will be determined through the degree of the dean of FKIP. The room is open for internal and external examiners, colleagues, family and others. During the closed defense, the students have to defend their thesis only in front of the examination panel. The panel considers the originality and contribution to the research field, the methodology and research approaches as well as reasoning in their discussion, the research results and conclusion. The final grade of the dissertation follows grade letters from A to E to pass, while

students fail the program if they only receive a F. Improvement of the grades is possible during the studies. However, the program coordinators remark that this does not occur on a regular basis.

The experts conclude that UNSRI has established transparent criteria of shared responsibilities between doctoral candidates, supervisors, and the institution. The experts appreciate that continuous guidance by their supervisors is provided. They further approve the assessment for the doctoral thesis. Nevertheless, the experts observe that the majority of dissertation topics are on Realistics Mathematics Education. Although the experts acknowledge that this is the strong expertise of UNRSI, they suggest considering to distribute the role of the first supervisor and likewise dissertation topics among the staff, if possible. In the experts' opinion, this would strengthen other research groups at UNSRI as well as professors, who are qualified for PhD supervision. Having more first supervisor can bring new insights, broaden the PhD research topics and strengthen the research groups.

Criterion D 5 Infrastructure

Evidence:

- Self-assessment report
- Visit of the campus during the audit
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI provides detailed explanation on the supporting infrastructure for doctoral students. For the doctoral program *Mathematics Education*, this primarily includes students' working spaces on campus, discussion and seminar rooms, lecture rooms, libraries, micro-teaching laboratories and the computer laboratory. Students can access literature in the library as well as online with their university account. Furthermore, students conduct experiments at school and universities to collect data for their research (especially during their internship).

The experts consider that the presented facilities are adequate for students to complete their studies on time. They further highlight the supportive structure at UNSRI to provide the students assistance in writing their publications and finalizing their dissertation monograph.

Criterion D 6 Funding

Evidence:

- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI outline its funding sources, as explained in more detail in criterion 3.2.

The program coordinators explain to the experts that at UNSRI, the supervisors mainly provide funding for doctoral students. This includes funding for research, attending conferences as well as publishing their research results. Only in rare cases, students search for external funding with governmental grants or additional sources. The doctoral students confirm that scholarships are available. Some students admit that they choose to study at UNSRI because they offer financial support. The experts learn about further details and funding possibilities in the self-assessment report, yet they miss the details on how the awardee was selected and how the grants were announced for all students.

Therefore, the experts form the opinion that UNSRI has established adequate and sustainable funding to maintain the doctoral program *Mathematics Education*. The experts suggest the study program to provide transparent funding system that includes grants information, selection criteria, eligibility, etc. for all doctoral students in *Mathematics Education*. The experts appreciate that UNSRI's lecturers provide sufficient resources for the students' research project as well as activities such as summer schools or attendance of conferences.

Criterion D 7 Quality Assurance

Evidence:

- Self-assessment report
- Results of surveys of doctoral students
- Guidebook for Writing Thesis and Dissertation for Masters and Doctoral programs
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNSRI describes in its self-assessment report that they collect data to support the further development of the study program. As described in criterion 5, UNSRI also conducts internal quality audits for the doctoral study programs and invites external stakeholders for regular reviews. In addition, it invites students to participate in surveys at the end of the semester to collect suggestions on improving the modules. UNSRI further observes the study

duration of students to complete their PhD. The program coordinators mention in the discussion that especially the mandatory publication poses a challenge for some students. Therefore, they made new students aware of the complication and the workload to publish a scientific work. This caused the study duration to drop in the past. UNSRI further describes to the experts that they take the issue of scientific integrity very serious; therefore, all works are checked for plagiarism and compared to the code of ethics for scientific research. Furthermore, UNSRI introduces its students to the regulations with brief and concise guidelines.

The experts conclude that UNSRI offers the structured doctoral program Mathematics Education with regulations documenting the rights and duties of the doctoral candidates as well as relevant organizational arrangements. In the opinion of the expert, these rules represent good scientific practice. Moreover, the experts observe evidence that UNSRI collects data related to individual progression, net research time, completion rate, dissemination of research results, and career tracking and uses this data to continuously assess the quality of the structured doctoral programme.

E 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:

D 1. Workload analysis of the teaching staff at the Department of Mathematics Education

F Comment of the Higher Education Institution (31.05.2024)

The institution provided a detailed statement:

No	Criteria	Issue	Page	Response
1.	Criteria 1	<ul style="list-style-type: none"> The experts question why UNSRI has deleted English in all curricula and how it ensures that students reach sufficient levels at graduation 	19	<ul style="list-style-type: none"> Students should be encouraged to write their thesis in English, especially in the master and doctoral programs. This should also foster collaboration with external partners, particularly internationally. There are USEPT (University Sriwijaya English Proficiency Test) score limits for each level: 400 (BPME), 450 (MPME), and 475 (DPME). The Language Institute offers more classes until the student receives the required score.
		<ul style="list-style-type: none"> The representatives of the rector's office admit that their strategies aim to become an excellent university, which also includes students with good English skills. Nevertheless, the course was deleted based on a rector's degree because all students need to prove their English competences. 	19	<ul style="list-style-type: none"> English language publications are discussed in scientific activities at the master's and doctoral levels. There will be an English Conversation Week in the future. It makes it easier to practice English with faculty members up until you achieve a grade.
		<ul style="list-style-type: none"> Students are required to describe all variables, test them in schools and analyze these results. In their opinion, this is a research-based learning approach, often also labelled as "small-scale research." In contrast, master students work on their 	17	<ul style="list-style-type: none"> I appreciate your concern about this. The research boundaries for undergraduate study are application (level 6), master's degree development (level 8), doctoral degree development (level 9), and developing theory

		<p>research objective, often developing products such as learning materials or media. Students in the doctoral program are deeper involved in theory; they design original experiments in relation to a new theory</p>		<p>(level 10), all based on the Indonesian National Qualification Framework level.</p>
		<ul style="list-style-type: none"> • UNSRI needs to re-think its strategy of compensation for missing competences in pedagogy in the master program and develop opportunities for these students to take adequate courses during their first or second semester. • The experts demand UNSRI to develop a mechanism, which reviews the total workload of the students in each course including the time spent on self-study (reading assignments, projects, exercises, homework, etc.). This should also include the time spent on research for the final projects. The experts highlight that UNSRI needs to develop a mechanism to monitor the student workload outside of the classroom to avoid a higher workload that is awarded with credit points. 		<ul style="list-style-type: none"> • There will be a new version of the curriculum with mandated student matriculation from the pure mathematics study programme. • For the self-study mechanism, a method will be implemented in the Learning Management method to record student work completed as self-study. Assignment tracking takes the form of a checklist that students fill out and turn in to the course instructor. The checklist allows the instructor to keep an eye on things on a regular basis.
		<ul style="list-style-type: none"> • In relation to the number of course credits taken by DPME students, it is written "Students must complete 42 Indonesian credits or 177.6 ECTS credits to graduate". 	17	<ul style="list-style-type: none"> • It should be "Students must complete 42 Indonesian credits or 117.6 ECTS credits to graduate".

		<ul style="list-style-type: none"> The experts additionally acknowledge that the curriculum at UNSRI does not adequately give the students training on teaching students with disabilities 	21	<ul style="list-style-type: none"> On one campus, there are facilities for people with disabilities, including designated restrooms, designated pathways, and designated areas for students with disabilities. The campus will include lectures and other events for students with disabilities. People whose physical abilities to move, coordinate actions, or participate in physical activities are severely limited, impeded, or delayed will be of more concern to us. The rules and other significant matters pertaining to disability will be organised in an academic book guide. Also, curriculum documents will provide a comprehensive description of the teaching strategies and other curricular components related to this disability topic.
	Criteria 1	<ul style="list-style-type: none"> The experts miss collaborations between the Department of Mathematics and the Department of Mathematics Education. The experts, therefore, consider UNSRI should establish a deeper collaboration between these two departments. This should be done on the teaching level, however the lectures of both departments could also benefit from a collaboration on research level. 	21-22	<ul style="list-style-type: none"> In fact, the DPME has been collaborating with the department of Mathematics since 2022 through Prof. Dr. Yulia Resti, M.Si. who acts both as lecturer of several courses, such as: prelim and topic in data and statistics and co-supervisor of M. Hasbi Ramadhan. <p>Link: Collaboration with Department of Mathematics</p>
		<ul style="list-style-type: none"> Therefore, the experts suggest increasing the use of English progressively through the semesters, teaching the students also the subject-specific English terminology. In addition, students should be encouraged to 	24	<p>We will regularly urge students to get better at the language. In the classroom, we ask the lecturer to provide learning materials in English and use English as a language of everyday conversation.</p>

		<p>speak English in the classroom during certain activities or modules in order to advance their conversation skills.</p>		
		<ul style="list-style-type: none"> The doctoral program is less competitive. UNSRI accepts up to 15 PhD students, but the number of applications is low. 	28	<ul style="list-style-type: none"> The process of selecting DPME candidates is quite competitive. In fact, we have two out of five ways to select new students. 1) PMDSU (Pendidikan Magister Menuju Doktor Sarjana Unggul), in 2020, Unsri accepted one student out of 34 candidates from all over Indonesia. In 2022, Unsri accepted one student out of nine candidates from all over Indonesia. 2) Reguler, in 2019, Unsri accepted four students out of seven candidates in Indonesia. In 2020, Unsri accepted three students out of five candidates in Indonesia. In 2021, Unsri accepted eight students out of 10 candidates in Indonesia. In 2024, DPME will be more selective in accepting DPME students.
	Criteria 1	<ul style="list-style-type: none"> The experts suggest creating surveys on the total workload in each semester, complementing the information for each module. This should avoid peaks of workload in certain semesters due to a high number of courses. 	35	<p>The curriculum structure will be changed in the near future to prevent a workload peak caused by large number of courses offered in certain semesters.</p>
		<ul style="list-style-type: none"> The experts acknowledge the need to include project-based, case-based, and research-based learning into the classroom. However, they want to emphasize that UNSRI should consider to focus on a diversity of teaching methods in each course. The experts consider that a variety of teaching and learning methods in one 	36	<p>We appreciate your interest in this topic and agree with your recommendation to use a range of methods for learning and instruction.</p>

		course and during the semester is the most beneficial way to empower all students in their learning. Therefore, the experts continue to state that UNSRI should remain critical towards the strong focus on project-based and case-based learning in all courses.		
	Criteria 2	<ul style="list-style-type: none"> The experts note that the examination forms are not well documented in the module handbooks, especially regarding the assessment criteria. 	39	The assessment criteria of each course are documented in the module portfolio. The module handbook only shows the type of the exams and how the proportion of each exam contributes to the students' final grade.
		<ul style="list-style-type: none"> The experts think that the assessment methods need to be defined in the module handbooks to allow the students to prepare for the course. Changes during the semester need to be avoided, unless there is a case of special events. 	40	The types of exams in each course have been explained well in the module handbook, and informed to the students in the first meeting of the course. Changes of the types of the exam are rare cases in the mathematics education cluster. In case it is happening, there is a very special reason. The plan to change the type of assignment needs to be informed earlier and is agreed by all of the students enrolled in the course.
		<ul style="list-style-type: none"> There is no English doctoral thesis until now at Unsri. The experts encourage all students in the PhD program to write their thesis in English, publish their research in international journals, and use only English in the classroom. 	40	<ul style="list-style-type: none"> Several DPME students have written their dissertation summary in English. Starting from August 2024, outstanding DPME students will write their published dissertations in English. Link: PhD Dissertation Summary in English Writing a published dissertation has become an option for DPME students stated in the Sriwijaya University Academic Guidelines (See Table 3.2). DPME has carried out socialization on writing published dissertations

				<p>in March 2024. Starting from August 2024, outstanding DPME students will write their published dissertations in English.</p> <p>Link: Academic Guidelines Documentation</p> <ul style="list-style-type: none"> • Since the beginning in 2019, DPME students have published their research in reputable international journals as a graduation requirement. <p>Link: List of Published Articles of DPME students</p> <ul style="list-style-type: none"> • Since the beginning in 2016, all reading sources and materials provided to the DPME students are in English. Several mandatory courses are also taught by the lecturer from Utrecht University, namely Asc. Prof. Dr. Michiel Doorman. In addition, the guest lecturers attended by DPME students are mostly given by experts from foreign institutions. These include the Netherlands, Germany, Brunei Darussalam, Malaysia, Singapore, Australia and the USA.
	Criteria 3	<ul style="list-style-type: none"> • Supervision in the doctoral program is less rigid, since each student has several supervisors/promotors. According to the lecturers, doctoral students have to hand in reports regularly to demonstrate their progress. Since many of the doctoral students perform their research outside of 	43	<ul style="list-style-type: none"> • Doctoral students' supervision is less frequent for face-to-face meetings. But, doctoral students' supervision is more frequent for online meetings using Zoom.

		<p>UNSRI, personal meetings are less frequent.</p> <ul style="list-style-type: none"> Although experts see several opportunities for students to receive grants and scholarships at UNSRI, they assess that the selection criteria are not made transparent. 	46	<ul style="list-style-type: none"> In fact, the announcement of the opening and offering of scholarships has been widely announced both through WA groups and direct websites, but the selection process for students who meet the criteria is limited to get the winner. For example https://bima.kemdikbud.go.id/
	Criteria 4	<ul style="list-style-type: none"> The experts remark that it would be suitable if the module handbooks would be easily accessible on the webpage of the study program for download for (potential) students and stakeholders. 	47	<ul style="list-style-type: none"> The module handbook had been uploaded on the website and open access, however, before visitation, the website was down, so the experts might not be able to open it. The page referred to is https://fkip.unsri.ac.id/s1pmat/module-handbook/
		<ul style="list-style-type: none"> Transcript of record should be updated Although the grade of the individual modules as well as the students' grade point average are listed, the document does not contain any information to the ECTS credit point calculation. The experts emphasize that the presentation of ECTS credits for each module is beneficial in the international context. The experts suggest UNSRI to integrate statistical data as set forth in the ECTS 	47-48	<ul style="list-style-type: none"> UNSRI will make a transcript of record that contains ECTS credits for each module as requested by students.

		Users' Guide is included to allow readers to assess the individual mark.		
		<ul style="list-style-type: none"> The experts learn that there is a separated webpage for UNSRI admission; but neither the link nor the information was accessible to them online. 	48	<ul style="list-style-type: none"> The university has provided a link for new student registration. On the website there are information regarding the terms and procedures for registering new students. However, when the expert accessed the page, UNSRI's website was under maintenance. The page referred to is https://usm.unsri.ac.id/. (Other pages provided by UNSRI https://pmb.unsri.ac.id/)
	Criteria 5	<ul style="list-style-type: none"> The experts suggest adding additional surveys to collect the students' feedback. Particularly, students should be asked at different phases of their studies about the opinion of the study programs (e.g. after the first year or at graduation) to collect the general of students during this study phase. In addition, students could be asked on the experience of their studies considering an entire semester in addition to single modules. In this way, the students' workload could be analyzed in an entire semester giving additional information to single modules. 	51	<ul style="list-style-type: none"> At the end of every semester there is a survey related to the implementation of lectures even before they graduate which can be accessed at QUESTIONNAIRE OF STUDENT SATISFACTION WITH THE LEARNING PROCESS. ACADEMIC ADMINISTRATION. FACILITIES AND INFRASTRUCTURE (google.com). This survey actually contains open questions regarding suggestions for both study programs and faculties. However, this suggestion is not discussed in depth in the report.
		<ul style="list-style-type: none"> Additional surveys could also be distributed for various stakeholders. 	51	<ul style="list-style-type: none"> Surveys were also distributed to stakeholders, namely user satisfaction surveys which can be accessed on the website CDC Unsri News USER

		<ul style="list-style-type: none"> the experts notice that the student questionnaires should focus in more detail on the workload during the self-study period. In the discussions, the students comment that they are occasionally unable to finish their homework due to their high workload. Since the teaching staff could not provide a clear statement how it measures the workload out-side of the classroom, the experts observe that there is room for improvement in this regard. The experts suggest that the questionnaires include questions on the workload outside the classroom to ensure that assignments and homework does not exceed the awarded credit points. 	<p>51</p> <p>51</p>	<p>SATISFACTION SURVEY OF UNSRI ALUMNI</p> <ul style="list-style-type: none"> A survey of assignment workloads outside of lectures is also available at Mathematics Education Cluster Student's Workload Survey (google.com). However, this survey was limited to closed questions using a Likert scale only. In the future, the instrument regarding student workload will be improved so that it can measure whether workload outside the classroom does not exceed the credits taken by students
	Additional Criteria D.1. Research	<ul style="list-style-type: none"> The industry partners remark that more students should be encouraged to write their final thesis in English to facilitate their collaboration 	53	<ul style="list-style-type: none"> Several DPME students have written their dissertation summary in English. Starting from August 2024, outstanding DPME students will write their published dissertations in English. Link: PhD Dissertation Summary in English
		<ul style="list-style-type: none"> The experts suggest UNSRI to consider allowing dissertations by publication in the future instead of a monograph. 	53	<ul style="list-style-type: none"> Writing a published dissertation has become an option for DPME students stated in the Sriwijaya University Academic Guidelines (See Table 3.2). DPME has carried out socialization on writing published dissertations

				<p>in March 2024. Starting from August 2024, outstanding DPME students will write their published dissertations in English.</p> <p>Link: Academic Guidelines Documentation</p>
	D.2. Duration and Credits	<ul style="list-style-type: none"> The experts suggest UNSRI to proceed to evaluate the possibilities to allow optional dissertations by publications next to the regular monograph 	54 - 55	<ul style="list-style-type: none"> Writing a published dissertation has become an option for DPME students stated in the Sriwijaya University Academic Guidelines (See Table 3.2). DPME has carried out socialization on writing published dissertations in March 2024. Starting from August 2024, outstanding DPME students will write their published dissertations in English. <p>Link: Academic Guidelines Documentation</p>
	D.3. Softskills and Mobility		55 - 56	<ul style="list-style-type: none"> After being suggested by the experts from the ASIIN in the end of on-site visit, DPME continues to be consistent in providing opportunities for lecturers and students for international mobility. 1) In March 2024, DPME officially succeeded in holding the International Day of Mathematics for the 5th consecutive year. In addition, DPME sent student representatives to take part in the Math Remix Creative Challenge held by the International Mathematics Union. The student's

				<p>work is displayed on the official IDM website which has been recognized by UNESCO.</p> <p>Link: Math Remix Challenge</p> <ul style="list-style-type: none">• DPME invited distinguished guests from Deakin University (Prof. Wanty Widjaja) and Universiti Teknologi Malaysia (Prof. Abdul Halim Abdullah). <p>Link: Certificate Video of IDM314</p> <ul style="list-style-type: none">• In April 2024, Prof. Dr. Ratu Ilma Indra Putri, M.Si. and Viona Adelia succeeded in strengthening international collaborative research at Utrecht University, the Netherlands. <p>Link: International Collaborative Research</p> <ul style="list-style-type: none">• In May 2024, Usman Arifin, one of the DPME students succeeded in winning the mathematics learning video competition organized by the Indonesian Mathematics Education Postgraduate Association. <p>Link: Certificate</p> <ul style="list-style-type: none">• In July 2024, Viona Adelia and Prof. Dr. Zulkardi, M.I. Komp., M.Sc. will present their posters at ICME-15 in Sydney, Australia. Apart from that, Duano Sapta Nusantara and Prof. Dr. Ratu Ilma Indra Putri, M.Si. will present their papers in the same forum. <p>Link:</p>
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				<p>LoA ICME 15</p> <ul style="list-style-type: none"> In July 2024, Prof. Dr. Zulkardi, M.I.Komp., M.Sc., Prof. Dr. Ratu Ilma Indra Putri, M.Si. will be the steering committee and Duano Sapta Nusantara will be one of the invited speakers at SEADR10 in Melbourne. <p>Link: Invitation Letter</p> <ul style="list-style-type: none"> In August 2024, DPME is going to send Rahma Siska Utari to attend the summer school program at Utrecht University. <p>Link: LoA of Rahma Siska Utari</p>
	D.4. Supervision and Assessment	<ul style="list-style-type: none"> The experts suggest considering the distribution of the role of the first supervisor and likewise dissertation topics among the staff, if possible. In the experts' opinion, this would strengthen other research groups at UNSRI as well as professors, who are qualified for PhD supervision. Having more first supervisors can bring new insights, broaden the PhD research topics and strengthen the research groups. 	57 - 58	<ul style="list-style-type: none"> The majority of students are interested in researching PMRI topics. This is because it is a characteristic/speciality of DPME. At that time, the two professors' expertise in PMRI. Beside PMRI, there were some DPME students who were conducting research topics related to mathematical modeling, problem solving, STEAM PjBL, STEM and ICT in Mathematics Education. The distribution of roles as first supervisor has been carried out according to UNSRI academic guidelines by involving three professors in DPME with expertise in their respective fields. In fact, DPME has also involved other professors from the Faculty of Mathematics and Natural Sciences, namely Prof. Yulia Resti, M.Sc. as Co-Supervisor of M. Hasbi Ramadhan who researches on the topic financial literacy. Supervisors Decree of M. Hasbi Ramadhan

	D.6. Funding	<ul style="list-style-type: none"> The experts suggest the study program provides a transparent funding system that includes grants information, selection criteria, eligibility, etc. for all doctoral students in DPME. 	59	<ul style="list-style-type: none"> DPME provides funding for DPME students through PMDSU grant, PDD grant, and PNBP grant. All DPME students have equal opportunities. In the even semester, DPME students are given information via WhatsApp group to be involved in the process of preparing both internal and external grant proposals. Melengkapi kriteria di buku pedoman tentang seleksi mahasiswa penerima grant <p>Link: PMDSU, PDD, and PNBP.</p>
	Appendix	<ul style="list-style-type: none"> The total credits for the curriculum in the doctoral program in the Table is 67,2 ECTS. 	74	<ul style="list-style-type: none"> It should be 117,6 ECTS.

G Summary: Expert recommendations (03.06.2024)

Taking into account the additional information and the comments given by four 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 Mathematics Education	With requirements for one year	30.09.2029	–	-
Ma Mathematics Education	With requirements for one year	30.09.2029	–	-
PhD Mathematics Education	With requirements for one year	30.09.2029	–	-

Requirements

For all study programs

- A 1. (ASIIN 1.5) The university needs to develop a mechanism to monitor the total workload of students, including the time spend on independent study.
- A 2. (ASIIN 4.2) The Transcript of Records needs to include conversion of Indonesian credit points to ECTS credit points.

Requirement

For Ma Mathematics Education

- A 3. Ensure that students, who enter with a bachelor in “Mathematics”, need to compensate their missing competences in the field of pedagogy during the first year.

Recommendations

For all study programs

- E 1. (ASIIN 1.1 and 1.3) It is recommended to increase the number of international partners besides the established partners.

- E 2. (ASIIN 1.3) It is recommended to encourage the use of English in the study programs, including final thesis in English.
- E 3. (ASIIN 1.3) It is recommended to include competences on how to teach students with disabilities into the curriculum.
- E 4. (ASIIN 1.3 and 3.1) It is recommended to increase the collaboration of the Department and Mathematics and the Department of Mathematics Education regarding research and teaching.
- E 5. (ASIIN 1.6) It is recommended to implement diverse teaching and learning methods.
- E 6. (ASIIN 1.3 and 3.2) It is recommended to increase the transparency of grants and scholarships; the grants/scholarships should be awarded on competitive basis and include student mobility programs.
- E 7. (ASIIN 1.5 and 5) It is recommended to add student satisfaction surveys beside the end-semester evaluations.

**Recommendations
For PhD Mathematics Education**

- E 8. (ASIIN 2 and D1) It is recommended to implement dissertation by publications (collection of publications or cumulative).

H Comment of the Technical Committee 12 – Mathematics (10.06.2024)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the motivation and foundation of all requirements and recommendations. In particular, it rephrases the recommendation E8 to clarify that students need to be able to either work on a dissertation monographs or dissertation by publications. In addition, the Technical Committee discusses the motivation and wording of the requirement A3 to allow students to compensate missing competences within the first year. However, after hearing all statements, the Technical Committee decides no changes and supports the requirement in its current form.

The Technical Committee 12 – Mathematics recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Mathematics Education	With requirements for one year	30.09.202x	–	-
Ma Mathematics Education	With requirements for one year	30.09.202x	–	-
PhD Mathematics Education	With requirements for one year	30.09.202x	–	-

Requirements

For all study programs

- A1. (ASIIN 1.5) The university needs to develop a mechanism to monitor the total workload of students, including the time spend on independent study.
- A2. (ASIIN 4.2) The Transcript of Records needs to include conversion of Indonesian credit points to ECTS credit points.

Requirement

For Ma Mathematics Education

- A3. (ASIIN 1.4) Ensure that students, who enter with a bachelor in “Mathematics”, need to compensate their missing competences in the field of pedagogy during the first year.

Recommendations

For all study programs

- E 1. (ASIIN 1.1 and 1.3) It is recommended to increase the number of international partners besides the established partners.
- E 2. (ASIIN 1.3) It is recommended to encourage the use of English in the study programs, including final thesis in English.
- E 3. (ASIIN 1.3) It is recommended to include competences on how to teach students with disabilities into the curriculum.
- E 4. (ASIIN 1.3 and 3.1) It is recommended to increase the collaboration of the Department and Mathematics and the Department of Mathematics Education regarding research and teaching.
- E 5. (ASIIN 1.6) It is recommended to implement diverse teaching and learning methods.
- E 6. (ASIIN 1.3 and 3.2) It is recommended to increase the transparency of grants and scholarships; the grants/scholarships should be awarded on competitive basis and include student mobility programs.
- E 7. (ASIIN 1.5 and 5) It is recommended to add student satisfaction surveys beside the end-semester evaluations.

Recommendations

For PhD Mathematics Education

- E 8. (ASIIN 2 and D1) It is recommended to allow for dissertations by publications (collection of publications or cumulative).

I Decision of the Accreditation Commission (28.06.2024)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission discusses the requirements and recommendations and follows the assessment of the auditor and the suggestions from the Technical Committee 12. In addition, it decides on editorial changes in E3 and E4 to clarify the proposition of these recommendations. Moreover, the accreditation commission discusses on motivation of the recommendation E8, but decides not to make any changes.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Mathematics Education	With requirements for one year	30.09.2029	–	-
Ma Mathematics Education	With requirements for one year	30.09.2029	–	-
PhD Mathematics Education	With requirements for one year	30.09.2029	–	-

Requirements

For all study programs

- A 4. (ASIIN 1.5) The university needs to develop a mechanism to monitor the total workload of students, including the time spend on independent study.
- A 5. (ASIIN 4.2) The Transcript of Records needs to include conversion of Indonesian credit points to ECTS credit points.

Requirement

For Ma Mathematics Education

- A 6. (ASIIN 1.4) Ensure that students, who enter with a bachelor in “Mathematics”, need to compensate their missing competences in the field of pedagogy during the first year.

Recommendations

For all study programs

- E 9. (ASIIN 1.1 and 1.3) It is recommended to increase the number of international partners besides the established partners.
- E 10. (ASIIN 1.3) It is recommended to encourage the use of English in the study programs, including final thesis in English.
- E 11. (ASIIN 1.3) It is recommended to include competences into the curriculum on how to teach students with disabilities.
- E 12. (ASIIN 1.3 and 3.1) It is recommended to increase the collaboration of the Department and Mathematics and the Department of Mathematics Education regarding research and teaching.
- E 13. (ASIIN 1.6) It is recommended to implement a diversity of teaching and learning methods.
- E 14. (ASIIN 1.3 and 3.2) It is recommended to increase the transparency of grants and scholarships; the grants/scholarships should be awarded on competitive basis and include student mobility programs.
- E 15. (ASIIN 1.5 and 5) It is recommended to add student satisfaction surveys beside the end-semester evaluations.

Recommendations

For PhD Mathematics Education

- (ASIIN 2 and D1) It is recommended to allow for dissertations by publications (collection of publications or cumulative).

Appendix: Programme Learning Outcomes and Curricula

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved at graduation in the bachelor study program Mathematics Education:

Program Learning Objectives (PEOs)

1. Having academic ethics, character education values, in developing oneself both formally and non-formally
2. Having knowledge of mathematics, learning mathematics, and research in learning mathematics using appropriate technology.
3. Able to implement knowledge of mathematics and educational concepts in internship, learning and research of mathematics education in schools

Program Learning Outcomes (PLOs)

PLO 1	Having good morals, ethics and personality in completing tasks as a mathematics educator.
PLO 2	Able to communicate research results and ideas about mathematics education in writing and orally based on the values of honesty and responsibility.
PLO 3	Internalizing the spirit of independence, struggle, entrepreneurship, and communication skills, as well as being responsible as a mathematics educator.
PLO 4	Having knowledge of mathematical concepts in solving mathematical problems and supporting further studies.
PLO 5	Having an understanding of the basic concepts of educational philosophy, approaches, methods, models, media, evaluation/assessment, and general knowledge to support mathematics learning and teacher competence in teaching practice in schools.
PLO 6	Having an understanding of research methodology and scientific publications in the field of mathematics education.

PLO 7	Able to apply mathematical knowledge logically, critically and systematically in solving problems.
PLO 8	Able to apply innovative educational and mathematics learning concepts in teaching practice at school independently or in groups.
PLO 9	Able to design innovative mathematics learning tools following educational concepts and school curriculum.
PLO 10	Able to utilize technology in solving mathematics and learning problems.
PLO 11	Able to conduct research in mathematics education following scientific principles and publish the results honestly and validly.

The following **curriculum** is presented:

SEMESTER 1					
No	Courses code	Courses name	SKS	ECTS	Prerequisite
1	UNI1001	Religion	2	3.2	
2	UNI1003	Civic Education	2	3.2	
3	GMA1101	Introduction to Logic	3	4.8	
4	GMA1102	Set Theory	3	4.8	
5	GMA1103	Geometry	2	3.2	
6	GMA1104	Algebra	3	4.8	
7	GMA1105	History of Mathematics	2	3.2	
8	GMA1106	Philosophy of Education	2	3.2	
Total Credit			19	30.4	

SEMESTER 2

No	Course code	Course name	SKS	ECTS	Prerequisite
1	UNI1002	Pancasila	2	3.2	
2	UNI1004	Indonesian	2	3.2	
3	GIP1202	Student Development Theory	2	3.2	
4	GMA1207	Calculus	3	4.8	
5	GMA1208	Trigonometry	3	4.8	
6	GMA1209	Plane Analytical Geometry	2	3.2	Geometry
7	GMA1210	Combinatorics	3	4.8	
8	GMA1211	Basic Statistics	2	3.2	
Total credit			19	30.4	

SEMESTER 3

No	Course code	Course name	SKS	ECTS	Prerequisite
1	GMA2101	Proof and Reasoning	2	3.2	
2	GMA2102	Number Theory	3	4.8	
3	GMA2103	Matrix and Vector	3	4.8	
4	GMA2104	Advanced Calculus	3	4.8	Calculus
5	GMA2105	Analytical Solid Geometry	2	3.2	Plane Analytical Geometry
6	GMA2106	Algorithms and Programming	2	3.2	
7	GMA2107	Theory of Learning Mathematics	2	3.2	
8	GMA2108	Curriculum Review	3	4.8	
Total Credit			20	32	

SEMESTER 4

No	Course code	Course name	SKS	ECTS	Prerequisite
1	GMA2209	Linear Algebra	3	4.8	Matrix and Vector
2	GMA2210	Probability Theory	3	4.8	Advanced Calculus and Set Theory
3	GMA2211	Transformation Geometry	3	4.8	Algebra, Geometry, Matrix and Vector
4	GMA2212	Multivariate Calculus	3	4.8	Advanced Calculus
5	GMA2213	Computer Applications	2	3.2	
6	GMA2214	Media for Learning Mathematics	2	3.2	
7	GMA2215	Teaching Models for Mathematics	3	4.8	
8	GMA2216	Evaluations of Mathematics Learning	3	4.8	
JUMLAH			22	35.2	
No	Course code	Elective Courses	SKS		Prerequisite
1	GMA2217	Nonparametric Statistics	2	3.2	Basic Statistics
2	GMA2218	Multivariate Statistics	2	3.2	Matrix and Vector
3	GMA2219	Problems in Mathematics Teaching	2	3.2	
4	GMA2220	Non-Euclidean Geometry	2	3.2	
5	GMA2221	Mathematical Values	2	3.2	
6	GMA2222	Mathematical Problem Solving	2	3.2	
Total Credit			12	19.2	

SEMESTER 5

No	Course code	Course name	SKS	ECTS	Prerequisite
1	GIP3101	Digital Classroom Management	2	3.2	
2	GMA3101	Mathematical Statistics	3	4.8	Teori Peluang
3	GMA3102	Real Analysis	3	4.8	
4	GMA3103	Educational Research Methodology	3	4.8	
5	GMA3104	Colloquium	2	3.2	
6	GMA3105	Enterpreneurship	2	3.2	
7	GMA3106	Instructional Plan	2	3.2	Media for Learning Mathematics , Teaching Models for Mathematics, Evaluations of Mathematics Learning
8	GMA3107	School Based Management	2	3.2	
Total credit			19	30.4	
No	Course code	Elective Courses	SKS		Prerequisite
1	GMA3108	Modeling and Simulation	2	3.2	
2	GMA3109	Mathematics Teaching Material Development	2	3.2	
3	GMA3110	Realistics Mathematics Education	2	3.2	
4	GMA3111	Ethnomathematics	2	3.2	
5	GMA3112	Financial Mathematics	2	3.2	
Total Credit			10	16	

SEMESTER 6

No	Course code	Course name	SKS	ECTS	Prerequisite
1	GIP3002	Micro Teaching	2	3.2	
2	GMA3213	Discrete Mathematics	3	4.8	
3	GMA3214	Linear Programming	3	4.8	Algebra, Linear Algebra
4	GMA3215	Numerical Methods	2	3.2	Algorithms and Programming
5	GMA3216	Differential Equations	3	4.8	
6	GMA3217	Abstract Algebra	3	4.8	
Total credit			17	27.2	
No	Course code	Elective courses	SKS		Prasyarat
1	UNI3001	Community Service Program	4	6.4	
2	GMA3218	Qualitative Research Methods	2	3.2	
3	GMA3219	Numerical Analysis	3	4.8	
4	GMA3220	Initial Value and Boundary Condition Problems	3	4.8	
5	GMA3221	Introduction to Topology	3	4.8	
6	GMA3222	Stochastics Processes	2	3.2	
Total credit			17	27.2	

SEMESTER 7

No	Course code	Course name	SKS	ECTS	Prerequisite
1	GIP4001	School Experience	4	6.4	Micro Teaching
JUMLAH			4	6.4	

No	Course code	Elective Course	SKS		Prerequisite
1	GMA4102	Complex Analysis	2	3.2	
2	GMA4103	Educational Internship	4	6.4	
3	GMA4104	Computation	2	3.2	
4	GMA4105	Graph Theory	2	3.2	
5	GMA4106	Cryptography	2	3.2	
Total credit			12	19.2	

SEMESTER 8

No	Course code	Course name	SKS	ECTS	Prerequisite
1	GMA4001	Undergraduate thesis	6	9.6	
Total credit			6	9.6	

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved at graduation in the master study program Mathematics Education:

Program Learning Objectives (PEOs)

1. Having professional responsibility and academic ethics in carrying out their duties and work.
2. Able to develop knowledge and technology in the field of mathematics education to produce innovative work through research activities with an interdisciplinary and multidisciplinary approach.
3. Able to solve problems in the field of mathematics education by using innovative research results logically, critically, and creatively

Program Learning Outcomes (PLOs)

PLO 1	Able to be responsible, disciplined, collaborative, and maintain academic ethics in completing assigned tasks.
PLO 2	Mastering and be able to develop mathematical knowledge.

PLO 3	Mastering pedagogical and didactic theory and assessment in the field of mathematics education
PLO 4	Mastering development research methodology in the field of mathematics education
PLO 5	Able to critically analyse current issues in mathematics education using an inter- and/or multidisciplinary approach.
PLO 6	Able to solve various mathematics education problems using an inter- and/or multidisciplinary approach.
PLO 7	Able to publish research results.
PLO 8	Able to apply technology in mathematics education.

The following **curriculum** is presented:

Semester 1

No.	Course Code	Course	Credit	ECTS	Prerequisite
1	GIP5101	Philosophy of Science	2	3,2	
2	GMA5101	Mathematical Thinking	3	4,8	
3	GMA5102	Advanced Abstract Algebra	3	4,8	
4	GMA5103	Advanced Realistic Mathematics Education	3	4,8	
Total Credit			11	17,6	

Semester 2

0 Appendix: Programme Learning Outcomes and Curricula

No.	Course Code	Course	Credit	ECTS	Prerequisite
1	GMA5204	Methodology, Research Ethic, and Scientific Publication	3	4,8	
2	GMA5205	Mathematical Modeling	3	4,8	
3	GMA5206	Current Issues in Mathematics Learning	2	3,2	

4	Elective Course in Mathematics Domain (*)				
	GMA5207	Modern Geometry	3	4,8	
	GMA5208	Review of School Mathematics Textbook	3	4,8	
	GMA5209	Combinatorics Exploration	3	4,8	
	GMA5210	Statistics Mathematics	3	4,8	
	GMA5211	Numerical Analysis	3	4,8	
	GMA5212	Complex Analysis	3	4,8	
	GMA5213	Topology	3	4,8	
Total Credit			11	17,6	

Note: (*) Elective courses in Mathematics Domain: master students can only choose one course.

Semester 3

No.	Course Code	Course	Credit	ECTS	Prerequisite
1	GIP6101	Educational Statistics	3	4,8	
2	GMA6107	Assessment in Mathematics Learning	2	3,2	
3	Elective Course in Mathematics Education Doamin (**)				

	GMA6102	ICT in Mathematics Learning	3	4,8	
	GMA6103	Innovation in Mathematics Learning	3	4,8	
	GMA6104	Ethnomathematics	3	4,8	
	GMA6105	Designing Learning Product and Classroom Observation	3	4,8	
	GMA6106	Mathematical Disposition	3	4,8	
	GMA6108	Learning Mathematics Psychology	3	4,8	
Total Credit			8	13,4	

Note: (**) Elective courses in Mathematics Domain: master students can only choose one course.

Semester 4

No.	Course Code	Course	Credit	ECTS	Prerequisite
1	GMA6001	Thesis	6	9,6	
Total Credit			6	9,6	

According to self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved at graduation in the doctoral study program Mathematics Education:

Program Learning Objectives (PEOs)

1. Upholding moral and human values, as well as showing an attitude of responsibility, discipline, independence, and maintaining academic ethics towards the tasks given
2. Able to develop knowledge and new technology in realistic mathematics education through research to produce original, creative and tested work.
3. Able to solve problems in the field of realistic mathematics education using innovative research results using inter, multi, or transdisciplinary approaches

Program Learning Outcomes (PLOs)

PLO 1	Able to appreciate cultural diversity, morals, academic ethics, as well as other people's original opinions or findings.
PLO 2	Able to develop/design theories of learning mathematics using local contexts that are beneficial to society and science and able to gain national and international recognition.
PLO 3	Able to design and carry out scientific activities in the field of mathematics education based on research results.
PLO 4	Able to analyse, apply and evaluate factual, conceptual, procedural and meta-cognitive knowledge related to mathematics learning problems.
PLO 5	Able to solve science, technology and/or arts problems in the field of mathematics education through an inter or multidisciplinary approach.
PLO 6	Able to compose a dissertation in the field of mathematics education based on scientific principles that the academic community can access
PLO 7	Able to prepare inter, multi, or transdisciplinary research, and/or experiments in the field of mathematics education and the resulting innovations in the form of dissertations, and papers that have been published in reputable international journals.
PLO 8	Able to demonstrate academic leadership in management, development, research and organizations under their responsibility.
PLO 9	Able to develop and maintain collegial and peer relationships within their own environment or through collaborative networks with research communities outside the institution.

The following **curriculum** is presented:

Semester 1					
No.	Course code	Course name	Sks	ECTS	Prerequisite
1.	GIP 7101	Methodology, Research Ethics and Scientific Publications	3	4.8	
2.	GMA 7101	Learning Design in RME	3	4.8	
3.	GMA 7102	Reputable Journal of Mathematics Education	3	4.8	
4.	GIP 7102	Philosophy of Mathematics Education	3	4.8	
Total credit			12	19.2	

Semester 2					
No.	Kode	Nama Kuliah	Sks	ECTS	Prerequisite
1.	GMA 7203	Prelium	0	0	GIP 7001, GIP 7002, GMA7001, GMA7002
2.	GMA 7204	Dissertation Proposal Seminar	3	4.8	GMA7003
3.	GMA 7205	Algebra*	3	4.8	
	GMA 7206	Number Theory*	3	4.8	
	GMA 7207	Geometry*	3	4.8	
	GMA 7208	Data and Statistics*	3	4.8	
	GMA 7209	Calculus*	3	4.8	
	GMA 72010	Discrete Mathematics*	3	4.8	
	GMA 72011	Mathematical Modelling *	3	4.8	
Total credit elective course *= choose only one course			21	33.6	

Semester 3					
No.	Course code	Course name	Sks	ECTS	Prerequisite
1.	GMA 8101	Internship in Mathematics Education	3	4.8	GMA7004
2.	GMA 8102	Dissertation Product Prototyping	3	4.8	
Total credit			6	9.6	

Semester 4

0 Appendix: Programme Learning Outcomes and Curricula

No.	Course code	Course name	Sks		
1.	GMA 8203	Mathematics Education Dissertation Workshop	3	4.8	
2.	GMA 8204	Mathematics Education Professional Seminar	3	4.8	
Total credit			6	9.6	

Semester 5					
No.	Course code	Course name	Sks	ECTS	Prerequisite
1.	GMA 9101	Dissertation Manuscripts Writing	3	4.8	
2.	GMA 9102	Dissertation Seminar	3	4.8	
Total credit			6	9.6	

Semester 6					
No.	Course code	Course name	Sks	ETCS	Prerequisite
1.	GMA 9003	Dissertation Writing and Examination	6	9.6	
Total credit			6	9.6	
Total credit through all semesters			42	67.2	