ASIIN Accreditation Report

Bachelor's Degree Programme
Mathematics

offered by
University of Tabuk (male and female campus), Saudi Arabia

Last update: 25.09.2015

Basic information about the accreditation procedure

Degree programmes	**Bachelor's Degree programme in Mathematics (male/female)**
Higher Education Institution	**University of Tabuk**
Seals applied for	The Higher Education Institution has applied for the following seals and labels: • ASIIN Seal for the degree programmes
Peer panel	Prof. Dr. Norbert Kalus, Beuth University of Applied Sciences, Berlin Prof. Dr. Volker Mammitzsch, Philipp University, Marburg Prof. Dr. Helmut Rudolph, University of Applied Sciences, Leipzig Prof. Dr. Angela Schwenk-Schellschmidt, Beuth University of Applied Sciences, Berlin
ASIIN Procedure Manager	Johanna Höderath Dr. Michael Meyer
On-site visit	The on-site visit took place on November 3-4, 2013.

Table of Contents

A Preliminary Remark

The on-site visit for the above mentioned degree programmes took place on November 3-4, 2013. At the female campus, the programmes were jointly assessed with the Bachelor's degree programme in Biology.

Prior to the talks with the representatives of the university, the peers met to prepare their questions and to discuss the self-assessment report. Prof. Schwenk-Schellschmidt (female) and Prof. Mammitzsch (male) were asked to act as speaker of the audit team for the aforementioned degree programmes.

The peers had discussions with the following groups:

University management, responsible managers of degree programmes, teaching staff, students.

Additionally, the auditors inspected the infrastructure and the technical equipment of the department for mathematics at at female and male campus of University of Tabuk.

The following chapters relate to the Self Assessment Report (hereinafter SAR) provided by University of Tabuk in 2012 as well as to the discussions and information provided during the on-site visit including samples of exams and final theses

The assessment and the award of the ASIIN-seal are always based on the European Standards and Guidelines (ESG) and the Subject-Specific Criteria of Technical Committee 12 - "Mathematics", valid at the time of conclusion of the contract.

The report has the following structure: Chapter B presents the facts which are necessary for the assessment of the requested seals. The information principally stems for the self-assessment report and related appendices provided by the Higher Education Institution. An analysis and separate assessments of the peers about the compliance with the criteria for the requested seals follow. The assessment of the peers is preliminary and subject to changes based the subsequent information. The statement of the HEI is included with the exact wording. The final recommendation of the peers is drafted after and based on the statement of the HEI (and additional documents, if applicable). The Technical Committee makes a proposal for the accreditation decision (chapter F). The final decision is taken by the Accreditation Commission for Degree Programmes (chapter G).

Any gender-specific terms used in this document apply to both women and men.

B Report of the peers (Accreditation Report)

B-1 Formal specifications

a) Name and awarded degree	b) Study mode	c) Programme Duration & Credit points	d) First & annual enrollment	e) Expected intake	f) Fees
Mathematics B.Sc. in Mathematics	Full time	8 semester 132 Saudi credit hours	Programme started in 2008	300 per year	none

Analysis of the peers:

The auditors considered the name of the Bachelor's degree programme as adequate to reflect the objectives and contents of the programmes. During the sessions, the peers learned that the intention is to cover all disciplines of mathematics. This includes for the fundamental education the fields analysis and linear algebra supplemented through the fields of algebra, higher analysis and applied mathematics.

The expected intake per semester / study year seemed to be realistic regarding the quoted numbers of students and graduates, the group size of courses/modules, or the actual workload of teachers. Standard period of study is within regular range. A part-time study is not provided. They also took note of the other formal aspects of the degree programme and took those into consideration for their assessment.

Concerning the allocated credit points (Saudi credit hours) of the Bachelor's programme, the HEI did not clarify comprehensively on request how the HEI converted the credit hours (CH) to a workload based credit system like ECTS (as to that see chapters B-3-2).

Assessment of the peers:

For the award of the ASIIN seal

Criterion 1 Formal specifications

The peers judged the information about the formal specifications and characteristics of the Bachelor's degree programme mathematics to be complete and meaningful. According to the peers' view, the criterion was fulfilled.

B-2 Degree Programme: content concept & implementation

B-2-1 Objectives of the degree programme

B-2-2 Learning outcomes of the programme

As **objectives of the degree programme** the institution states the following:

Aims of the programme of studies

- to develop within students skills in reasoning, problem-solving, critical thinking and analysis, oral and written communication, and use of appropriate technology so as to provide scientific and technical services in various fields of science of different governmental and national sectors.
- to develop within students an awareness of, and abilities in, applications of mathematics in other disciplines and real-life situations in order to contribute to community service through different means.
- to prepare students for meaningful employment in teaching, business, industry, government, or further study in mathematics or related fields to meet the needs of the region and the Kingdom of the scientific research and applied studies of various relevant mathematics.
- to meet the needs of the region and the Kingdom of qualified national cadres and majoring in mathematics.

As **intended learning outcomes of the degree programme** the institution states:

Upon successful completion of the major in mathematics, it is expected that graduates will:

- have an understanding of, and facility with, mathematical symbols and concepts.
- be able to analyze a situation from graphical, numerical, algebraic, and verbal points of view.
- be able to apply mathematical techniques to approach a problem according to the following three steps: Set up the problem, solve, or approximate a solution to, the problem using mathematic, interpret the results in the context of the given problem

- be able to make appropriate and effective use of technology to explore mathematical ideas and solve mathematical problems.
- be able to communicate mathematics effectively both orally and in writing.
- be able to understand a proof of a theorem, as well as discern flaws in a mathematical argument.
- be able to construct a proof of a theorem.
- be inclined to synthesize new mathematical material independently, placing it in a context of what is already known.
- believe that the scientific method, rational thought, focused study, and creative exploration can be used to further progress toward the solution of problems, both within mathematics and in society at large.

The intended learning outcomes are published in the students handbook which combine all relevant information for the students.

Analysis of the peers:

The peers realized that the graduates should have a profound overview of the contents of fundamental mathematical disciplines and are able to identify their correlations. They should be able to recognise mathematics-related problems and solve them within a specified time frame and they should have a basic ability to work in a scientific way. The graduates should have abstraction ability and are able to recognize analogies and basic patterns as well as to think in a conceptual, analytical and logical manner. Additionally they should have an extensive comprehension of the significance of mathematical modeling and be able to create mathematical models for mathematical problems as well as for problems in other areas of science or everyday life, and have a selection of problem solving strategies at their disposal. Furthermore they found out that graduates should be able to formulate mathematical hypotheses and have an understanding of how such hypotheses could be verified or falsified using mathematical methods and that they could flexibly apply mathematical methods of fundamental component areas of mathematics and were able to transfer the findings obtained to other component areas or applications.

The peers wondered how graduates of a Bachelor's degree should be able to construct a proof of a theorem and learned from the programme managers that there was a mistake in the self report. Graduates should not be able to construct but to understand proofs of theorems which confirm the peers to be an adequate aim for a Bachelor's degree programme.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 2.1 Objectives of the degree programme
Criterion 2.2 Learning outcomes of the programme

For the peers the criterion regarding the study aims is fulfilled. The aims reflected the level of the qualification sought and are comparable to the exemplary learning outcomes set out in the appropriate ASIIN subject-specific criteria of mathematics. They were achievable, valid, and reflect currently foreseeable developments in the subject area.

The name of the programme reflected the intended learning outcomes.

To be able to prove whether the study aims are published in a sufficient way the peers pleased the programme managers to send the students handbook as an additional information before their final decision.

B-2-3 Learning outcomes of the modules/module objectives

The **objectives of individual modules** are published in the module descriptions. The module descriptions are available to the stakeholders via module handbook and – as a general overview – via internet. The students confirmed that they have access to the module descriptions.

Analysis of the peers:

The peers considered the module descriptions provided in the course handbook comprehensive, and clearly defined. They found the intended learning outcomes for the programmes as a whole systematically put into practice within the individual modules of the programme. The peers perceived that the module descriptions are available for relevant stakeholders – particularly students and lecturers – for consultation. But they miss the description of some of the modules/courses (Linear Algebra 1 (MATH 241), Numerical Analysis and mathematical Applications (MATH 434), Linear Algebra 2 (MATH 344), Number Theory (MATH 346), Integral Equations (MATH 408),Measure Theory (416), Rings Theory and Modulus (445), Introduction to Approximate Theory (434), Functional Analysis (415), Differential Geometry (463) und History of Mathematics at Arab and Muslims (481)

Assessment of the peers:

For the award of the ASIIN seal

Criterion 2.3 Learning outcomes of the modules/module objectives

The peers reviewed the available module descriptions as a good information base for the students regarding the single modules. Before their final evaluation took place the peers ask for the missing descriptions as additional information.

B-2-4 Job market perspectives and practical relevance

The HEI mentions the following job perspectives for the graduates:

Mathematics program graduates with training offered, appropriately linked to professional practice, have the opportunity to get jobs in the following areas:

- Teaching in universities and schools
- Working in statistical establishments
- Working in factories
- Working in banks
- Working in oil industry

Practical relevance of the programmes shall be achieved by:

the students are involved in a research project in the eight level of the study.

Analysis of the peers:

At the beginning peers are astonished that graduates of a Bachelor's degree program should teach in universities. But they learned by explanations of the programme managers that those graduates only teach within courses during the preparatory year. Most of the students are expected to work in schools as teachers but also in banks or insurance companies. Because the region of Tabuk is an intensive growing area within Saudi Arabia the peers followed the expectation of the university that there are good perspectives for at least male graduates on the labor market.

From the female students the peers learned that their chances on the job market are much bleaker, and that exceedingly high graduation examination results are needed for them to find an adequate employment. While the peers considered this situation to be rather unsatisfactory, they did not infer any direct neglect or responsibility from the side of the university to this regard.

With regard to the practical elements included in the programmes, the peers found them to be sufficiently included into the programme structure.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 2.4 Job market perspectives and practical relevance

The peers realized that there is a demand on the labour market for graduates who possess the intended learning outcomes (competences). The competences as presented thus allow graduates to work in a sphere appropriate to the qualification.

Overall, the training offered is appropriately linked to professional practice (external projects, laboratories, placements, etc.).

B-2-5 Admissions and entry requirements

The entrance and admission requirements for the Bachelor's degree programmes are stated in the handbooks of the corresponding department. The actual entrance to the degree programme takes place after the completion of a joint Preparatory Year, which is mandatory for all students of the College of Science.

The Rules of Implementation for Article 3:

The following requirements have been stipulated for the admission of the new student:

a) Must obtain a secondary school certificate or equivalent from inside or outside the Kingdom of Saudi Arabia.

b) The secondary school certificate should not be more than five years old and the Rector of the University may give exemption from this term if there are good reasons.

c) Should be with good conduct and behavior

d) Should successfully pass the interview conducted by the Senate

e) Should be medically fit

f) Should obtain approval from his employer allowing him to study if he is working at private or public sector.

g) Should fulfil any other terms fixed by the Senate

h) Must not be dismissed from another university for disciplinary or educational reasons.

Any student may register for the third academic level if he fulfills the following requirements:

a. successfully completes all the preparatory year courses with the grades indicates in b and c hereunder;

b. earns Grade C or better in the first or second level courses of English in the preparatory year;

c. earns grade C or better in the first or the second level courses of mathematics in the preparatory year.

Promotion of students to the third academic level, after completion of all preparatory year requirements, takes place at the beginning of the semester.

Rules for the recognition of external study attainments/achievements are stipulated in the Rules and Regulations of undergraduate Study and Examinations:

With the consent of the Dean of the College to which the student may be transferred the student can be transferred from outside the University based on the following restrictions:

a) The student should have been studied at a recognized university

b) Should not be dismissed from the transferring university due to disciplinary or educational reasons.

c) Should fulfill the transfer terms determined by the Senate of the College

d) The number of the units that the transferred student will be required to study at University of Tabuk should be not less than (60%) of the number of the units required for obtaining the Bachelor Degree at the University.

All courses that have been studied by a student who has transferred from one major to another are recorded in his/her academic record, including the grades and the semester and cumulative GPAs obtained throughout his/her study at the University.

Analysis of the peers:

The peers considered that the procedures for admission to the programme are governed by strictly applied and transparent quality criteria. From their point of view the admission and entry requirements are designed to facilitate the achievement of the learning outcomes and therefore ensure that those students admitted possess the required competences and formal training. Also the peers realize regulations in place covering the recognition of activities completed externally.

Regarding the question whether all applicants are treated equally the peers learned from the programme managers that the requirement of medical fitness concernscontagious diseases and will not exclude physically handicapped students.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 2.5 Admission and entry requirements

Peers see the criterion completely fulfilled.

B-2-6 Curriculum/content

The general structure of the Bachelor's degree programme Mathematics is composed as follows, wherein the Saudi Arabian credit points are named *credit hours (CH)*:

The university requirements for the Bachelor's degree programme Mathematics are: Islamic Culture I, II, III and IV (2 CH each), Language Skills (2 CH) and Arabic Writing (2 CH).

The compulsory college requirements for the Bachelor's degree programme Mathematics are: English I+II (5 CH each), Mathematics I+II (3 CH each), Communication Skills, Learning, Thinking and Research Skills (3 CH), Computer Skills and Its application (4 CH), General Chemistry (3 CH), General Biology (3 CH), General Physics (3 CH), Fundamentals of integral calculus (4 CH), General statistics (4 CH), Probability Theory (3 CH), Research project (3 CH).

The elective courses offered by the department: Real Analysis (3 CH), Partial Differential Equations & Special Functions (3 CH), Financial Mathematics (3 CH), Numerical Analysis and Mathematical Applications (3 CH), Number Theory (3 CH), Linear Algebra 2 (3 CH), Special Functions (3 CH), Complex Analysis 2 (3 CH), Measure Theory (3 CH), Rings Theory and Modulus (3 CH), Euclidian and Non Euclidian Geometry (3 CH), Introduction to Approximation Theory (3 CH).

The curriculum of the Bachelor's degree programme Mathematics is structured as followed:

First level: MATH I (3 CH), General Physics (3 CH), English I (5 CH), General Biology (3 CH), Learning, Thinking, and Research Skills (4 CH).

Second level: General Chemistry (3 CH), MATH II (3 CH), English II (5 CH), Computer Skills and Its application (3 CH), Communication Skills (2 CH).

Third level: Fundamentals of integral Calculus (4 CH), Basics of Mathematics (3 CH), Analytical Geometry (3 CH), Programming Language (4 CH), Language Skills (2 CH), Islamic Culture (I) (2 CH).

Fourth level: Advanced Calculus (4 CH), Differential Equations 1 (3 CH), Linear algebra (3 CH), General Statistics (4 CH), Writing Skills (2 CH), Islamic Culture (2) (2 CH)

Fifth level: Differential Equations 2 (3 CH), Real Analysis 1 (3 CH), Probability theory (1) (3 CH), Abstract algebra 1 (3 CH), Islamic Culture (3) (2 CH).

Sixth level: Partial Differential Equations (3 CH), Abstract algebra 2 (3 CH), Introduction to Numerical Analysis (3 CH), Introduction to Operations Research (2 CH), Optional mathematics (3 CH), Islamic Culture (4) (2 CH).

Seventh level: Mathematics and packages programs (3 CH), Integral equation (3 CH), Complex analysis (1) (3 CH), General Topology (3 CH), History of mathematics among the Arabs and Muslims (3 CH), Optional mathematics (3 CH).

Eighth level: Discrete Mathematics (3 CH), Differential Geometry (3 CH), Functional Analysis (3 CH), Optional mathematics (3 CH), research project (3 CH).

Analysis of the peers:

The peers saw a programme with classical mathematical contents. Statistics aspects are handled only marginally because at the male campus there is a separate statistics Bachelor's degree programme offered by the new statistics department. This department will offer its programme also at the female campus within the next year.

The peers learned that during the third semester (level 3) a course computer science is offered wherein programming language C++ is taught. This is for the peers only a very basically preparation of the students to use basic methods of computer-aided simulation and mathematical software to solve mathematical problems.

Regarding the intense of teaching mathematical applications peers and programme managers agreed that this aspect should increase generally. The programme managers explained that they are in discussion with employer committee how to strengthen the mathematical applications regarding the requirements of the labor market. The peers appreciated the activities of the department for a further improvement of the programme.

During the onsite visit the peers got the impression that the English language skills of the male students are relatively poor. The communication with foreign professors therefore is limited and in some cases translators are needed.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 2.6 Curriculum/content

The peers came to the conclusion that the curriculum made it possible in general to achieve the intended learning outcomes by the time the degree is completed. From their point the objectives and content of the individual modules are coordinated in order to avoid any unintended overlaps. But with view to the professional fields they recommended to enlarge students' computer skills and competences in order to adjust adequately their application orientation. Furthermore they recommended improving English language skills of the male students.

B-3 Degree programme: structures, methods and implementation

B-3-1 Structure and modularity

The Bachelor's degree programme Mathematics is described in terms of modules (called courses). The modules offered are completed by students of the degree programmes, but also by students from other degree programmes.

Analysis of the peers:

The audit team found the criterion for modularization to be met. Usually, each module consists of different didactic elements such as theoretical lectures and practical elements. Each module is a coherent and consistent package of teaching and learning in itself.

The curriculum of the Bachelor's programme consists of elective modules encouraging students to integrate some focal points into their study course. The peers positively noted to choose principally identical courses offered at different time in order to better fit their individual schedule. In the peers view this opportunity facilitates the successful achievement of learning outcomes in due time.

The size and duration of modules allow generally students to spend a semester at another higher education institution. However, the opportunities for study visits at other HEIs ("mobility window") are not made use of by the female students.

Even if English is already an inherent part of the Bachelor's curricula, the current language skills of students have been found improvable. It should be kept in mind that strengthening the English skills is a fundamental precondition for entering into new co-operations respectively expanding those in the future.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 3.1 Structure and modularity

The peers considered the requirements of the said criterion as sufficiently met already. Nevertheless with view to the programme educational objective of internationality, they found it commendable that existing efforts to enhancing English language skills in the curriculum of the Bachelor's degree programme should be strengthened.

B-3-2 Workload and credit points

The Bachelor's programme has a **credit point system** in place. As a rule, the modules are weighted with 2 to 4 Saudi Arabian credit points. One credit point is awarded for 50 min of lectures or 100 min of tutorial. Between 12 and 19 credit points are awarded per semester in the Bachelor's programme.

Analysis of the peers:

As the credit point system used in Saudi Arabia, which, in effect, is a credit hour system, only encompasses the presence hours of students without referring to (additional) students' self-study, the national credit hour system is not yet transparent to the peers. A comparison and conversion of the credit hour system to a work load based credit system such ECTS were not made. This would be necessary at least for those graduates wishing to pursue further studies at a university in the European Higher Education Area (EHEA). One such system is the European Credit Transfer System (ECTS) used by all countries in the European Higher Education Area. Detailed information on how ECTS credits are allocated can be found in the ECTS Users' Guide which is available as a download (http://ec.europa.eu/education/lifelong-learning-policy/doc/ects/guide_en.pdf). This does not mean that the official credit point system in use is to be changed but a comparative document must be established showing the overall workload of the students according to the principles of the ECTS, i.e. which transfigure the national credit system values to ECTS equivalents. Apparently, a reliable calculation of the student workload through appropriate monitoring tools has not been carried through or even foreseen thus far. Overall the peers perceived that the students in general are satisfied with the relation presence hours and self-study hours.

An additional tool for international mobility in which the ECTS of a programme are usually mentioned is the Diploma Supplement (see 7.2 Diploma Supplement).

Assessment of the peers:

For the award of the ASIIN seal

Criterion 3.2 Workload and credit points

The peers considered the requirements of the criterion not yet fulfilled. The peers found it necessary that a conversion of the Saudi credit system into a workload based system such as ECTS must be made and subsequently published.

B-3-3 Educational methods

The **didactical concept** includes the following elements: lectures, tutorials, quizzes and laboratories.

Options for elective modules are available.

Analysis of the peers:

The auditors gained the impression that the teaching methods used for implementing the didactical concept are appropriate to support the attainment of the learning objectives. They appreciated the wide variety of didactical methods applied for teaching. They detected that students have time available to carry out independent academic work.

Apart from this, the audit team recognized that the compulsory and elective components in the study plan are in a balanced ratio. They detected that the students have enough room for individual profiling.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 3.3 educational methods

In view of the peers, the educational concept complies with the requirements of the respective criterion.

B-3-4 Support and advice

Offers for support and counselling of students are provided as described below:

The implementation plan calls for the instructor (individual faculty) to perform specific four duties, such as:

- During the first study week of each semester, instructor informs the class about course objectives and outcomes. If necessary, the instructor conducts a survey in which students self assess their achievement of the course outcomes (at that time).
- During the semester time, the instructor presents the course and assesses student achievements of the course outcomes. The achievements are assisted via exams, homework, projects and oral / written presentations, etc.; the instructor determines how well students are achieving the course objectives.
- During the final week of the semester, the instructor conducts a similar survey that students completed at the start of the semester. A final-week survey would allow students to recommend changes/improvements to course and program objectives and outcomes.
- At the end of the semester, the instructor concludes a survey which indicates the extent of assessment to each course outcome and to identify the assessment item used to assess each outcome. The instructor also completes a one-question report to the specialty-area committee that oversees the course; the report should recommend changes/improvements to course and program objectives and outcomes. The instructor incorporates student recommendations in the report.

Analysis of the peers:

Apparently, there are sufficient resources to guarantee support and counselling for students. Both, the staff and the students seemed highly engaged in the activities and there evidently exists a good relationship between students and staff. Reportedly, the teaching staff is highly responsive towards the students' needs, which is reflected by the mentioned personal and programme-related advice and support through the Department, too. With regard to the subject specific support the teachers expressed the wish to develop their subject relevant knowledge (mathematical software) and teaching skills in order to advise the students in a better way. This aspect is further explained in 5.2 Staff development.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 3.4 Support and advice

In this regard, the peers considered the academic feasibility of the study programme as ensured through corresponding offers of support as well as interdisciplinary course guidance.

B-4 Examinations: system, concept and organisation

According to the self-assessment report and the information gathered during the discussions, the **exam methods** described subsequently are foreseen:

Typically, each module includes a number of quizzes to be taken during the semester as well as a mid-term and a final exam. In addition, students must complete homework as well as write small reports and presentations. The module descriptions include a list of the possible assessment forms while the actual exam types to be used are communicated to the students at the beginning of each semester.

The programme is completed by a final exam as well as the so-called Review Article (final thesis) at the end of the last semester.

Progression from one semester to the next is possible if the student has acquired a sufficient number of credits (see chapter B-3-2). In these cases students may repeat only the modules which they have failed. In other cases, the full semester must be repeated. The minimum grade for passing a module is 60%. Additionally, students must acquire an average grade of 2.00 out of 5.00 in the cumulated grades of the modules per semester.

The **organisation of exams** is managed as follows: Exam periods are scheduled at the end of each semester. Make-up exams are scheduled before the start of the new semester and must be completed latest before the end of the following semester.

Analysis of the peers:

The peers discussed the exam methods and exam organization with the teaching staff and students. They learned from some students that the exam organization had been difficult in the past, i.e. that two or more exams took place during one day. However, they were convinced through the further discussions and corresponding regulations that these situations constituted exceptions and that principally the organization of exams worked satisfactory.

As to the exam methods, the peers found that the module descriptions allowed for a great variety of exams. The actual examinations to take place in a given semester would be communicated to the students at the beginning of the semester. This procedure seemed reasonable to the peers.

In order to gain an impression of the actual exam methods in use as well as to the level and content, the peers assessed numerous exams and final thesis (final research projects) at the two campuses. In comparison they come to the conclusion that quality of the exams and final thesis are congruent. They found that the types of exam method are ac-

ceptable and correspond to a Bachelor's level. Basically the peers ascertain that the exam methods allowed for a thorough verification of the achievement of intended learning outcomes. Nevertheless it turned out that the male students in comparison to the female students practice less oral discussions. The peers regard it as essential that the students are capable of orally discussing a problem from their specialist area.

Furthermore, the peers noted that the final thesis (so-called final research project) did not fully comply with the expected scientific standards and expectations. In some cases the peers could not detect that the students carry out an assigned task independently. The peers gained rather the impression that parts of the provided thesis are not declared citations from different sources. They learned from the teaching staff that the students before they start with the final thesis are provided with some necessary requirements. This instruction should support the students in writing their final thesis in terms of substantive and formal criteria. At the time of the site visit this above mentioned document was not available for the peers. In order to make a final assessment they will need the document for verification.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 4 Examinations: system, concept and organisation

Basically, the peers found the exam methods and system compliant with the criterion. In order to come to a final assessment the peers merely asked to provide the defined requirements for the final research project. Further they recommended strengthening the student's capability of orally discussing a problem from their specialist area and placing it in the context of a subject.

B-5 Resources

B-5-1 Staff involved

Teaching staff of the *Faculty of Science* is composed of four full professors, three associate professors, 23 assistant professors, 19 lecturers and eight demonstrators.

According to SSR, main research areas of the *Mathematics Department* are Linear & Modern Algebra, Numerical Analysis, Mathematical Programming, Statistics and Stochastic Processes, Differential Equations, Computational Mathematics, Applied Mathematics,

Real and Functional Analysis and Harmonic Analysis and Special Functions. It also presents a list of publications on research works done by individual teaching staff.

In addition, university of Tabuk has two programs to support scientific research:

The first program

Deanship of scientific research started a new program to support research publication, the program aims to stimulate publishing in scientific national and international journals between both male and female researchers of the faculty members in the university of Tabuk. This program gives reward for publishing in scientific journals classified globally. The site of journals deanship includes list of journals classified and approved by the association Saudi national accreditation.

The second program

Deanship of scientific research announced for its annual support of research supported by the university, support included this year six key areas: disease in the region of Tabuk and methods of prevention and treatment, youth and development and protection of intellectual and moral, renewable energy sources and their applications.

Analysis of the peers:

In general, competence, composition and range of staff resources are suited to conduct the said study programmes. The teaching staff's fields of expertise are sufficiently supportive to the structure and content of these programmes.

During the discussions with the peers the teachers of the Faculty of Science explained that besides teaching of fundamentals and student support, the research activities are limited through time restrictions. Consequently, this affects the research strength of the departments and the Faculty of Science itself. Basically the peers gained the impression that the male teachers are more involved in research projects in comparison to the female teachers. They understood from the explanations of the teachers that the needed framework conditions are established but the intensity of turning a research project could be more distinctive.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 5.1 Staff involved

The peers considered the requirements of the criterion as basically addressed. From the point of view of the auditors the characteristics of the research and development activi-

ties of the teaching staff thus supported the desired outcome level of the programme only to a certain extend. They recommended further improving the opportunities for research.

B-5-2 Staff development

The institution reported on the following measures to subject-related and didactical further training for staff: Teaching staff participate in professional development and research activities, specifically by attending international scientific seminars and conferences. The further development of teaching staff falls under the responsibility of the department chair.

Analysis of the peers:

The programme coordinators indicated an awareness of the necessity of teaching staff in keeping up with state-of-the-art knowledge in the respective subject area as well as in the didactical and teaching skills field. In view of the accreditation period and the international comparability the peers encouraged the university to offer regularly trainings focuses on teaching skills and subject specific, especially for new faculty members.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 5.2 Staff development

The peers suggested and generally support further initiatives regarding the development of subject-related knowledge and teaching skills.

B-5-3 Institutional environment, financial and physical resources

The University of Tabuk (UT) is a Saudi Government-financed institution. UT has witnessed tremendous quantitative and qualitative progress in terms of enrollment and diversity of academic programs in both social and natural sciences. It has 9 Faculties, 4 branches in Tabuk area, and more than 48 departments offering a diversity of specializations. It is recognized today as one of the most fast growing universities in Saudi Arabia with unique professional disciplines and specializations.

The College of Science continually updates and enhances its computer facilities. The University Computer Center has a large mainframe with adequate number of terminal points around the campus. Although it serves mainly administrative applications and several

educational and research objectives, it provides e-services for students, faculty members and employees.

- Students Services include Scientific Council, Department Nano-Research Laboratory, Admissions and Registration, Suggestions and Complaints, Preparatory Year, Electronic Database, University Map, Libraries, Technical Support and E-mail Service.
- Faculty Services include: Personal Sites, Libraries, E-mail Service, Decisions and Circulars System, Contacts Book, Electronic Database, Recruitment System, SMS Service, Admissions and Registration, Technical Support and Arbitration system research.
- Employee Services include: Forms, Decisions and Circulars System, SMS Service, SAUDI National e-Government Portal, Technical Support, Documents Management System, Employee's E-Services, E-Mail Service and Committees and Councils

Library

The Deanship of Library Affairs participated in many of the international information databases that serve the scientific and research fields of the University of Tabuk, and that all faculty members and students can benefit from this service by getting a user name and password to these data base through communication with the headquarters of the Dean, at Faculty of society. The library offers a wide range of services to the students, faculty and general public. The facilities include:

- Open library access
- Photocopying
- Inter-library loan
- Search facility
- CD-Rom data base access
- Direct access to the international information databases that serve the scientific and research fields.

Analysis of the peers:

The international accreditation is understood as part of the internationalization strategy of the HEI, aimed at raising the level of education to internationals standards and thereby improving the conditions for international co-operations. The peers found that with view to the given resources (PC equipment and collection of international books) there is room for improvement:

During the on-site visit on the female campus, the peers visited a variety of reasonable classrooms and other sites of the HEI's infrastructure (library). The teaching staff argued in this context that in comparison to the male campus the infrastructure is under construction. This concerns in particular the library and learning spaces in general. Nonetheless the peers confirmed for both campuses that the quantity and quality of the infrastructure like international relevant literature and PC equipment and a PC Pool with subject relevant software (C ++ and MATLAB) for mathematics are indispensable in the long run. In order to be international comparable the peers considered it necessary to enhance the above mentioned facilities.

The peers took note that the opening hours (8.00 am -14.30 pm) of the library at the male are reasonable for the students. It should be mentioned that generally the classes end at 3 o´clock and thus the opening hours of the campuses are limited to this time. As mentioned above the library at the female campus is currently under development. But the teachers assured persuasively that the establishment of the library will be finished timely.

The peers gained the impression that decision-making structures are mainly implemented at the male campus. Concerns related to the female campus had to be addressed to responsible persons at the male campus in order to get essential financial support. Through this fact the ability to react timely to problems or study related necessities was limited. The coordination and communication in study relevant questions between the male and female campus did not seemed to be very pronounced. Due to the fact that it is *one* Bachelor programme the peers considered it self-understood that equal care is taken of the programme at both of the campuses.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 5.3 Institutional environment, financial and physical resources

The peers concluded that the requirements of the above mentioned criterion are not sufficiently met. In following aspects they saw room for improvement: in the long run the PC equipment should be augmented in order to improve capacities and competencies in computer science for students. Furthermore they recommended increasing the collection of international books in mathematics in regard to the international comparability. At last they strongly suggested intensifying the cooperation between the different branches of the department (male and female campus).

B-6 Quality Management: further development of degree programmes

B-6-1 Quality assurance and further development

Within the plan of the university, the mathematics academic program will be revised every five years. The staff members are evaluated by the administration and given annual allowances to encourage the staff members to apply their most capability and efforts in their work.

There is an evaluation to each staff member done every year. This evaluation affects on the financial promotion to the staff member. This evaluation is done by the head of the department.

Questionnaires about the teaching evaluation are distributed to the students for each subject of the program to give their free opinion about teaching so that the instructor can make use of it and develop his methods of teaching.

In addition, the Program Faculty develops and conducts the assessment processes for the program through time. The assessment process is as follows:

- Periodical review of program objectives,
- Continuous effort to improve outcome assessment,
- Evaluating, advising, and monitoring students, and
- Insuring that all students meet all program requirements.

The graduate student survey which was conducted at the end of the second semester and delivered to nearly 19 graduates, showed that graduates "as a whole" had expressed their satisfactions and agreements on most items in the survey.

An employer survey includes more than 15 public and private organizations throughout Tabuk City. The aim was to measure their overall satisfaction toward program graduates with respect to program outcomes and program educational objectives.

Analysis of the peers:

During the talks to vice president the peers learned that the university defined its understanding of quality in studies and teaching within a general quality assurance regulation.

Additionally the peers are informed by the programme managers that in case of poor results in teaching evaluation the concerned professors will be pledged by head of department to visit special courses to improve their didactical skills. Out of the talks to the stu-

dents the peers learned that the results of the teaching evaluation are discussed with the students.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 6.1 Quality assurance and further development

The peers saw a quality assurance concept in place which is regularly further developed and which is designed to ensure the continual improvement of the degree programme. Students and other stakeholders participate in these quality assurance activities. In General the peers expected that the university is able to ascertain any failure to achieve goals and to check on the extent to which the set goals are achievable and reasonable.

B-6-2 Instruments, methods & data

The HEI provided various tables which summarize the evaluation results concerning the achievement of educational objectives and programme outcomes, for example results of assessment tools for the program education objective established and achievement, whereby “established” signifies the rate of achievement targeted by the HEI, “achieved” shows the actual achievement of the given criterion.

They also provided tables showing that the achievement of the learning objectives in the Bachelor’s degree programme of Mathematics lacks somewhat behind the self-established goals. The other items on the table achieve at least a good evaluation result.

The tables also show the grade of satisfaction with the achieved programme outcomes for students and lecturers respectively. The tables show a consistently better view of courses by students than by lecturers.

Analysis of the peers:

The peers got the information from the programme managers that only a few students cancel their studies without final examination.

In general the peer saw suitable methods and instruments in use to ensure that the quality of degree programmes is maintained and further developed.

The data for the programme are not yet significant but the peers are convinced that the university will use the collected data for the internal review of the programme.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 6.2 Instruments, methods & data

The peers considered the criterion to be fulfilled.

B-7 Documentation and transparency

B-7-1 Relevant regulations

The regulations mentioned below have been provided for assessment:

- General examination regulation (put into force)
- Admission regulation (put into force)

Analysis of the peers:

The peers saw that the regulations for the programme encompassed all key stipulations for admissions, the operation of the programme and graduation. The programme managers explained in a comprehensible manner to them that all regulations were checked by the responsible ministry. They additionally informed the peers that the regulations are published condensed in the student handbook.

The peers realized that the regulations are accessible for consultation in the handbook only for students of University of Tabuk. They did not see the regulations published in the internet to be accessible for all interested groups.

Assessment of the peers:

For the award of the ASIIN seal

Criterion 7.1 Relevant regulations

To be able to evaluate the way students are informed about the examination regulations the peers asked for the student handbook as additional information before the final appraisal of the programme took place. Generally they the deemed it necessary to publish all regulations in the internet and to be available to all stakeholders

B-7-2 Diploma Supplement and qualification certificate

The University of Tabuk annexed a document which is called Diploma Supplement in English language to the self-assessment report.

Analysis of the peers:

The peers determined that the document which is called Diploma Supplement by the university provides information about level, context, content and status of the studies, the success of the graduate as well as about the composition of the final grade. But they did not find information about the study aims and (generic) learning objectives or a description of the national higher education system in order to allow foreign higher education institutions or employers judging the qualification presented.

So they rank the document given by the university as a Transfer of records and not as a real Diploma Supplement. They advised the university of the templates provided, for example, by the European Commission Directorate General Education and Culture (http://ec.europa.eu/education/lifelong-learning-policy/).

Assessment of the peers:

For the award of the ASIIN seal

Criterion 7.2 Diploma Supplement and qualification certificate

The peers considered the criterion to be fulfilled only partly. In order to facilitate the mobility of graduates to the European Higher Education Area the Diploma Supplement has to be prepared and handed out to students on a regular basis providing information about the objectives, intended learning outcomes, structure and level of the degree, as well as about an individual's performance and the national higher education system.

C Additional Information

Before preparing their final recommendation, the auditors 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. Defined requirements for the final research project
2. Missing module descriptions
3. Students handbook

D Comment of the HEI (07.02.2014)

The institution provided the following statement:

We would like to express our thanks to the peer panel of ASIIN for their visit to accreditate the Bachelor's Degree Programm in mathematics (Male/Female) in the Faculty of Science of University of Tabuk.

As per the peers, the study aims should be published in a handbook. We published this handbook and we will be publish it on the web site of the department. This handbook will be distributed to the mathematics students. This will be done on the beginning of each calendar year as well.

As per the assessment of the peers regarding to enlarge students computer skills and competences, the faculty is planning and applied for a budget to enquip the labs in the new building with computers and all software packages as well. This building will be completed soon.

Furthermore for improving the English language skills of male students, we are trying to have a tie up with British council and the American corporation for IELTS for imparting training to qualify and to enhance English language skills.

As per the assessment of the peers regarding final research project, we have renewed the requirements and willing to adopt the recommendation that the research problem is orally discussed regarding to the specific context.

As per review of the peers for the missing descriptions of some modules, we have done this, some of them are elective courses and not selected during the last semesters. You will not find learning outcomes included in these files.

As per the recommendation of the peers, we are willing to increase the collection of the international books in mathematics, not only that but we are planning to have a separate library for mathematics in the new building.

Furthermore, we like to assure you that cooperation between the different branches of the department (Male and Female compus) will be intensified.

E Summary: Peer recommendations (04.03.2014)

The peers take note of the additional information and the comment on the report given by the department. With these additional documents they estimate that the students get complete and transparent information about the programme. Regarding the requirements for the research project or final thesis the peers see formal regulations for the students which are acceptable from their sight of view. The peers appreciate as well the announcements of the department regarding the enlargement of the computer and language skills of the students, the improvement of the library equipment and the cooperation between the different branches of the department. Naturally there could not be shown any results of these measures so the peers confirm the foreseen requirements and recommendations to these points.

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

Degree Programme	**ASIIN seal**	**Subject-specific Label**	**Maximum duration of accreditation**
Ba mathematics (male and female)	With requirements for one year		30.09.2019

Requirements	**ASIIN Criteria**
1. A conversion of the Saudi credit system into a workload based system such as ECTS must be made and subsequently published.	3.2
2. A programme-specific document (e.g. Diploma Supplement) has to be prepared and handed out to students on a regular basis providing information about the objectives, intended learning outcomes, structure and level of the degree, as well as about an individual's performance.	7.2
3. All regulations must be published in the internet and available to all stakeholders (specifically students and staff).	7.1

Recommendations	ASIIN Criteria
1. It is recommended in the long run to enhance the opportunities for further development of subject-relevant knowledge and teaching skills for the teaching staff.	5.2
2. With view to the professional practice it is recommended to enlarge students' computer skills and competences in order to more adequately facilitate their application orientation.	2.6
3. It is recommended in the long run to augment the PC instrumentation to improve capacities and competencies in computer science for students.	5.3
4. It is recommended to improve and intensify the cooperation between the different branches of the department.	5.3
5. It is recommended to increase the number of international books in mathematics.	5.3
6. It is recommended to increase the time available for research activities for the teaching staff.	5.1
7. It is recommended to strengthens the capacity of the students for orally discussing a problem from their specialist area and how it might be solved, placing it in the context of the subject.	4
8. It is recommended to improve the English language skills of the male students.	2.6

F Comment of the Technical Committee 12- Mathematics (12.03.2014)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discussed the report of the peers, in particular the quality level of the final thesis. The Committee noticed that to some extent the final theses were on an adequate level. Nevertheless, the members also realized that the issue of the quality level could not be answered consistently. It was attributed to linguistic difficulties of the students and/ partly also to the capacity of carrying out an independent scientific work. Furthermore, it is not completely clear, which time budget the students spend on their studies. Although the invested time of the students could not be used as the only indicator of the quality of a programme, students have as part of their self-studies to tackle abstract mathematical problems, in order to reach the bachelor level. Based on these considerations, the Technical Committee deemed it for necessary to add a requirement (A 4) that ensures the content-wise development of the study programme.

Moreover the Technical Committee suggested that an amendment is to be made (E. 1 and E. 3) to the wording and deleted “in the long run”.

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

Degree Programme	**ASIIN seal**	**Subject-specific Label**	**Maximum duration of accreditation**
Ba mathematics (male and female)	With requirements for one year		30.09.2019

G Resolution of the Accreditation Commission (28.03.2014)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission followed the argumentation of the Technical Committee and deemed it also for necessary to add a requirement that ensures the content-wise development of the study programme (A 4). Furthermore, the Accreditation Commission agreed as proposed by the peers and Technical Committee the requirements and recommendations.

Requirements	**ASIIN Criteria**
1. A conversion of the Saudi credit system into a workload based system such as ECTS must be made and subsequently published.	3.2
2. A programme-specific document (e.g. Diploma Supplement) has to be prepared and handed out to graduates on a regular basis providing information about the objectives, intended learning outcomes, structure and level of the degree, as well as about an individual's performance.	7.2
3. All regulations must be published and available to all stakeholders (especially to students and staff).	7.1
4. ASIIN (3.1, 3.2) The programme must ensure that the students achieve the intended competence profile by taking into consideration the contact- and self-study hours. Measures have to be implemented to ensure the intended level of the final thesis for all graduates.	2.2, 2.6

Recommendations	**ASIIN Criteria**
1. It is recommended to enhance the opportunities for further development of subject-relevant knowledge and teaching skills for the teaching staff.	5.2
2. With view to the professional practice it is recommended to enlarge students' computer skills and competences in order to more adequately facilitate their application orientation.	2.6
3. It is recommended to augment the PC instrumentation to improve capacities and competencies in computer science for students.	5.3
4. It is recommended to improve and intensify the cooperation between the different branches of the department.	5.3
5. It is recommended to increase the number of international scientific sources in mathematics.	5.3

6. It is recommended to increase the time available for research activities for the teaching staff.	5.1
7. It is recommended to strengthens the capacity of the students for orally discussing a problem from their specialist area and how it might be solved, placing it in the context of the subject.	4
8. It is recommended to improve the English language skills of the male students.	2.6

H Decision on Fulfillment of Requirements (26.06.2015)

As the HEI did not deliver any material to proof the fulfillment of requirements the Accreditation Commission for Degree Programmes decides in its meeting on June 26th 2015 to extend the deadline for six month.

Insofar the Accreditation Commission comes to the following decision

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Ba mathematics (male and female)	Requirements not fulfilled / 6 month extension	n/a	30.09.2019

I Decision on Fulfillment of Requirements (25.09.2015)

The Accreditation Commission for Degree Programmes decides in its meeting on September 25th 2015 that the requirements for the degree programme have been fulfilled. Taking into account the viewpoints of the peers and the Technical Committee the Accreditation Commission comes to the following decision:

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Ba mathematics (male and female)	All requirements fullfilled	n/a	30.09.2019