ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Ba Astronomy
Ba Mathematics
Ba Physics

Provided by
Institut Teknologi Bandung, Indonesia

Version: 1st of July 2016

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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]
Program Studi Sarjana Astronomi	Ba Astronomy	ASIIN	National Accreditation Agency for Higher Education in Indonesia (BAN-PT): from 21.02.2013 until 21.02.2018	12, 13
Program Studi Sarjana Matematika	Ba Mathematics	ASIIN	National Accreditation Agency for Higher Education in Indonesia (BAN-PT): from 02.04.2009 until 02.04.2014	12
Program Studi Sarjana Fisika	Ba Physics	ASIIN	National Accreditation Agency for Higher Education in Indonesia (BAN-PT): from 12.06.2009 until 12.06.2014	13
Date of the contract: 17.01.2014 **Submission of the final version of the self-assessment report:** 02.09.2014 **Date of the onsite visit:** 10.-11.02.2015 **at:** Faculty of Mathematics and Natural Sciences, Jl. Ganesa 10 Bandung 40132, Indonesia				
Peer panel: Prof. Dr. Ralf-Juergen Dettmar, Ruhr-University Bochum Prof. Dr. Mathias Getzlaff, Heinrich-Heine-University Düsseldorf Prof. Dr. Wolfgang Willems, Otto-von-Guericke University Magdeburg				

[1] ASIIN Seal for degree programmes
[2] TC: Technical Committee for the following subject areas: TC 12 – Mathematics; TC 13 – Physics.

Prof. Dr. Susanne Rockinger, Ostbayerische Technische Hochschule Regensburg Dr. Bernd Stoffregen, Volkswagen AG Muhammad Avicenna Naradipa (student peer), University of Indonesia
Representative of the ASIIN headquarter: Dr. Thomas Lichtenberg
Responsible decision-making committee: Accreditation Commission for Degree Programmes
Criteria used: European Standards and Guidelines, version 10.05.2005 ASIIN General Criteria, version 28.06.2012 Subject-Specific Criteria of Technical Committee 12 – Mathematics as of 09.12.2011 Subject-Specific Criteria of Technical Committee 13 – Physics as of 09.12.2011

In order to facilitate the legibility of this document, only masculine noun forms will be used hereinafter. Any gender-specific terms used in this document apply to both women and men.

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Astronomy, B.Sc.	B.Sc.		6	Full time	No	8 Semester	200 ECTS = 144 CU	October 1951, Fall Semester
Mathematics, B.Sc.	B.Sc..		6	Full time	no	8 Semester	200 ECTS = 144 CU	September 1948, Fall Semester
Physics, B.Sc.	B.Sc..		6	Full time	No	8 Semester	200 ECTS = 144 CU	September 1948, Fall Semester

For the degree programme Ba Astronomy, the webpage of the study programme (http://www.as.itb.ac.id/en/, access 20.02.2015) states the following **intended learning outcomes**:

Having entirely fulfilled all the study requirements, students who have completed their Undergraduate Program in Astronomy are able to:

- Comprehend the basic knowledge of natural science in terms of its fundamental laws and the logic of mathematical relations.
- Identify and solve scientific problems using scientific method within its professional ethics.
- Reason the working of the universe and its contents (planetary system, stellar system, realms of galaxies) through astronomy and astrophysics.
- Perform basic astronomical tasks: to collect observational data using telescope, to analyze and interpret data.
- Apply established scientific method using advanced physics, mathematics, and computations in solving astronomical and astrophysical problems.
- Explore interdisciplinary subjects and technology in fields related to astronomy.
- Communicate their scientific knowledge and skills in oral presentation and written report.
- Recognize the past/present/future scientific mission and exploration, the availability of scientific data, and the relevant community.

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

- Work ethically as an individual as well as a team and develop a good attitude towards cooperation.
- Follow the development of scientific knowledge and apply scientific thinking in a wide range of work places and various contemporary challenges.
- Recognize the place and role of astronomy in human civilization and maintain strong enthusiasm in science.

In addition to the above LOs, a majority of astronomy graduates has good understanding of the role of astronomy in science education and is involved in communicating science to the general public. Students also possess the basic knowledge and skills needed for Master's level studies.

The following **curriculum** is presented:

Common First Year Programme

Semester 1				*Semester 2*			
No	*Code*	*Courses*	*cr*	*No*	*Code*	*Courses*	*cr*
1	MA1101	Mathematics IA	4	1	MA1201	Mathematics IIA	4
2	FI1101	Elementary Physics IA	4(1)	2	FI1201	Elementary Physics IIA	4(1)
3	KI1101	General Chemistry IA	3(1)	3	KI1201	General Chemistry IIA	3(1)
4	KUxxxx	Intro. to Engineering and Design 1	2	4	KUxxxx	Intro. to Engineering and Design 2	2
5	KU1180	Intro. to Mathematics and Natural Sciences	2	5	KUxxxx	Pengantar Teknologi Informasi B	2
6	KUxxxx	Scientific Writing in Indonesian	2	6	KUxxxx	Academic Writing (English)	2
7	KUxxxx	Sport	2	7			
		Total	19(2)			Total	17(2)

Second Year

Semester 3				*Semester 4*			
No	*Code*	*Courses*	*cr*	*No*	*Code*	*Courses*	*cr*
1	FI2101	Mechanics	4	1	AS2201	Celestial Mechanics	3
2	AS2101	Astrophysics	3	2	AS2202	Basic Astronomy Laboratory I	3(1)
3	AS2102	Statistics in Astronomy	3(1)	3	AS2204	Mathematical Methods in Astronomy II	3
4	AS2103	Positional Astronomy	3	4	FI2202	Electricity and Magnetism	4
5	AS2104	Mathematical Methods in Astronomy I	3	5	AS2205	Computational Astronomy	3(1)
6	KU206X	Religion and Ethics	2	6	KU2071	Pancasila and Civic Education	2
		Total	18(1)			Total	18(2)

Third Year

Semester 5				*Semester 6*			
No	*Code*	*Courses*	*cr*	*No*	*Code*	*Courses*	*cr*
1	FI3102	Thermal Physics	4	1	AS3201	Intro. to Cosmology	3
2	AS3101	Basic Astronomy Laboratory II	3(1)	2	AS3202	Physics of Galaxy	3
3	AS3103	Solar System	3	3	AS3203	Stellar Physics	3
4	AS3105	Processes in Astrophysics I	3	4	AS3204	Processes in Astrophysics II	3
5	FI3101	Waves	3	5		Elective in Management	2
6		Free Elective		6		Elective in Environment	2
7		Free Elective		7		Free Elective	
		Total	16(1)			Total	16

Fourth Year

Semester 7				*Semester 8*			
No	*Code*	*Courses*	*cr*	*No*	*Code*	*Courses*	*cr*
1	AS4091	Final Project I	4	1	AS4092	Final Project II	4
2		Free Elective		2		Free Elective	
3		Conditional Elective		3		Conditional Elective	
		Total	4			Total	4

Obligatory Courses required by ITB

No	*Code*	*Courses*	*cr*
1	KU206X	Religion and Ethics	2
2	KU2071	Pancasila and Civic Education	2
3		Elective in Management	2
4		Elective in Environment	2
		Total	8

Free Elective Courses

No	*Code*	*Odd Semester*	*cr*	*No*	*Code*	*Nama Mata Kuliah*	*sks*
1	AS2005	Astronomy and Environment	2	1	AS2005	Astronomy and Environment	2
2	AS3002	Astronomical Institution Management	2	2	AS3002	Astronomical Institution Management	2
3	AS3006	Calendar System	3	3	AS3006	Calendar System	3
4	AS3007	Small Solar System Bodies	3	4	AS3007	Small Solar System Bodies	3
5	AS4001	Astronomical Job Training	2	5	AS4001	Astronomical Job Training	2
6	AS4102	Stellar System	3	5	AS4202	Dynamics of Stellar System	3
7	AS4103	Observational Astrophysics	3	6	AS4204	Satellite Orbits	3
8	AS4104	Interstellar Matter	3	7	AS5xxx*)		
9	AS4105	Stellar Evolution	3	8			
10	AS5xxx*)						

For the degree programme Ba Mathematics, the self-assessment report states the following **intended learning outcomes**:

The learning outcomes of UPM have been constructed by considering inputs from stakeholders. Postgraduate study requirements are also reflected to learning outcomes. The UPM formulates the learning outcomes (LO) as follows:

- The students are able to exhibit sufficient knowledge and insight in mathematics and relevant areas, with a relatively deep understanding in some particular subfields of mathematics, and apply them to solve problems,
- The students are able to demonstrate adequate basic math skills, such as observing, recognizing, collecting and utilizing data, to make calculation, estimation, and interpretation, with or without the aid of technologies (such as computers and software),
- The students are able to exhibit mathematical powers, that include reasoning, making connections, solving problems, and communicating,
- The students are able to show the ability to complete tasks and to develop relatively new ideas, both independently and in team including preparing and presenting reports, orally and in writing as well,

- The students have personality characteristics and habits of work necessary for successful career, and understand professional and ethical responsibility,
- The students are aware of contemporary issues and able to respond appropriately,
- The students are well-prepared for self-development, in mathematics and relevant areas, or career in work

The following **curriculum** is presented:

Semester I				Semester II			
	Codes	Course Name	CP		Codes	Course Name	CP
1	MA1101/ MA11102	Mathematics IA/IB	4	1	MA 1201/MA1202	Mathematics IIA/IIB	4
2	FI1101/ FI1102	Elementary Physics IA/IB	4(1)	2	FI1201/ FI1202	Elementary Physics IIA/IIB	4(1)
3	KI1101	General Chemistry I	3(1)	3	KI1201	General Chemistry IIA	3(1)
4	KUxxxx	Scientific Writing	2	4	KU1072	Introductory Information Technology B	2
5	KU1108	Introduction to Mathematics and Natural Sciences	2	5	KU1201	Introduction to Engineering and Design II	2
6	KU1101	Introduction to Engineering and Design I	2	6	XXxxxx	English	2
7	KUxxxx	Sport	2	7			
		Total	19			Total	17
Semester III				Semester IV			
	Codes	Course Name	CP		Codes	Course Name	CP
1	MA2121	Elementary Linear Algebra	4	1	MA2231	Multivariable Calculus	4
2	MA2151	Simulation and Computational Mathematics	4	2	MA2271	Introductory Differential Equation	4
3	MA2181	Data Analysis	4	3	MA2251	Discrete Mathematics	4
		Elective courses/ ITB Compulsory courses	6			Elective courses/ ITB Compulsory courses	6
		Total	18			Total	18

Semester V				Semester VI			
	Codes	Course Name	CP		Codes	Course Name	CP
1	MA3131	Introductory Real Analysis	4	1	MA3231	Introductory Real Analysis	4
2	MA3171	Numerical Mathematics	4	2	MA3011	Career Mathematics	2
3	MA3181	Probability Theory	4	3	MA3271	Mathematical Modeling	4
		Elective courses/ ITB Compulsory courses	6			Elective courses/ ITB Compulsory courses	8
		Total	18			Total	18
Semester VII				Semester VIII			
	Codes	Course Name	CP		Codes	Course Name	CP
1	MA4093	Final Project I	3	1	MA4094	Final Project II	3
2	MA4091	Mathematics Seminar I	1	2	MA4092	Mathematics Seminar II	1
		Elective courses	14			Elective courses	14
		Total	18			Total	18

For the degree programme Ba Physics, the self-assessment report states the following **intended learning outcomes**:

On those bases, the Undergraduate Programme in Physics sets the programme learning outcomes (PLO) for the graduates as follows:

1. They are able to demonstrate their knowledge of classical and modern physics by identifying physical properties of a physical system.
2. They are able to formulate a standard physical system into a physical model by using mathematics.
3. They are able to solve problems of a standard physical system comprehensively by the use of mathematics and computational tools.
4. They are able to analyse a physical system by applying mathematics and computational tools/ICT.
5. They are able to design and conduct experiments in physics or related physics areas, and to acquire, analyse and interpret the resulting data.
6. They have a basic capability in oral communication and in writing scientific report in an appropriate scientific style.
7. They are able to work effectively, both individually and in group.
8. They are able to apply knowledge of physics to broader areas/interdisciplinary problems.
9. They have basic characters of a good scientist.
10. They have an ability to improve their knowledge and be able to continue their study in a higher degree program..

The following **curriculum** is presented:

Semester I				Semester II			
	Code	**Course Name**	**CU**		**Code**	**Course Name**	**CU**
1	MA1101	Mathematics IA	4	1	MA1201	Mathematics IIA	4
2	FI1101	Elementary Physics IA	4(1)	2	FI1201	Elementary Physics IIA	4(1)
3	KI1101	Basic Chemistry IA	3(1)	3	KI1201	Basic Chemistry IIA	3(1)
4	KU1011	Indonesian Language: Scientific Writing	2	4	KU102X	English	2
5	KU1160	Introduction to Mathematics and Natural Sciences	2	5	KU1072	Introduction to Information Technology B	2
6	KU1101	Introduction to Engineering and Design 1	2	6	KU1201	Introduction to Engineering and Design 2	2
7	KU1001	Sport	2	7			
		Total	**19**			**Total**	**17**
Semester III				**Semester IV**			
	Code	**Course Name**	**CU**		**Code**	**Course Name**	**CU**
1	FI2101	Mathematical Physics I	4	1	FI2201	Mathematical Physics II	4
2	FI2102	Mechanics	4	2	FI2202	Electricity and Magnetism	4
3	FI2103	Electronics	4(2)	3	FI2203	Modern Physics	3
4		Elective Course I (*)	3	4	FI2204	Measurement Methods and Data Processing	3(1)
5		Elective Course II (*)	2	5		Elective Course IV (*)	3
6		Elective Course III (*)	2	6		ITB Compulsory Courses I (**)	2
		Total	**19**	**7**		**Total**	**19**
Semester V				**Semester VI**			
	Code	**Course Name**	**CU**		**Code**	**Course Name**	**CU**
1	FI3101	Waves	3	1	FI3201	Experimental Physics I	2(2)
2	FI3102	Thermal Physics	4	2	FI3202	Computational Physics	4
3	FI3103	Quantum Physics	4	3		Elective Course VII (*)	3
4	FI3104	Experimental Physics I	2(2)	4		Elective Course VIII (*)	3
5		Elective Course V (*)	2	5		Elective Course IX (*)	3
6		Elective Course VI (*)	2	6		Elective Course X (*)	2
7		ITB Compulsory Courses II (**)	2	7		ITB Compulsory Courses III (**)	2
		Total	**19**			**Total**	**19**
Semester VII				**Semester VIII**			
	Code	**Course Name**	**CU**		**Code**	**Course Name**	**CU**
1	FI4091	Final Project I	3	1	FI4201	Solid State Physics	3
2	FI4101	Nuclear Physics	3	2	FI4092	Final Project II	3
3		Elective Course XI (*)	3	3	FI4093	Final Project Seminar	1
4		Elective Course XII (*)	3	4		Elective Course XIV (*)	3
5		Elective Course XIII (*)	2	5		Elective Course XV (*)	3
6		ITB Compulsory Courses IV (**)	2			Elective Course XI (*)	3
		Total	**16**			**Total**	**16**

Compulsory Courses: 58 CU; *: C-Undergraduate Elective Courses; **: B – ITB Compulsory Courses

ITB Compulsory Courses

	Code	Course Name	CU
1	KU206X	Ethics and Religion	2
2	KU2071	Pancasila and Civics	2
3		Management Courses*	2
4		Environmental Courses*	2
		Total	8

ITB Compulsory Courses: 8 CU

*They are alternative courses on management and environmental courses set up by ITB. Students may take any one of them.

Undergraduate Elective Courses

No	Code	Course Name	CU	DE/E	No	Code	Course Name	CU	DE/E
1	FI3211	Advanced Quantum Physics	3	DE	26	FI4278	Computation of Granular System	3	E
2	FI2071	Instrumentation System	3(1)	DE	27	FI4175	Selected Topics on Physics of Instrumentation	2	E
3	FI3281	Statistical Physics	3	DE	28	FI3179	Sensor System	2	E
4	FI3182	Scientific Communication	3	DE	29	FI3252	Radiotherapy Physics	2	E
5	FI2083	Programming and Physical Simulation	3	DE	30	FI3152	Radiodiagnostic Physics	2	E
6	FI4184	Computational Physics	3	DE	31	FI3151	Dosimetry and Radiation Protection	3	E
7	FI2112	Introduction to Einstein Theory of Relativity	3	DE	32	FI2151	Biophysics	2	E
8	FI3241	Reactor Physics	3	DE	33	FI3251	Electrophysiology and Bioenergetics	3	E
9	FI2251	Physics of Radiology	3	DE	34	FI3163	Electromagnetic Methods	2	E
10	FI3221	Electromagnetic Interaction in Materials	3	DE	35	FI2262	Environmental Sciences and Natural Disaster	2	E
11	FI2161	Earth Physics and Complex Systems	3	DE	36	FI3266	Econophysics	2	E
12	FI3173	Advanced Electronics	3	DE	37	FI3265	Physics of Geothermal Systems	2	E
13	FI3231	Fluid Physics	3	DE	38	FI3164	Computation of Complex Fluid	2	P
14	FI4096	Independent Study A	2	DE	39	FI3267	Rock Physics	2	E
15	FI3094	Internship	2	DE	40	FI4132	Computational Materials and Quantum Devices	2	E
16	FI3095	Independent Study	2	E	41	FI3231	Introduction to Electronic Material Physics	2	E
16	FI3213	Einstein Theory of Relativity	3	E	42	FI4231	Physics and Technology of Semiconductor	2	E
17	FI3214	Group Theory and Symmetries in Physics	3	E	43	FI4133	Physics of Energy Materials	2	E
18	FI4115	Relativistic Quantum Mechanics	3	E	44	FI4232	Electromagnetic Material Processing	2	E
19	FI4241	Nuclear Reaction and Nuclear Data	2	E	45	FI4131	Nanoelectronic and Nanophysics	2	E

20	FI4142	Nuclear Thermal hydraulic and Safety	2	E	46	FI4121	Material Characterization Techniques	3	E
21	FI3242	Nuclear Fuel Management	2	E	47	FI4221	Physical Properties and Functionalization of Matter	3	E
22	FI3141	Nuclear Applications in Industry	2	E	48	FI4122	Photonic Theory and Applications	3	E
23	FI4141	Nuclear Instrumentation	2	E	49	FI4222	Synthesis and Physical Properties of Soft Matter	3	E
24	FI4242	Special Topic on Nuclear Physics	2	E	50	FI3176	Medical Instrumentation	2	E
25	FI3274	Microcontroller and Interface Systems	3	E					

DE: Directed Elective Courses E: Elective Courses

C Peer Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

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

Evidence:

- Joint Self-Assessment Report, chapter 2 (JOINT SAR FMNS ITB FINAL)
- http://www.as.itb.ac.id/en/ (Access 28.02.2015)
- Self-Assessment Report for Astronomy, chapter 2 (UPA)
- Self-Assessment Report for Mathematics, chapter 2 (UPM)
- Self-Assessment Report for Physics, chapter 2 (UPP)
- Diploma Supplement for each study programme, § 4.2

Preliminary assessment and analysis of the peers:
The Institut Teknologi Bandung (ITB) defined the study aims and the intended learning outcomes of the three Bachelor Programmes at a level of higher education which corresponds to learning outcomes relevant to level 6 of the European Qualifications Framework. This encompasses competences like advanced knowledge of the field of study and to manage complex technical activities or projects; these intended outcomes had been formulated for all three study programmes. Also "Advanced skills to solve complex and unpredictable problems" are clearly defined in the learning outcomes of all three degree programmes. But the auditors noticed that the competence to "take responsibility for managing professional development of individuals and groups" as called for in the European Qualification Framework was not properly taken up in any of the programmes. The peers encouraged ITB to complement the intended learning outcomes accordingly.

The aims and the intended learning outcomes of the study programs are published on the programme specific websites and are hence available for interested stakeholder groups. The aims of the study programmes are included in the Diploma Supplement in § 4.2 under "Program requirements". The auditors noticed that for all three degree programs the aims as published on the websites and the aims as specified in the Diploma Supplements deviated from each other. The auditors underlined that the aims and the intended learn-

ing outcomes of all degree programs must be harmonized in the official documents and the publications to ascertain that only one version is available which can be referred to. Apart from this, the auditors confirmed that the intended learning outcomes were accessible on the webpage to the relevant stakeholders.

The **Subject-Specific Criteria (SSC)** of the Technical Committee for Mathematics and Physics provide the basis for judging whether the intended learning outcomes framed by Higher Education Institutions are constituted in the degree programmes in a comprehensible manner. The auditors examined the areas of competence as set forth by the *Subject-Specific Criteria* (SSC) for degree programmes and came to the following conclusions:

For the Bachelor's Degree Program Mathematics ITB provided in appendix "MATH-C2-1" an overview of the alignment of the intended learning outcomes formulated for this degree programme with the subject-specific criteria of ASIIN. The peers confirmed that this alignment was appropriately done and underlined that all aspects of the subject-specific criteria were well referred to in Learning Outcomes; the specialist learning outcomes as well as the social learning outcomes. The peers only indicated that the competence to "use electronic media competently" may be emphasised more clearly but as it is mentioned in the Learning Outcome "to make calculation, estimation, and interpretation, with or without the aid of technologies (computers and software)" the peers concluded that this aspect was also covered.

In the appendix "SAR PHYSICS REVISED" (FINAL) ITB showed for the Bachelor's degree Programme Physics how the subject-specific criteria of ASIIN were reflected in the Learning Outcomes of this degree program. The peers concluded that this alignment was comprehensible and extensive and all relevant aspects of the subject-specific criteria of ASIIN had been observed appropriately.

In the appendix "AST2 Objective Matrix Models" ITB outlined the subject-specific criteria of ASIIN and the respective Learning Outcomes of the Bachelor's Degree Program Astronomy. There are no subject-specific criteria exclusively for Astronomy as Astronomy is subsumed as a particular part of Physics in Germany. ITB referred to the subject-specific criteria of Physics and proved in a comprehensible manner that the subject-specific criteria had been considered fully with a specific focus on Astronomy.

In summary, the auditors appreciated the systematic and transparent approach chosen by ITB to show the alignment between the subject-specific criteria of ASIIN and the learning outcomes of the three degree programs of ITB.

From a professional point of view, ITB explained that graduates from ITB are very well reputed and normally find comparatively easy working opportunities in their field of pro-

fession. This general statement is supported by the tracer studies which are being carried out regularly for each degree programme individually. The peers discovered the link on ITB's Career Centre webpage but were not able to read it as it is only available in Indonesian language. The peers understood that the professional allocation of graduates differs from programme to programme. In the Bachelor Astronomy graduates tend to turn to science journalism and work in reputable media in Indonesia. But the majority of graduates move on to Master's programmes. In Mathematics, the tracer study shows that graduates work in financial services and insurances, communication and information technology, consulting services, Transportation and Logistics. In Physics, ITB frankly admitted that this programme was not designed to produce graduates to be ready-worked for a specific job, but graduates were adaptive and trainable. As the current job market is strongly driven by new science based technologies, graduates from Physics provide strong competences in this field and are searched for. The tracer study shows that graduates find employment in the information & communication sector (30%), education (16%) as well as professional scientific and technical services (3%), mining industries (14%), and construction (3%). The peers confirmed that the competences as presented thus allow graduates to work in a sphere appropriate to the qualification.

The auditors welcomed the information that the Programme Educational Objectives were evaluated once every five years. ITB explained that different sources of information like Alumni and employer surveys and the performance of students and graduates (tracer study information) were taken into consideration to determine the effectiveness of the Programme Educational Objectives. Also students were asked to give their input to improve the teaching and learning effectiveness. Given this information and input, the curriculum of the study programmes was revised where this deemed necessary. The auditors strongly supported the involvement of stakeholders in the revision process of the study programmes.

With regard to the professional practice in education ITB underlined that a number of measures were taken to provide education with practical relevance. Even though internships are voluntary, a number of students approach the ITB Career Centre for internship opportunities and as many alumnis support ITB they provide many opportunities to do a practical internship. Besides, alumnis and representatives from businesses are invited regularly to present experiences from businesses or other potential employers. Furthermore, practical courses in laboratories are required or so-called "structured activities" which means that specific tasks are given to the students and they have to develop solutions to these tasks. Overall, the peers confirmed that the training offered was appropriately linked to professional practice.

Criterion 1.2 Name of the degree programme

Evidence:

- The names of the study programmes are published under the following links:
- www.as.itb.ac.id (Access 28.02.2015)
- www.phys.itb.ac.id (Access 28.02.2015)
- www.math.itb.ac.id (Access 28.02.2015)

Preliminary assessment and analysis of the peers:
The names of all three degree programmes are published on the subject specific webpage. The auditors confirmed that the names of the degree programmes "Astronomy", "Mathematics", and "Physics" properly reflected the intended aims and learning outcomes. The programmes are published in English and in Indonesian language. The study programmes are primarily carried out in Indonesian language.

Criterion 1.3 Curriculum

Evidence:

- Joint Self-Assessment Report (JOINT SAR FMNS ITB FINAL)
- http://www.itb.ac.id/education/ITB_undergraduate_handbook.pdf (28.02.2015)
- Astronomy: APPENDIX AST2 OBJECTIVE MATRIX MODELS
- Mathematics: APPENDIX MATH-C2-4: THE DESIGNATED MAPPING OF COURSES TO LEARNING OUTCOMES
- Physik: SAR PHYSICS REVISED (FINAL)
- http://www.as.itb.ac.id/en/test-1/curriculum (access 28.02.2015)

Preliminary assessment and analysis of the peers:
On the webpage an undergraduate handbook was published describing all bachelor degree programmes offered at ITB. This presentation of the study programmes entails the description of the curriculum and the workload in terms of credits for each individual study programme. Furthermore, for the degree programme Astronomy the auditors laudably noted that the subject-specific webpage provided an overview of the curriculum and the module descriptions. For the other two degree programmes, the auditors were unable to identify the same information on the webpage in English and strongly encouraged ITB to make the curriculum and the module descriptions available in English.

As outlined under criterion 1.1 ITB provided an analysis of the alignment of the Subject-specific criteria with the intended learning outcomes for each individual study programme under review. In addition, ITB provided objective matrices depicting which module contributes to the fulfilment of learning outcome; the respective contribution is specified in terms of “high”, “medium” or “low” contribution.

In general, the panel acknowledged that the curricula of all programmes were very much aligned to the expected learning outcomes. In some instances (Mathematics: differential equations do not follow analysis; Astronomy: the modules “Physics of stars” and “Structures of the Milky Way” are taught in the same semester) the auditors were surprised about the sequence of modules but could follow the explanation of ITB that this sequence was sensible and comprehensible in the Indonesian system; the peers had not objections. The auditors confirmed that the curriculum was designed to ensure a sound knowledge of classical physics and mathematics and provided the basic capacity to comprehend physics and mathematics-related problems. The peers understood that the first year at ITB is a common year for all students in one faculty (Faculty of Mathematics and Natural Sciences). In that year students deepen their mathematical skills from high school and are introduced to “Elementary Physics” and “Basic Chemistry” with mandatory laboratory courses and experimental works. After the visit of the laboratories the auditors confirmed that the students were made familiar with basic principles of experimentation, learnt to use modern physics measurement methods, and were in a position to assess the significance of results correctly. The peers also wanted to know if students learnt to use basic methods of computer-aided simulation, mathematical software and programming to solve mathematical problems. In Astronomy students conducted standard CCD image reduction using widely used software or in the module “Computational Astronomy” students were introduced to programming. In the final project it is expected that students apply observational or simulation data. More specifically, students were requested to use software like google sky which can be downloaded freely and make a software supported presentation. In the degree programme Mathematics, the module “Simulation and Computational Mathematics” introduced the utilization of simulation from well-known toolboxes (Matlab, Maple etc.) and taught the students to interpret the solutions. In the module “Introduction to Differential Equations” the students shall obtain competences to use computer algebra effectively and fluently to solve simulations.

ITB explained that soft skills had been considered of increasing importance and the curriculum had been modified to accommodate social skills more prominently. Presentation skills were introduced in the first semester, and students were required to make between 7 to 10 presentations per year and facilitate the following discussions; some of the presentations had to be done in English. The peers positively acknowledged that the majority

of students were almost fluent in English. Up to 40% of the accomplishments per semester were based on practical (e.g. group experiments) or oral performances. The peers confirmed that social skills were properly integrated into the curriculum.

Furthermore, the auditors underlined that objectives and intended learning outcomes for the degree programme were systematically substantiated and updated in its individual modules. The peers could comprehend which knowledge, skills and competences students will acquire in each module.

Criterion 1.4 Admission requirements

Evidence:

- http://www.as.itb.ac.id/en/test-1/admission (access 28.02.2015)
- Joint Self-Assessment Report, chapter 2.5 (JOINT SAR FMNS ITB FINAL)
- Regulation of Ministry of Education (of Indonesia) No. 034/2010
- § 2, Student Admission: Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung

Preliminary assessment and analysis of the peers:
The peers were explained that admission to the undergraduate programmes of ITB was conducted centrally by the ITB and the national committee on student selection for university studies. The management of student admission is centrally-organized at the Directorate of Education of ITB for all faculties and schools within ITB. Since 2011, ITB had been using the national-level student admission system. The national admission committee is composed from all state university delegates.

Based on regulation of Ministry of Education No. 034/2010, and more specifically spelled out in the Rector's Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung, student admission for state university is categorized into two types:

Student admission based on written and skill test

In this type of selection, student performance is evaluated through their written and skill test. The written test is clustered in two categories: science and technology (SAINTEK) and social and humanities (SOSHUM). Depending on the faculty the students want to enter they have to take another test specifically designed for the faculty the students apply for. ITB selects the best students based on the test results.

Student admission based on academic performance (non-written and skill test)

Student performance is evaluated through their subject score during high school and other relevant academic achievement (such as relevant science competition). Students also have to take the faculty-specific test.

In addition, through the Law of the Republic of Indonesia No. 12/2012, the government mandates all state universities to recruit students who have a high academic-performance but not the financial resources to pay the tuition fees. At least 20% of the new students admitted to the university have a background that does not allow them to pay the tuition fees. The government covers the financial expenses and provides incentives to the university to implement this policy.

The students who are being admitted in the first year, are considered as students of the Faculty of Mathematics and Natural Sciences and like other new students of ITB, they have to attend the so-called “First Common Year Programme”. The purpose of this “First Common Year Programme” is to ensure that all students have the same knowledge and scientific foundation before entering the actual degree programmes. At the end of this first year, each student proposes three choices of study programmes they want to enter. Based on the performance of the students in the first year, the best students are admitted to the first choice. If all places in a degree programme are occupied, students are distributed into the programmes of the second choice and so on. Finally, all students are distributed into the four programmes of the Faculty of Mathematics and Natural Sciences (Mathematics, Physics, Chemistry or Astronomy). The First Year must be completed in two years, otherwise students have to leave the university. About 3 percent of the students leave ITB due to dissatisfactory performance. The concern of the peers that students may be disappointed and drop out was neither confirmed by the students nor by the staff members. Students as well as staff members admitted that there are students who are dissatisfied if they had been distributed to their second or third choice but it was confirmed by students and staff members that in almost all cases an acceptable solution was found. Cases that students leave ITB to study elsewhere because they did not get their first degree programme choice were very rare.

The peers wondered if a change of the academic programme was possible at a later stage and learnt, that in Article 7.1 of the “Academic and Student Regulations” ITB defined that a student registered in a Study Programme was not allowed to move to another Study Programme at the same level. A change of study programme can only be continued if there is a proof that the current Study Programme the student had chosen was unsuitable. This change of study programme could be continued, considering the students’ academic achievement in the currently attended programme and the availability of the education facilities in the study programme the student would like to join. The students con-

firmed that they know cases where a change of the study programme or even a change of the faculty had taken place.

The auditors confirmed that the requirements and procedures for admission are transparent and clear. All applicants are treated according to the same standards and regulations. According to the peers, especially the faculty-specific test supported the students in achieving the learning outcomes. Furthermore, the auditors appreciated the "First Common Year Programme" as it ascertains that all students meet adequate standards when entering the degree programme.

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

The peers thanked ITB for outlining the implicit consideration of "taking responsibility for managing professional development of individuals and groups" in the intended learning outcomes and agreed with ITB that this competence is covered in the design of the curriculum. However, the auditors see a distinction between "working in groups and teamwork" versus "taking responsibility for the management of professional assignment". But the peers make it very clear that they assess this lack of explicit statement of minor importance and simply encourage the Faculty of Mathematics and Natural Sciences to amend the learning outcomes once the goals of the degree programmes are being reviewed.

The peers appreciated that ITB issued Diploma Supplements for students who are graduating and used a uniform template following the Decree of Ministry of Education and Culture, RI, No. 81/2014. However, the peers underlined that the statistical distribution of passing grades in each programme showed how the national scale was actually being used in that context and allowed for comparison with the statistical distribution of grades in a parallel programme of another institution. Hence the auditors stick to the intended requirement that the Diploma Supplement must include the grade distribution; this should be included in the provisional template of Diploma Supplements for all degree programmes of ITB.

The peers verified that the aims and learning outcomes of UPA, UPM and UPP in Diploma Supplements had been harmonized with other respective publications and decided to refrain from the intended requirement. Furthermore, the auditors verified that the curriculum of UPP and UPM had been made available in English and had been updated on the subject-specific webpage. However, although the peers could finally find the syllables and module handbook on the English webpage after considerable searching they under-

lined that the module descriptions should be made available in a way that they can be easily identified.

In addition, the peers underlined that the Faculty of Mathematics and Natural Sciences should establish procedures to regularly reflect upon the curriculum of the degree programmes and update where this deemed feasible and necessary to make sure that trends and developments in the different fields of science are properly reflected in the academic programmes.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Astronomy: APPENDIX AST2 OBJECTIVE MATRIX MODELS
- Mathematics: APPENDIX MATH-C2-4: THE DESIGNATED MAPPING OF COURSES TO LEARNING OUTCOMES
- Physik: SAR PHYSICS REVISED (FINAL)
- http://www.as.itb.ac.id/en/test-1/curriculum (access 28.02.2015)
- § 1, Article 1.7 SKS Load: Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung
- Guidelines for Credit Earning and Credit Transfer at Institut Teknologi Bandung
- http://lp4.itb.ac.id/wp-content/uploads/TERJEMAHAN-SK-CreditTransfer-Final1.pdf (access 28.02.2015)
- Module handbooks

Preliminary assessment and analysis of the peers:

The programme structure of Undergraduate Programme within Institut Teknologi Bandung (ITB) is described in the "Regulation of Academic and Student Affairs". All degree programmes are divided into modules which are accredited with credit points and comprise a sum of teaching and learning. The auditors understood that the "Common First Year Programme" intended to strengthen the comprehension of basic sciences and enhancing required learning aptitudes. The Bachelor stage (Sarjana) managed by the programmes within each faculty or school intended to develop the knowledge and skill of the chosen discipline. The minimum total credit for Undergraduate Programme at ITB is 144 credits which is equal to 200 European Credit Transfer and Accumulation System (ECTS,

using 28.8 hours per credit). The normal duration for the subject-specific studies is 6 semesters with minimum 108 credits (150 ECTS). The peers wondered if the four years bachelor programme with the first common year and three years of subject specific studies was equivalent to a bachelor's programme of 180 credit points. The auditors agreed that parts of the first common year programme had to be seen as providing subject specific basic knowledge in mathematics and natural sciences. The peers had no doubt, also considering the learning outcomes which are discussed under criterion 3, that the study programmes offered at ITB are comparable to other bachelor programmes, in terms of input as well as in terms of output.

In general, the Undergraduate Programmes at ITB are designed to be completed within four academic years. The maximum length of study is limited to six years. The peers were explained that the majority of students completed their degree in the given 4 year's time frame and only a minority needed to extend the studies to 6 years. According to ITB this applied to all study programmes and the peers could comprehend that the curriculum was structured in a way to allow students to complete the degree in the regular timeframe.

The peers examined the curriculum and module descriptions and noticed that all degree programmes comprise a number of compulsory and elective modules which allowed the students to define an individual focus of study. The peers also confirmed that the modules properly contributed to the requirements of the degree programme and ensured that each module objectives supported the qualification level and the overall intended learning outcomes. The auditors wanted to know if the curriculum provided sufficient flexibility to study abroad or conduct a practical placement in another country. ITB explained that a number of international co-operations were maintained by the university. ITB also supported a number of double degree programmes with universities in the Netherlands, Japan, Spain, or Australia but only for graduate courses. For undergraduate programmes ITB rather supports short term assignments or short term study exchanges, like students coming from abroad and finishing their theses (e.g. 2 students from Rüsselsheim). According to ITB, student mobility depends on the degree programme, but in Physics, for example, out of the intake of 100 students 15-20 go abroad during their study programme. Regarding the recognition of credit points, ITB explained that there are a number of agreements with specific universities in place and students can arrange learning agreements with the supervisor to make sure credit points are easily recognized. But even if learning agreements had not been drafted beforehand, students can get credit points accredited if the modules are also part of the curriculum of ITB. This needs to be approved by the supervisor. The peers understood that student mobility was practically

taking place and the "Guidelines for Credit Earning and Credit Transfer at Institut Teknologi Bandung" provided a clear regulation of recognition of credit points.

Work placements or internships are not required in any of the degree programmes but it is possible to conduct internships as part of the electives. According to the university, students were encouraged by ITB to carry out internships and ITB also provided support. ITB further explained that many alumnis are very willing to support ITB and offer work placements. Students who do internships had to write a report about the internship and make a presentation. ITB further explained that internships were not made mandatory because many students intended to pursue a more academic career. The auditors could understand this reasoning.

Criterion 2.2 Work load and credits

Evidence:

- § 4, Article 4.3 Study Load per Semester: Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung
- http://www.as.itb.ac.id/en/test-1/curriculum (access 28.02.2015)
- Self-Assessment Report for Astronomy (UPA)
- Self-Assessment Report for Mathematics (UPM)
- Self-Assessment Report for Physics (UPP)
- Module Descriptions of the three degree programmes
- Joint Self-Assessment Report, chapter 3.2 (JOINT SAR FMNS ITB FINAL)
- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:

The normal study load for each regular semester for the Undergraduate Programme is limited to a maximum of 20 (twenty) SKS. According to the self-assessment report provided by ITB, the normal workload for each regular semester is limited to 800 hours, corresponds to 20 credit unit (27.8 ECTS). 18 SKS correspond approximately to 25 ECTS credit points (conversion factor 1 SKS correspond approximately to 1,38 ECTS points).

The standard evaluation questionnaires contain a standard question on the workload in relation to the credit points earned (Question 8. "Lecturer gives reasonable workload proportional to the course's credits"). In the analysis of this question for Physics it became evident that in most cases students assess the work-load relation to the credit

points earned as reasonable with some exceptional voices indicating that this was not true for all modules. During the discussion with the students they confirmed, that only in exceptional cases the students have the feeling that the work-load credit point relation was not realistic. In any case the auditors took positively note of the fact that the work-load evaluation was part of the standard evaluations and could see that the data was analysed and available. In the joint report of the Faculty of Mathematics and Natural Sciences ITB provides an overview of the normal credits and the corresponding workload per semester which shows a balanced distribution of workload. On the subject-specific webpage of Astronomy, the curriculum and the distribution of workload is published although the elective course had not been included which makes it difficult to properly assess if the workload is really balanced. For Mathematics and Physics the curriculum is not published on the webpage at all. Based on the self-assessment reports the workload is fairly balanced over the semesters and the estimated time budgets are realistic enough to enable students to complete the degree within the given time-frame.

In § 1, Article 1.6 of the "Academic and Student Regulations" it is defined that one SKS of academic load for the Undergraduate Program is equivalent to 3 (three) hours a week of the student's efforts within one regular semester which consists of:

a. One (1) hour of scheduled academic interactions with the teaching staff, or face-to-face learning activities.
b. One (1) hour of structured activities related to lectures, such as doing the assignments, solving problems, writing papers, or reviewing literature.
c. At least one (1) hour of independent activity, students' independent activity to obtain better understanding of the subject matters and to prepare academic assignments such as reading references.

Based on this rule of the "Academic and Student Regulation" the auditors confirmed that in the module handbook, for each individual module the hours of lectures, the hours of structured work, and the hours of individual study per week were outlined.

Criterion 2.3 Teaching methodology

Evidence:

- Joint Self-Assessment Report (JOINT SAR FMNS ITB FINAL)
- Self-Assessment Report for Astronomy (UPA)
- Self-Assessment Report for Mathematics (UPM)
- Self-Assessment Report for Physics (UPP)

- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:
The Undergraduate Programmes at ITB are full-time programme with classroom, structured, and self-study activities. The staff members of ITB apply various teaching and learning methods (such as lectures, computer training and classroom and lab exercises, individual and group assignments, seminars and projects). Structured activities include tutorial, homework, assignment (reading or problem exercises), and practical activities. Group project assignments are also given in some courses to develop students' skill in teamwork, discussion, and coordination. The peers concluded also with reference to the remarks of the students that the teaching methods and instruments used supported the students in achieving the learning outcomes. In the self-assessment report of Physics, it was frankly stated that the weakness that needs to be improved is that in some courses tasks/materials for independent work are not well balanced compared to the work load. The peers strongly encouraged the responsible staff members that the material for independent work should be well organized and be prepared before the term.

As indicated in the preceding criterion, the peers acknowledged that in § 1, Article 1.6 of the "Academic and Student Regulation" a clear definition and distribution of face-to-face, structured and self study activities was provided and is well reflected in the module handbooks.

The peers wanted to know where the students learnt independent academic research and writing. ITB explained that in the "Common First Year" there are several compulsory modules for all students like "Scientific Writing in Indonesian", "Introduction to Information Technology", and "Academic Writing (English)". Furthermore, in the 7th and 8th semester, the curriculum of the Faculty of Mathematics and Natural Sciences includes a final project, which is a written report related to a topic in the student's major studies. The project is conducted independently under guidance of a supervisor and consists of literature study, empirical research (including experimentation/observation), or simulation. This Final Project report is then defended orally in front of examiners. The peers confirmed that independent academic research and writing are properly implemented in the curriculum.

Criterion 2.4 Support and assistance

Evidence:

- Article 4.5, Academic Advisor: Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung

- Joint Self-Assessment Report (JOINT SAR FMNS ITB FINAL), chapter
- http://www.international.itb.ac.id/web/ (access 28.02.2015)
- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:
The auditors appreciated the concept of the "Academic Advisor" as it is also defined in Article 4.5 in the "Regulation for Academic and Student Affairs". As students commence their study at the common first year programme, academic advisors are appointed for them. The academic advisor is supposed to play the role as a "parent-like" who give advice to students when selecting the courses. One academic advisor will be responsible to supervise about 20 students. The peers learnt that it is not planned that the academic advisors are exchanged. In case of problems or conflicts, which occur rarely as students stated, the student can turn to the Head of Department. According to the students, disagreements were normally settled amicably. The students described a case, where an academic advisor encouraged a student to turn to a research field which was not part of the programme. The student was able to convince the advisor that this research field was not supporting the academic advancement which was accepted. Depending on the kind of problem, also psychological services are offered. If students feel under severe pressure they can also turn to the Dean. In addition, students can raise their academic or non-academic problems in the Counselling Centre. The Agency for Students managed all types of scholarships and provided respective support for students who were eligible. ITB's health centre offered health services for students and faculty members. The ITB Career Development Centre (ITB CDC) maintained an on-line job application and career opportunity information system for all ITB students. ITB also maintained a Language Centre which offers courses for ITB students and staff particularly pre-departure courses like "TOEFL Preparation Courses" and "Courses in English for Specific Purposes" especially in science and technology. The peers confirmed that the webpage of the International Office provided all required information about studies at ITB. Even an online tour through some of the facilities of ITB was offered. The auditors concluded that there were adequate resources available to provide individual assistance, advice and support for all students. The peers underlined that the allocated advice and guidance, namely the academic advisor assisted the students in achieving the learning outcomes and in completing the course within the scheduled time.

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

The peers understood the explanation of ITB that the "research-based learning (RBL) method" giving open ended problems to students which must be submitted at the end of

semester may lead to a high work load at the end of a semester. The peers laudably noted the response of ITB to aim for a better coordination of courses at the degree programme of Physics. The peers acknowledged that on the subject-specific webpage of Astronomy the total credit unit of elective courses and the distribution of workload were published on the webpage; the same applied to the curriculum of UPP and UPM which had been published on the subject-specific webpage. The peers confirmed their encouragement that the material for independent work of the Physics degree programme should be well organized and prepared before the commencement of the semester.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Article 1.4 Regular Semesters, Article 5.1 Evaluation of Learning Processes: Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung
- Module Descriptions
- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:

The peers were explained that the Faculty of Mathematics and Natural Sciences adopted the concept of multi-component assessments to measure the achievement of course outcomes and thus the Programme's learning outcomes. The types of evaluations used in each course are determined in the syllabus and the module descriptions of the curriculum. In Article 5.1 of the Academic and Student Regulations it was outlined that the evaluation of the students' learning processes should be done at least twice a semester, during the semester and at the end of the semester. In the module descriptions it was specified that in most modules the overall final grade was composed of the mid-term test, the final examination, quizzes and home work. In most modules the percentage of each test result for the overall final mark of the module was clearly defined but not in all cases (e.g. Mechanics, Electricity and Magnetism, Physics of Waves etc.) and the peers recommended providing the weighing factor of partial grades consistently in the module descriptions. As far as the auditors comprehended, the final exam was a comprehensive test covering the content of the entire module. In principal the auditors supported this approach of a "continuous assessment" as it offered students continuous feedback on their progress in

developing competences. Exams were module-related and structured to cover all of the intended learning outcomes. The peers noticed that the most common evaluation used was written examinations; however quizzes, laboratory works, assignments (reading, small projects, simulation, report, etc.), presentations, seminars, and discussions also contributed to the final grade as specified in the module descriptions. Looking at the fairly large number of assignments and presentations, the auditors were convinced that the students had sufficient opportunities to develop their oral skills to express a scientific topic appropriately. The peers also took positive note of the active and communicative students during the audit. Students have the right to inquire their marked examination, quizzes, assignments and ask questions should there be a grading mistake.

The peers learnt that in Article 1.4 of the "Academic and Students Regulation" that a semester comprised 16 week of which at least 14 weeks are dedicated to lectures and 2 weeks to examinations. The Directorate of Education of ITB arranged the schedule of examinations; the mid-semester examination was usually held in week 8 or 9, and the end-semester examination during the two weeks following the completion of classes. In addition to course schedule publication, the examinations' dates and times were normally announced in each undergraduate programme's announcement board or could be accessed online. The students confirmed that the examinations were well organised and fully transparent to the students. Some students indicated that they had to take up to three exams in one day. According to the students this was still feasible but the auditors underlined their concern that the examination load and preparation times were not adequate and recommended coordinating the examinations in a way that students have sufficient time to prepare for them. The auditors understood that the Final Score List needed to be submitted one month after the period of end-semester examinations to ascertain that no delays hampered the progression of the students. Article 5.2 of the "Academic and Student Regulations" stated clearly that evaluation of a student's academic performance is done through the evaluation adopting the principles of justice, relevancy, and accountability. The peers gained the conviction that exams were marked using transparent criteria.

The peers were unable to find a concise set of rules in the "Academic and Student Regulations" for the repetition of examinations if a student failed the examination. Orally, the peers were explained, that students failing an exam had the opportunity to participate in short semesters during the summer to repeat the essence of the modules and repeat the test. If this re-visit examination was also failed, the student was required to repeat the entire module which normally leads to a prolongation of the study time. The auditors kindly requested ITB to provide the rules and regulations that specify the repetition of examinations for those who failed. The peers appreciated Article 4 in the "Academic and

Student Regulations" stating that disabled students get special services in accordance with the institute-provided facilities; they wondered if other compensational measures were available too.

At the end of each degree programme, the curriculum includes a final project which is a written report related to a topic in the student's major studies. The final project is conducted in two semesters (one year) and divided into Final Project 1 and Final Project 2, each worth 3 credits (Indonesian). Final Project 1 usually consists of exposition regarding the topic and problem that will be discussed, the literature study, motivation in choosing the topic, and methods that will be utilized. Final Project 2 then consists of empirical research or simulation conducted to solve the problem. The project is conducted independently under guidance of a supervisor; the supervisor can be selected by the student and does not have to be the academic advisor. The topic and content of the project might be decided by both the student and supervisor. The peers underlined that the final theses as examined by the peers did not only demonstrate a thorough understanding of the matter but they could comprehend that it also included analytical work conducted individually by the candidates. This Final Project report has to be defended orally in front of examiners. The auditors confirmed that the final theses they had examined and as far as they could understand them were of adequate standard.

ITB added that it was possible that a student carried out the final thesis outside the university. Some lecturers maintained close connections to private businesses and if the supervisor and the student agreed on a topic accepted by the private company the project could be conducted in company. The first supervisor has to be the staff member from ITB, but the project could also be co-supervised by an expert from outside of the respective undergraduate programme. The auditors concluded that there are clear rules for final projects written outside the university in place.

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

The peers did not comprehend the explanation of ITB why the weighing factor of partial grades could not consistently be defined in the module descriptions; in most module descriptions this seemed to be possible and should simply be applied consistently for all modules. The peers stick to their intended recommendation. The auditors also appreciated that the Faculty of Mathematics and Natural Sciences sought improvement of exam organization and wanted to coordinate with the Directorate Education to minimize the overload of examinations taken in one day. The peers emphasized their intended recommendation for the follow-up during the re-accreditation.

Based on the explanation provided by ITB regarding the possibilities to retake exams the auditors concluded that the exact procedures for the repetition of examinations depended on the individual course lecturer and no binding regulation was in place granting a consistent and transparent procedure for all students. The peers underlined that the rules and regulations of course repetition must be defined in a binding official document and stressed that this matter should be taken up with the Vice Rector for Academic and Student Affairs.

4. Resources

Criterion 4.1 Staff

Evidence:

- Staff handbook for all three degree programmes under review
- Joint Self-Assessment Report (JOINT SAR FMNS ITB FINAL), chapter 5
- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:
ITB provided staff handbooks for all three degree programmes. The auditors were impressed about the number of staff members who had received their doctorate degree from international universities (USA, Japan, Europe). ITB explained that the Indonesian government encouraged the universities to employ staff members holding a doctorate degree. Retired staff members were normally replaced in due time. Regarding the availability of appropriate new staff members, ITB added that for some positions ITB received 15-16 applicants and for other positions ITB has difficulties to identify appropriate candidates at all. The auditors confirmed that the succession of staff members was regulated and the composition, the scientific orientation and the qualification of the teaching staff team were suitable for the degree programmes under review.

Regarding the amount of staff members, the peers could comprehend that sufficient resources were available to provide appropriate assistance and advice to students. The auditors referred particularly to the concept of the academic advisors who provide individual support to students.

Regarding research activities the peers learned that ideally, the staff members dedicated about 40% of their time to teaching, 30% to community services and about 30% to research. In reality, the teaching load is higher and requires more than 40% of the time

available. Especially the summer breaks were used for research activities. ITB added that it maintained a number of international research programmes and research with partner institutions aiming at joint publications. For new staff members, the track record of research activities and publications is one of the evaluation criteria. The government was also keen to improve publications in international journals and provided incentives for publications; the more prestigious the journal the higher was the benefit. The number of publications in international journals increased significantly lately. ITB underlined that all staff members were involved in research activities because this was an additional source to generate resources. The auditors comprehended that research activities played an important role at ITB and that students were involved in these research activities where feasible. The peers confirmed that the research and development activities carried out by the teaching staff were in line with and support the level of academic qualification aimed at.

Criterion 4.2 Staff development

Evidence:

- Joint Self-Assessment Report (JOINT SAR FMNS ITB FINAL), chapter 5.2
- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:
ITB explained that there were several concepts to enhance the didactical competences of staff members. New staff members, for example, were required to take short courses in teaching called “Applied Approaches” that were organized by ITB. A number of lecturers had worked as teaching assistants abroad and gained teaching experiences at the respective institutions. The Indonesian government made available means for staff members to go abroad and further improve their qualification. In addition, faculty members are encouraged to present their research papers in national and international conferences, and to collaborate with colleagues from leading universities abroad.

The peers saw that ITB offered opportunities to staff members to further develop their professional and teaching skills and concluded that the evaluations provided feedback on the teaching competences of staff members.

Criterion 4.3 Funds and equipment

Evidence:

- Self-Assessment Report for Astronomy, chapter 5.3 (UPA)

- Self-Assessment Report for Mathematics, chapter 6.2 (UPM)
- Self-Assessment Report for Physics, chapter 5.3 (UPP)
- Inspection of laboratories of all three degree programmes
- Audit discussions with programme coordinators, lecturers, students

Preliminary assessment and analysis of the peers:
The self-assessment reports of all three degree programmes provided a detailed list of equipment available; the auditors visited the laboratories and gained a positive impression of the facilities and technical equipment available at the Department of Astronomy and the Department of Mathematics and concluded that the laboratories were adequate for basic education. The peers were not fully content with the facilities at the Physics Department because particularly the equipment for student experiments was not satisfactory. The peers expressed their view that the number of equipment was too little regarding the number of students who had to work at the laboratory equipment at a time. The peers indicated their concern that the students might have difficulties to fully achieve the intended learning outcomes under the given circumstances and recommended to enhance the laboratory equipment in the Physics Department to allow for laboratory practices of groups of two students.

ITB added that the University had received a new Campus about 20 kilometres far away from the main campus with 7 new buildings under construction; even on the main campus a number of new buildings were being built. The peers understood that ITB was expanding its facilities and would be able to provide additional resources in future where required. The students were, in general, satisfied with the equipment: the opening hours of the library were sufficient and computer labs were available in an acceptable quantity. For all three degree programmes the necessary computer hardware and also the software were available. In some cases the basic text books had only few copies at the library but the students indicated that photocopies could be made where need be. The peers concluded that the equipment was sufficient to support the achievement of the intended learning outcomes except the lab equipment in Physics.

The peers were explained that financial sources for ITB originated from Government Funding, Society Funding, and Tuition fees. The report provided an overview of the “operational budget” and the “research grants”. The peers were impressed to see that the operational budget steadily increased over the last years and learnt that the government made additional means available to further upgrade Higher Education in Indonesia. The peers wondered about the fluctuation of research funds and were told that research funds also come from private businesses and depend on the research cooperation. Hence, the amount fluctuates depending on the additional means received from private

businesses. The auditors were convinced that the financial means were sufficient and secured for the timeframe of the accreditation.

The peers were told that ITB had signed a number of cooperation agreements with different international universities. Internal cooperation within the Faculty of Mathematics and Natural Sciences was managed by the Dean. The peers concluded that internal and external cooperation was based on transparent regulations.

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

The peer acknowledged that time for research activities was available for all lecturers even though not to the envisaged extent.

The auditors took positively note of ITB's commitment to support UPP to upgrade the laboratory equipment to be able to carry out experiments and achieve the student's learning outcomes; the peers kept the recommendation to ensure the follow-up during the re-accreditation.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- To examine the module descriptions the following links had been consulted:
- www.as.itb.ac.id (Access 28.02.2015)
- www.phys.itb.ac.id (Access 28.02.2015)
- www.math.itb.ac.id (Access 28.02.2015)

Preliminary assessment and analysis of the peers:

The peers could find the module descriptions and the curriculum on the English webpage of the Astronomy degree programme of ITB; for Mathematics and Physics the module descriptions were not available on the webpage. ITB explained that all new students received the full syllables of their programmes upon arrival but the peers indicated that the degree programmes should also be transparent to other interested stakeholders. International students, for example, were not able to comprehend the content of the degree programmes and were not able to decide if the programmes offered were suitable for them. The peers underlined that the module descriptions, the curriculum and other rele-

vant information of the degree programmes should be made available on the subject-specific webpage.

In general, the auditors were impressed by the quality of the module descriptions and noted positively that the modules had reasonable names and identification codes, responsible coordinators and lecturers. The work load was properly specified in lectures, tutorials, structured activities and individual study. Credit points were indicated and the intended leaning outcomes were subdivided into knowledge, skills, and competences. The type of examination and the calculation of the module mark were outlined, even though not consistently for all modules (e.g. Mechanics, Electricity and Magnetism, Physics of waves, etc.). Also recommended literature was provided in the module descriptions. The peers noticed that the "date of last amendment" was missing. Furthermore, the auditors pointed out that the numbering of the modules in the module handbook and in the transcript of records do partly not match (e.g. Physics: Module Mechanics, Electronics; Mathematics: Discrete Mathematics, Simulation and Computational Mathematics) and the Transcript of Records for Mathematics is only available in Indonesian language. In some modules only the module responsible is mentioned but not the lecturer (e.g. Introduction to Engineering and Design) or the prerequisites are missing. Even though the peers only mentioned minor issues they still recommend modifying the modules descriptions based on the proposed amendments.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Certificate in Indonesian and English language for each degree programme
- Transcript of records in Indonesian and English language for each degree programme
- Diploma Supplement in Indonesian and English language for each degree programme

Preliminary assessment and analysis of the peers:

The peers understood that after graduation, a degree certificate was issued to each graduate. Exemplary certificates of each degree programme had been made available to the auditors. Additionally, a transcript of records and a Diploma Supplement in Indonesian and English language were printed and forwarded to the graduates.

These documents provided information on the student's qualifications profile and individual performance as well as the classification of the degree programme with regard to Indonesian education system (Diagram of Education level in Indonesia).

The individual modules and the grading procedure on which the final mark is based are explained in the module descriptions. As indicated in criterion 3, there are a few module descriptions where the grading procedure is not transparently explained. The peers could not find any indication of statistical data as set forth in the ECTS User's Guide to allow readers to categorise the individual result/degree. The auditors underlined that the Diploma Supplement must include the grade distribution (statistical data).

Criterion 5.3 Relevant rules

Evidence:

- Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung
- Guidelines for Credit Earning and Credit Transfer at Institut Teknologi Bandung
- http://lp4.itb.ac.id/wp-content/uploads/TERJEMAHAN-SK-CreditTransfer-Final1.pdf (access 28.02.2015)

Preliminary assessment and analysis of the peers:

The peers acknowledged that in the “Academic and Student Regulations” a full section on “Student Ethics” clearly defined the behavioural expectations ITB has towards the students. Furthermore, the section on “Academic Regulations” explained the rights and duties of ITB and students in detail. The auditors could see that all necessary rights and duties of both ITB and students are clearly defined and binding for all relevant stakeholders. The peers could not find the “Academic and Student Regulations” on the webpage and kindly request ITB to provide an indication where this regulation is published.

The peers understood that the students received all relevant course material in the language of the degree programme including the syllables at the beginning of each semester. In addition, most information was also available on the intranet accessible for all students. The peers added that all course-related information particularly in Physics and Mathematics needs also to be available in English on the programme specific webpage.

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

The peers comprehended that some of the shortcomings mentioned for the module descriptions had been clarified and supported that ITB wanted to update the module descriptions. Regarding the Diploma Supplement the peers had underpinned their standpoint that statistical data as an add-on would be required for transparency purposes. The auditors were unable to open the link for the "Academic and Student Regulations" and highlighted that this information needs to be publically available.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Joint Self-Assessment Report (JOINT SAR FMNS ITB FINAL), chapter 6
- Article 5.1 Evaluation of Learning Processes: Rector Decree No. 169/SK/I1.A/PP/2012 on Academic and Student Regulations Institut Teknologi Bandung
- https://karir.itb.ac.id/tracerstudy/ (access 28.02.2015)
- https://karir.itb.ac.id/tracerstudy/report (access 28.02.2015)
- https://karir.itb.ac.id/tracerstudy/uploads/report_prodi/FMIPA%20TS%202014.pdf (access 28.02.2015)

Preliminary assessment and analysis of the peers:

The auditors were explained that the University applied two types of quality assurance system, namely the Internal Quality Assurance and External Quality Assurance systems. The Internal Quality Assurance encompasses all activities focused on the improvement of teaching and learning quality within the university. The External Quality Assurance focused on both national and international accreditation. National accreditation is conducted by National Accreditation Agency of Higher Education (NAAHE). ITB maintained a Quality Assurance Unit which was in charge of preparing the guidelines and quality standards for institutional programmes and carry out the respective activities. The auditors had not received a quality assurance policy where ITB provided its understanding of qual-

ity and quality assurance and presented the techniques applied to ensure quality. The peers kindly request the quality assurance policy.

In Article 5.1 Evaluation of Learning Processes of the "Academic and Student Regulations Quality" it was defined that the evaluation of the students' learning processes should be done at least twice a semester, during the semester and at the end of the semester. The evaluations are implemented both by online and written surveys; students have to submit their evaluation results to obtain their grades which enforces high participation of the students. ITB staff members reported that especially the mid-term results were discussed and measurements for improvement were defined. If staff members received bad evaluation results the Head of Department discussed this with the lecturers and possibly encouraged them to take additional didactical training. If the bad performance persisted the Dean would talk to respective lecturer. Students had the right to inquire their marked examination and pose questions. Furthermore, there was also a complaint box available which was used occasionally. The evaluation results were published in a generalized way but not for individual modules. The peers learnt that it was not a custom to discuss the evaluation results with the students. The students explained that they could approach lecturers directly if they were discontent with certain aspects of a lecture and some lecturers changed the lecture according to the recommendation of the student. Even though the peers could see that the results of evaluations were used to further improve the degree programmes and the students could raise issues directly, the auditors encouraged ITB to request the lecturers to discuss the results with the students to include the students more actively in the quality management feedback loops.

In addition to the student's course evaluations, there is a fresh graduate survey and just prior to graduation; ITB distributed a standardized questionnaire to the graduating students regarding their educational experience in the programme and their readiness to enter the job market. Furthermore, ITB explained that the university conducted formal tracer studies to alumni who have worked in various fields to reflect their educational experiences in the programme and the impacts to their professional career paths. The surveys had been conducted through email and online forms with a response rate of 65 to 75%, in Astronomy even 87%.

In Astronomy and Physics, the evaluation indicated that most of the achievement of the learning outcomes had been very satisfactory but some "hard skills" like "knowledge and problem solving skills" and "experimental skills" of the students needed to be improved. In Mathematics the evaluation results showed that all intended Learning Outcomes were attained, although not to the extent of the initial design. The programme responsible staff members grew aware that there was room for improvement, especially for the learning outcomes "Building Knowledge" and "Self-development". The Department considered

revitalizing particular courses (Numerical Mathematics and Probability Theory) to improve in these fields.

The available evaluation data further indicated that the students who graduate on time (in 8 semesters or less) is about 50% of the intake students. The other students need longer time to complete their study; the maximum duration accepted is 12 semesters. According to the statistics, the actual drop-out rate is very low.

Regarding job market perspectives (also compare criterion 1.1) the peers learnt that graduates from a well-know university like ITB usually find employment within a reasonable timeframe after graduation. Based on data of the tracer study of 85 alumni of Physics students enrolled in 2006, it could be seen that the waiting time for graduates of the Undergraduate Programme in Physics to get the first job was 4.5 months.

The tracer study also informed that in Physics, for example, 40% of graduates work in job fields that are suitable with their study and 60% of graduates worked in related physics job fields.

The peers concluded that ITB had considerable quality assurance measures in place to assess the quality and the relevance of its degree programmes and maintained closed feedback loops to improve the programmes if deficiencies are stated.

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

The peers comprehended that a university-wide policy for quality assurance was in place and gratefully received the questionnaires even they were unable to read them. Apart from this the peers concluded that the quality assurance system was, in principal, of good quality and only recommended to include students more systematically into the feedback loops.

D Additional Documents

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

1. Rules regarding the repetition of exams if a student failed the examination
2. Indication where Academic and Student Regulations are published
3. Policy on quality assurance

E Summary: Peer recommendations (30.05.2015)

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

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ba Astronomy	ASIIN-seal with requirements	30.09.2020
Ba Mathematics	ASIIN-seal with requirements	30.09.2020
Ba Physics	ASIIN-seal with requirements	30.09.2020

Requirements

A 1. (ASIIN 3) The rules and regulations of course repetition must be defined in a binding and official document. The “Academic and Student Regulations” must be publically accessible.

A 2. (ASIIN 5.2) The Diploma Supplement must include the grade distribution (statistical data).

Ba Mathematics, Ba Physics

A 3. (ASIIN 5.1) The module descriptions and other relevant information of the degree programmes must be made available on the subject-specific webpage.

Recommendations

E 1. (ASIIN 5.1) It is recommended to modify the modules descriptions based on the proposed amendments outlined in the report (weighing factor of partial grades).

E 2. (ASIIN 4) It is recommended to coordinate examinations in a way that students have sufficient time to prepare for them. The re-evaluation should be possible for every course after several weeks.

E 3. (ASIIN 6.1) It is recommended to include the students more systematically in the feedback loops.

E 4. (ASIIN 1) The Faculty of Mathematics and Natural Sciences should establish procedures to regularly reflect upon the curriculum of the degree programmes and update them where this deemed feasible and necessary.

Ba Physics

E 5. (ASIIN 5.3) The Physics laboratory should be improved so that experiments can be done in groups by two.

F Comment of the Technical Committee 12 - Mathematics (08.06.2015)

Assessment and analysis
The technical committee discusses the procedure. All in all, it deems the assessment of the peers as well as the proposed requirements and recommendations adequate.

The technical committee 12 – Mathematics recommends the award of the seal as follows

Degree Programme	ASIIN-seal	Maximum duration of accreditaiton
Ba Mathematics	With requirements	30.09.2020

Requirements

For all degree programs

A 1. (ASIIN 3) The rules and regulations of course repetition must be defined in a binding and official document. The “Academic and Student Regulations” must be publically accessible.

A 2. (ASIIN 5.2) The Diploma Supplement must include the grade distribution (statistical data).

Ba Mathematics, Ba Physics

A 3. (ASIIN 5.1) The module descriptions and other relevant information of the degree programmes must be made available on the subject-specific webpage.

Recommendations

For all degree programs

E 1. (ASIIN 5.1) It is recommended to modify the modules descriptions based on the proposed amendments outlined in the report (weighing factor of partial grades).

E 2. (ASIIN 4) It is recommended to coordinate examinations in a way that students have sufficient time to prepare for them. The re-evaluation should be possible for every course after several weeks.

E 3. (ASIIN 6.1) It is recommended to include the students more systematically in the feedback loops.

E 4. (ASIIN 1) The Faculty of Mathematics and Natural Sciences should establish procedures to regularly reflect upon the curriculum of the degree programmes and update them where this deemed feasible and necessary.

G Comment of the Technical Committee 13 - Physics (10.06.2015)

Assessment and analysis for the award of the ASIIN seal:

The technical committee discusses the procedure. Even after reading the report it wonders why the peer panel decided to recommend a regular update of the curricula. The technical committee deems this might easily be misunderstood as a justification for significant change of once accredited study programs. Therefore it suggests deleting the respective recommendation.

Despite minor editorial modifications the technical committee deems the assessment of the peers as well as the proposed requirements and recommendations in all other points to be adequate.

The technical committee 13 – Physics recommends the award of the seal as follows

Degree Programme	ASIIN-seal	Maximum duration of accreditaiton
Bachelor Physics	with requirements	30.09.2020
Bachelor Astronomy	With requirement	30.09.2020

Requirements

A 1. (ASIIN 3) The rules and regulations of course repetition must be defined in a binding and official document. The “Academic and Student Regulations” must be publically accessible.

A 2. (ASIIN 5.2) The Diploma Supplement must include the grade distribution (statistical data).

Ba Mathematics, Ba Physics

A 3. (ASIIN 5.1) The module descriptions and other relevant information of the degree programmes must be made available on the subject-specific webpage.

Recommendations

E 1. (ASIIN 5.1) It is recommended to modify the modules descriptions based on the proposed amendments outlined in the report (weighing factor of partial grades).

E 2. (ASIIN 4) It is recommended to coordinate examinations in a way that students have sufficient time to prepare for them. The re-evaluation should be possible for every course after several weeks.

E 3. (ASIIN 6.1) It is recommended to include the students more systematically in the quality management feedback loops.

Ba Physics

E 4. (ASIIN 5.3) The Physics laboratory should be improved so that experiments can be done in smaller student groups.

H Decision of the Accreditation Decision (26.06.2015)

Assessment and analysis for the ASIIN label:
The Accreditation Commission discussed the procedure and decided to add one requirement referring to the relative statistical data which needs to be shown in the Diploma Supplement. Furthermore, it decided to delete recommendation number 4 because regular revision of the curriculum should be good practice of a living quality assurance system. The Accreditation Commission accepted all the other requirements and recommendations.

The Accreditation Commission takes the following decision:

Degree Programme	ASIIN-seal	Maximum duration of accreditation
Ba Astronomy	ASIIN-seal with requirements	30.09.2020
Ba Mathematics	ASIIN-seal with requirements	30.09.2020
Ba Physics	ASIIN-seal with requirements	30.09.2020

Requirements

A 1. (ASIIN 3) The rules and regulations of course repetition must be defined in a binding and official document. The “Academic and Student Regulations” must be publically accessible.

A 2. (ASIIN 5.2) The Diploma Supplement must include the grade distribution (statistical data).

A 3. (ASIIN 5) The Diploma Supplement must include a statistical distribution table of the passing grades awarded in the programme or field of study attended by the student (grade distribution table) showing how the grading scale is actually used in that programme.

Ba Mathematics, Ba Physics

A 4. (ASIIN 5.1) The module descriptions and other relevant information of the degree programmes must be made available on the subject-specific webpage.

Recommendations

E 1. (ASIIN 5.1) It is recommended to modify the modules descriptions based on the proposed amendments outlined in the report (weighing factor of partial grades).

E 2. (ASIIN 4) It is recommended to coordinate examinations in a way that students have sufficient time to prepare for them. The re-evaluation should be possible for every course after several weeks.

E 3. (ASIIN 6.1) It is recommended to include the students more systematically in the quality management feedback loops.

Ba Physics

E 4. (ASIIN 5.3) The Physics laboratory should be improved so that experiments can be done in smaller student groups.

I Fulfilment of Requirements (01.07.2016)

All degree Programs

A 1. (ASIIN 3) The rules and regulations of course repetition must be defined in a binding and official document. The "Academic and Student Regulations" must be publically accessible.

First Treatment6	
Peers	Fulfilled Justification: All academic related matters for students are provided via the internal webpage *(https://six.akademik.itb.ac.id).* Due to organizatorical reasons the webpage is only in Indonesian, the HEI nevertheless made plausible that in contains all relevant information including the rules and regulations for course repetition.
TC 12	Fulfilled Justification: The technical commitee follows the assessment of the peers
TC 13	Fulfilled Justification: The technical committee follows the assessment of the peers
AC	Fulfilled Justification: The accreditation commission follows the assessment of peers and technical committees.

A 2. (ASIIN 5.2) The Diploma Supplement must include the grade distribution (statistical data).

First Treatment	
Peers	Fulfilled Justification: The Diploma Supplements provided by the HEI include a transparent grade distribution.
TC 12	Fulfilled Justification: The technical committee follows the assessment of

	the peers
TC 13	Fulfilled Justification: The technical committee follows the assessment of the peers
AC	Fulfilled Justification: The accreditation commission follows the assessment of peers and technical committees.

A 3. (ASIIN 5) The Diploma Supplement must include a statistical distribution table of the passing grades awarded in the programme or field of study attended by the student (grade distribution table) showing how the grading scale is actually used in that programme.

First Treamtment	
Peers	Fulfilled Justification: The Diploma Supplements provided by the HEI include a statistical distribution table as well.
TC 12	Fulfilled Justification: The technical committee follows the assessment of the peers
TC 13	Fulfilled Justification: The technical committee follows the assessment of the peers
AC	Fulfilled Justification: The accreditation commission follows the assessment of peers and technical committees.

Bachleor Mathematics/Bachelor Physics

A 4. (ASIIN 5.1) The module descriptions and other relevant information of the degree programmes must be made available on the subject-specific webpage.

Erstbehandlung	
Peers	Fulfilled

	Justification: The HEI proofs that the module descriptions and all other relevant information about the degree programms are available on the subject sepecific webpages.
TC 12	Fulfilled Justification: The technical committee follows the assessment of the peers
TC 13	Fulfilled Justification: The technical committee follows the assessment of the peers
AC	Fulfilled Justification: The accreditation commission follows the assessment of peers and technical committees.

The accreditation commission decides the prolongation of the accreditation as follows:

Degree Programme	**ASIIN-seal**	**Maximum duration of accreditation**
Ba Astronomy	All requirements fulfilled	30.09.2020
Ba Mathematics	All requirements fulfilled	30.09.2020
Ba Physics	All requirements fulfilled	30.09.2020