ASIIN Seal

Accreditation Report

Bachelor's Degree Programme
Animal Production
Nutrition and Food Technology
Plant Production
Soil and Irrigation

Provided by
Jordan University of Science and Technology

Version: 08 December 2023

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
بكالوريوس في الانتاج الحيواني	Bachelor of Animal Production	ASIIN	none	08
بكالوريوس في التغذية وتكنولوجيا الغذاء	Bachelor of Nutrition and Food Technology	ASIIN	None	08
بكالوريوس في الانتاج النباتي	Bachelor of Plant Production	ASIIN	None	08
بكالوريوس في التربة والري	Bachelor of Soil and Irrigation	ASIIN	None	08
Date of the contract: 18.05.2021 **Submission of the final version of the Self-Assessment Report:** 27.04.2021 **Date of the onsite visit:** 31.05. – 02.06.2022 **at: Online Audit**				
Peer panel: Prof. Dr. Alexander Stoy, University of Applied Science Kiel Prof. Dr. Roland Bol, Institute of Bio- and Geosciences Agrosphere				

[1] ASIIN Seal for degree programmes
[2] TC 08 - Agriculture, Forestry, Food Scienes, and Landscape Architecture

Prof. Dr. Nicole Kemper, University of Veterinary Medicine Hannover, Foundation Dr. Knut Franke, Leibniz University Hannover Thomas Illies, Tradecorp Gary Strauß, University Bochum	
Representative of the ASIIN headquarter: Daniel Seegers	
Responsible decision-making committee: ASIIN Accreditation Commission for Degree Programmes	
Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 12.10.2015 Subject-Specific Criteria of Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture as of 27.03.2015	

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
Animal Production	Bachelor of Science		6	Full time	No	4 years	132 Jordan Credit Points	Fall and Spring Semester/ 1996
Nutrition and Food Technology	Bachelor of Science		6	Full time	No	4 years	132 Jordan Credit Points	Fall and Spring Semester/ 1996
Plant Production	Bachelor of Science		6	Full time	No	4 years	132 Jordan Credit Points	Fall and Spring Semester/ 1990
Soil and Irrigation	Bachelor of Science		6	Full time	No	4 years	132 Jordan Credit Points	Fall and Spring Semester/ 2007

For the Bachelor's degree programme Animal Production the Jordan University of Science and Technology (JUST) has presented the following profile in its Self-Assessment Report:

"The Bachelor's Degree in Animal Production Department suits the local and regional demand of qualified personal for working in various disciplines of animal production and husbandry. In the current global need for qualified animal production specialists as part of the food supply chain, the degree offers knowledge-based education in the disciplines of animal physiology, reproduction, nutrition, genetics and breeding as well as meat science."

The objectives of the AP undergraduate Programme are:"

1. To equip graduates with broad theoretical and practical skills and knowledge in

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

basic disciplines on animal production that serves the local and global market.

2. To provide the animal production industry with skilled and qualified personnel in order to be able to fit in the job market and develop their computer skills.

3. To prepare students that understand and apply basic research methods, including experimental design, data analysis, and interpretation in order to conduct scientific and applied research related to animal agricultural needs.

4. To prepare our students for critical thinking and reasoning, skeptical inquiry, and scientific approach to solve problems.

5. To provide and teach processes and scopes of integrated management to optimize the use of various farm resources to solve problems in animal agriculture.

6. To prepare our graduates for a wide variety of post-baccalaureate paths, including graduate school, professional training programmes, or entry-level jobs in any area of animal production."

For the Bachelor's degree programme Nutrition and Food Technology the Jordan University of Science and Technology (JUST) has presented the following profile in its Self-Assessment Report:

"The bachelor's Programme in Nutrition and Food Technology is a four-year, full-time programme, is one of the four study programmes in the Faculty of Agriculture, Jordan University of Science and Technology. Founded in 1996, the department was designed to keep the university up with the rapid advances in nutrition and food technology and prepare students to be specialists in different food industry fields and provide dietitians with a robust background in nutrition care. The decision to establish the nutrition and food technology programme is considered one of the most critical steps the university took to meet the demand for preparing nutritionists and food technologists to advance science and improve the quality of both the food industry and medical services."

Graduates of the NF undergraduate programme are:"

1. Qualified in the fields of food analysis, processing, quality control, and safety as well as ensuring their acknowledgment of food quality and food safety requirements which are addressed through the use of systems and programmes that in-

clude quality management, quality assurance, quality control, Hazard Analysis Critical Control Point (HACCP) system and Good Manufacturing Practices (GMPs).

2. Able to provide nutrition care through knowledge and skill development in communication, nutritional assessment, meal planning, diet therapy implementation, and counseling, in preparation for the dietetic profession.

3. Develop nutrition interventions and education programmes tailored for high-risk populations that experience health disparities.

4. Able to promote food and nutrition research that focuses on health, quality of life, obesity, chronic disease, and bioactive food components.

5. Able to work in an environment that supports interdisciplinary and collaborative research for faculty and students."

For the Bachelor's degree programme Plant Production the Jordan University of Science and Technology (JUST) has presented the following profile in its Self-Assessment Report:

The bachelor's Programme in Plant Production is a four-year, full-time programme in the Department of Plant Production, is one of the four study programmes in the Faculty of Agriculture, Jordan University of Science and Technology. Founded in 1990, offers undergraduate students the opportunity to pursue an academic (BSc.) degree. The first batch of students graduated from the programme in 1993. Graduates of the Plant Production Department may have jobs in both the private and public sectors. Examples of public sectors include the Ministry of Agriculture, the Ministry of Environment, the Ministry of Water, the National Centre for Agricultural Research, and other agricultural centers. In the private sector, they include private agricultural companies, greenhouse operations, nurseries, and others.

The objectives of the PP undergraduate Programme are:"

1. To provide our students with an outstanding education, scientific skills, and practical training that enable them to compete in the local and international job markets.

2. To conduct research that aims at solving problems and enhancing agricultural productivity.

3. To serve our local community by providing technical and practical support to our agricultural and rural communities, through our extension programmes."

For the Bachelor's degree programme Soil and Irrigation the Jordan University of Science and Technology (JUST) has presented the following profile in its Self-Assessment Report:

"The bachelor's Programme in Soil and Irrigation is a four-year, full-time programme in the Department of Natural Resources and Environment, is one of the four study programmes in the Faculty of Agriculture, Jordan University of Science and Technology. Founded in 1996, the programme offers the undergraduate students the opportunity to pursue an academic (BSc.) degree in three disciplines: Soil and Irrigation, Soil Water and Environment, and Rangeland and Forestry. Both Soil Water and Environment, and Rangeland and Forestry were suspended (Date 2007), with one discipline left (Soil and Irrigation). Graduates could be employed in agricultural research stations, the Ministry of Agriculture, the Ministry of Environment, the Ministry of Water, field engineers (agricultural engineer), private agricultural companies, teachers at schools, as well as research assistants, and with pre-training they can be managers at various public and private institutions."

The objectives of the SI undergraduate Programme are:"

1. To educate and train students with theoretical knowledge and skills in soil, water, and irrigation to produce high-quality graduates with a broad-based education in agriculture, land, and water management issues.

2. To develop the innovative capacity of students for increasing agricultural production with scarce water resources available.

3. To prepare for further graduate studies, careers in agricultural, land-water, irrigation, and environmental sectors.

4. To understand ethical issues and societal responsibility of serving the society and the environment at large.

5. To apply knowledge of soil and irrigation sciences coupled with life sciences, to formulate and solve soil, water and irrigation problems that address contemporary issues within a global, societal, and economic context.

6. To prepare leaders in agricultural and irrigation sectors to function on multi-disciplinary teams who can practice soil-water and irrigation sciences to serve national and regional companies, and government agencies."

C Peer Report for the ASIIN Seal

1. The Degree Programmes: Concept, content & implementation

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

Evidence:

- Self-Assessment Report
- Module descriptions
- Webpage Faculty of Agriculture: https://www.just.edu.jo/FacultiesandDepartments/FacultyofAgriculture/Pages/Default.aspx
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The peers refer to the Subject-Specific Criteria (SSC) of the Technical Committee Agriculture, Forestry, Food Sciences and Landscape Architecture as a basis for judging whether the intended learning outcomes of the Bachelor's degree programmes Animal Production (AP), the Bachelor's degree programme Nutrition and Food Technology (NF), the Bachelor's degree programme Plant Production (PP) and the Bachelor's degree programme Soil and Irrigation (SI) as defined by the Jordan University of Science and Technology (JUST) correspond with the competences as outlined by the SSC. They come to the following conclusions:

The purpose of the Bachelor's degree programme Animal Production is to train and educate graduates that leave the programme having a fundamental understanding of animal production and to give them a clear understanding of the underlying scientific principles. They should acquire basic theoretical knowledge and concepts of breeding, feeding, nutrition, physiology, reproduction, meat science herd-health and management the natural sciences as well as practical skills such as problem solving or critical thinking to become a useful addition for the labour market. The students should develop technical expertise that allows them to enter the labour market as agricultural engineers, researchers or production managers.

Graduates of the Bachelor's degree programme Nutrition and Food Technology will be qualified in the fields of food analysis, processing, quality management and safety. They should acquire basis theoretical knowledge in nutritional assessment, meal planning, diet therapy implementation. They should also acquire the practical skills to conduct research on the influence of different environmental factors on physical, chemical and biological properties of food. As a result, graduates are prepared to work as employees in quality management, researchers or production managers in the food and nutrition industry.

The qualification objectives of the Bachelor's degree programme Plant Production should ensure that graduates will have an understanding of plant production systems in Jordan and the crop farming business. They will be able to identify and analyse problems related to plant production and solve environmental and manmade problems through design. In addition, graduates will be able to analyse, draw conclusions and propose solutions to different issues in plant production, landscape design and plant protection.

The purpose of the Bachelor's Degree programme Soil and Irrigation is to train and educate graduates that leave the programme having broad knowledge in agriculture, land-, and water management issues and to give them a clear understanding of underlying scientific principles. They are supposed to be able to apply their knowledge in a global, societal and econimc context, for example by advising different actors such as government agencies or companies on ecological and agricultural problems. They should also be able to work in research or agricultural production.

The auditors hold the view that the objectives and intended learning outcomes of the degree programmes AP, NF, PP and SI as mentioned in the Self-Assessent Report are reasonable and the job perspectives are realistic. During the discussion with the auditors, the employers confirm that graduates from JUST have very good theoretical background and are in general better qualified in comparison to graduates from other similar programmes in Jordan. Although the employers are overall satisfied with the graduates' qualification profile, they stress that the working experience needs to be improved. From their experience, more practical skills are needed, especially if the students want to work for a research-oriented company. The peers explicitly support this point of view and recommend to provide more opportunities for students to improve their soft-skills (see criterion 2.1).

While the learning outcomes and objectives reflect a solid base for each of the programmes, the peers notice that they are rather basic-oriented and therefore partly outdated. The industry representatives confirm this assessment and state that they perceive the technological advancement at JUST to be rather slow. The peers recommend to keep

track of the developments in each of the respective fields and to revise the learning outcomes accordingly. While graduates might be prepared for the national market, the alumni survey shows that a majority of students experiences problems in finding a suitable job. This could be related to the economic situation in Jordan as a whole, but the peers conclude that updating the learning outcomes to align with international standards could be a possible solution to this problem.

In addition, the peers point out that the objectives and learning outcomes should be accessible to all stakeholders. For example, this could be achieved by publishing them on the Department's webpage (see criterion 5.3).

Based on the Self-Assessment Report and the discussions during the on-site-visit, the peers see that graduates of the four Bachelor's degree programmes acquire most of the necessary subject-related competences. They obtain basic theoretical knowledge in the core subjects, are able to solve subject-relevant problems, and can present the results.

However, judging by the feedback from industry representatives, these stakeholders are not involved in the development of the programmes' curricula and learning outcomes. According to the peers' initial assessment, it would be beneficial for the four programmes to not only rely on internal surveys when developing the programmes (see criterion 6).

In summary, the auditors are convinced that the intended qualification profiles of the four programmes allow graduates to take up an occupation, which corresponds to their qualification. The peers judge the objectives and learning outcomes to be suitable to reflect the intended level of academic qualification (EQF 6) and mostly correspond with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 08 – Agriculture, Forestry, Food Sciences and Landscape Architecture.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:
The auditors confirm that the names of the Bachelor's degree programmes Animal Production, Nutrition and Food Technology, Plant Production and Soil and Irrigation correspond with the intended aims and learning outcomes as well as the main course language.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report

- Study plan
- Module descriptions
- Webpage Faculty of Agriculture: https://www.just.edu.jo/FacultiesandDepartments/FacultyofAgriculture/Pages/Default.aspx
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The curricula of all four Bachelor degree programmes are mostly well designed and appropriately structured in order for students to successfully reach the intended learning and qualification objectives. They consist of several groups of modules: university general education requirements, faculty of agriculture requirements and departmental requirements.

JUST has developed and included a comprehensive matrix for every study programme in the Self-Assessment Report that shows, which intended learning outcome should be achieved by which course. This matrix makes apparent that the objectives of the four Bachelor's degree programmes are substantiated by the courses and it is clear to the peers, which knowledge, skills and competences students will acquire in each course.

The auditors appreciate that the programmes are taught in English, which is expected to increases job opportunities and international mobility prospects for students and graduates.

In the perception of the peers, the four study programmes under review reflect the traditional basics in the respective fields. While the peers highlight the importance of those basics, they note that there have been various developments in agriculture that are not reflected in the curricula. As it has been mentioned under criterion 1.1, they would advise to revise the learning outcomes of the programmes in a way that they reflect more of the developments in the fields of animal production, nutrition and food technology, plant production as well as soil and irrigation. To this end it would be also necessary to adjust the curricula and implement new contents. A starting point for this approach could be to offer more elective courses that cover more specific and current content, as the present catalogue is rather small and contains many broad topics. The students also confirm that they would appreciate updated curricula and more specific elective courses to develop their own profile and to follow their interests and be better prepared for their professional life.

One aspect that is part of the learning outcomes of all programmes is the ability of graduates to conduct scientific research after completing their studies. According to the peers, this aspect is not reflected in the curricula of the programmes. None of the modules provides sufficient training in scientific methods such as data analyses, scientific writing or

dealing with literature. Since scientific work is an integral part of the graduate profiles, the peers ask JUST to incoroporate this aspect either partly in adequate modules or as a compulsory module of its own.

The peers also critically comment on the fact that the programmes do not contain a bachelor thesis or a final project that improves and at the same time proves the students' ability to work on a topic from start to finish in a scientificially sound manner (see criterion 3).

In summary, the peers see that the curriculum allows the students to achieve most of the intended learning outcomes with the limitations described above.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- General Regulations for awarding the Bachelor's Degree of the Jordan University of Science and Technology
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Admission to JUST mostly depends on the grades of the high school graduates. They must pass the Jordanian High School Diploma (Tawjihi) with a minimum grade of 65% in the scientific classes. All Jordanian high school graduates that want to study at a university must fill out an application form with 20 options based on their preferences in different subjects and universities. Applicants are ranked based on their high school grades and the best get their first choice.

In addition, some students are accepted based on the profession of their parents. For instance, students whose parents are working at JUST would compete with students from the same group for an assigned number of placements.

Finally, 5% of the available placements are reserved for Jordanian students who obtained their high school diploma abroad.

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

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

Criterion 1.1 & 1.3

JUST states that all departments will discuss the content of their courses and consider integrating advancing technologies in the respective fields. In addition, JUST mentions elective courses that already integrate new technologies. These modules have been added to the curriculum in 2019. The peers appreciate this clarification and JUSTs intention to revise and update the core courses.

Criterion 1.3

JUST submits a decision by the Dean of the Faculty of Agriculture that all programmes under review will update their curriculum and add an undergraduate thesis or final graduation project as a compulsory course. To complement the introductionof final projects/undergraduate theses, JUST plans to offer additional courses in “Research Methods” and “Scientific” writing. Those courses will be offered as elective modules. The peers welcome this decision, but expect JUST to make at least one of these modules a compulsory part of the curriculum to ensure that students undergo scientific training before their theses.

Further, the peers ask JUST to submit a new version of the curriculum together with the examination regulations as well as the module descriptions for the theses and the “Research Methods” and “Scientific Writing” courses in order to consider this requirement fulfilled.

The peers consider Criterion 1 to be **partly fulfilled.**

2. The Degree Programmes: Structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- General Regulations for awarding the Bachelor’s Degree of the Jordan University of Science and Technology
- Webpage Faculty of Agriculture: https//www.just.edu.jo/FacultiesandDepartments/FacultyofAgriculture/Pages/Default.aspx

- Discussions during the audit

Preliminary assessment and analysis of the peers:

The four Bachelor's degree programmes under review are offered by four different departments: Department of Animal Production (AP), Department of Nutrition and Food Technology (NF), Department of Plant Production (PP), Department of Natural Resources and Enviroment (SI), which are part part of the Faculty of Agriculture of JUST.

One Jordanian Credit Point (CP) is awarded for one hour of theoretical lecture or three hours of practical laboratory work. This only includes contact hours, the students' self-study hours are not taken into consideration. Hence, there is no conversion rate between Jordanian CPs and the European Credit Point Transfer System (ECTS). This issue will be discussed in more detail under criterion 2.2. Students of each department are obliged to register for a minimum of 9 and a maximum of 18 credit hours per semester.

The curriculua are divided into five sections and consists of 132 CP. The first section are the University Compulsory Requirements where the students have to cover 16 CP: Arabic Language, Social Responsibility, Entrepreneurship and Innovation, General Skills, Military Sciences, and English Language.

The second section are the University Elective Requirements. Students have to take classes worth a total of 9 CP that can be chosen from list of courses from all faculties.

The third section includes the Faculty Compulsory Requirements that encompass 20 CP. These courses are basic introductory courses in the natural sciences, as biology and chemistry, and interdisciplinary courses such as "Principles of Agricultural Economics" or "Extension and Transfer of Agricultural Technology".

The biggest compartment are the Department Compulsory Requirements. The students have to cover 78 CP out the following areas:

AP: General Biology, Animal Nutrition, Animal Genetics, Enviromental Physiology, Animal Health etc.

NF: Organic Chemistry, Analytic Chemistry, Biochemistry, Principles of Animal Science, Principles of Nutrition- , Human Physiology, Human Nutrition, Food Technology, Diet Therapy, Food Quality Control etc.

PP: Molecular Genetics, Organic Chemistry, Principles of Soil Science, Soil Fertility and Fertilizers, Field Crop Production, Weed Science, Plant Pathology, Dieseases, Economic Entomology etc.

SI: General Microbiology, Organic Chemistry, Biostatistics, Principles of Soil Science, Introduction to Natural Resrouces Management, Soil Physics, Hydrology, Soil Reclamation, Agricultural Drainage, Irrigation Systems Design

Finally, there are Specialized Elective Courses that account for 9 CP of the overall 78 CP per department. Students can specialise in different areas of their respective fields. Since the four study programmes under review overlap in many aspects, many of the elective courses are regular courses that come from one of the other programmes.

In the third semester students are supposed to complete their summer training. This course is obligatory and can only be completed in the summer semester. Students can enrol for an 8 weeks internship in a company or government institution of their choice.

Extensive lists for all programmes can be found in the appendix of this report.

The peers discuss with the programme coordinators in detail about the current curricula and possible changes. As it has been mentioned in criterion 1.3, some aspects of the curricula are lacking, namely the scientific focus as well as the missing adaption of current developments. The other aspects of the programmes represent a solid subject specific basis that could be developed in a more modern way.

The auditors strongly recommend making scientific methods or scientific writing a compulsory course and offering it in the second or third year of studies. This will help to better prepare the students for writing laboratory reports and conducting a research project. The auditors also suggest introducing the students to good laboratory practise and scientific conduct (e.g. citation rules, plagiarism). These competences then need to be checked and further facilitated by a final project or an undergraduate thesis.

The auditors discuss with the employers whether they offer internships and how students gain practical experience. They mention the summer training as a way for students and companies to get in touch but also stress that it would be useful for the students to get more practical experience in order to be able to get acquainted with different areas, which will improve their job perspectives. The students support this point of view. For this reason, the auditors suggest increasing the scope of the field training. The industry representatives would for example welcome the opportunity to be guest lecturers at the university. The peers support this idea as it could benefit the students in two ways: Firstly, they would be in touch with developments in the industry and learn the current state of their fields of study, and secondly, they could learn what skills are important to be successful in a working environment.

International Mobility

The peers discuss with the programme coordinators whether there are windows of mobility for the students and point out that the international visibility and reputation of a university is increased by its research activities and the academic mobility of staff members and students. The academic mobility of the faculty members is already quite high and almost all teachers have international experience and contacts. However, in the opinion of the peers it would be great to see these international experiences lead to changes in the curricula of the programme and the vision of the agricultural faculty.

Only a few Bachelor's students spend some time abroad, usually in form of an ERASMUS+ programme. For example, last year four students of the agricultural faculty have studied for one semester in Bulgaria or Estonia. By contrast, there are 20 to 25 % international students at JUST and all courses are taught in English. The International Office supports and helps the international students.

Since the auditors learn from students that some of them plan to apply for international Master's programmes and want to spend some time abroad during the Bachelor's programme, the Department of Agriculture should initiate exchange programmes with international universities and actively support the students in gaining international experience. This would ensure that the students from the four study programmes do not have to compete with students from other departments for the few ERASMUS+ places that JUST offers. A good starting point to initiate international cooperations are the manifold personal international contacts of the faculty members.

The auditors recognize that there is no clear mobility window in the study programmes. It would be a massive improvement to specify mobility windows in each of the study programmes and to increase the amount of students going abroad. There's also the opportunity to show equivalents of modules that have been recognized in the past few years (e.g. on the JUST homepage) and to organize information events where students of the higher semesters that have gone abroad show off their experiences to inspire students in the lower semesters.

The auditors emphasize that it is very useful for students to spend some time abroad already during their Bachelor's studies to improve their English proficiency and to enhance their opportunities for being accepted in an international Master's programme.

With respect to the recognition of credits gained at other institutions, the peers learn that the current regulations comply with the Lisbon Convention, which states that achievement and competences acquired at another higher education institution must be recognised unless the institution that is charged with recognition, in this case by JUST, can prove substantial differences. By signing a learning agreement before staying abroad, it is guaranteed that the credits acquired at a foreign university are accepted at JUST.

Criterion 2.2 Workload and credits

Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The auditors perceive that the underlying credit hour system used for assigning credit points primarily reflects attendance times of students, without including working hours required for self-studies. Workload indicates the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations). The number of credits ascribed to each component should be based on its weight in terms of the workload students need in order to achieve the learning outcomes.

The estimation of workload must not be based on contact hours only (i.e. hours spent by students on activities guided by teaching staff). It embraces all the learning activities, including the time spent on independent work, compulsory work placements, preparation for assessment and the time necessary for the assessment. In other words, a seminar and a lecture may require the same number of contact hours, but one may require significantly greater workload than the other because of differing amounts of independent preparation by students.

Using this approach, all the teaching staff are involved in the process of credit allocation. They can put forward their proposals in terms of learning outcomes, and estimate the workload necessary to achieve them.

Typically, the estimated workload will result from the sum of:

- the contact hours for the educational component (number of contact hours per week x number of weeks)
- the time spent in individual or group work required to complete the educational component successfully (i.e. preparation beforehand and finalising of notes after attendance at a lecture, seminar or laboratory work; collection and selection of relevant material; required revision, study of that material; writing of papers/projects/dissertation; practical work, e.g. in a laboratory)
- the time required to prepare for and undergo the assessment procedure (e.g. exams)

Since workload is an estimation of the average time spent by students to achieve the expected learning outcomes, the actual time spent by an individual student may differ from this estimate. Individual students differ: some progress more quickly, while others progress more slowly. Therefore, the workload estimation should be based on the time an "average students" spends on self-studies and preparation for classes and exams. The initial estimation of workload should be regularly refined through monitoring and student feedback.

Within the ECTS, one credit corresponds to 25 to 30 hours of students' work. JUST should follow this framework and make transparent exactly how many hours of workload are needed for one credit point. By considering students' workload in curriculum design and delivery, JUST would facilitate mobility from institution to institution, from country to country, and between different educational sectors and contexts of learning.

The peers discuss with the programme coordinators about the current dropout rates and the average length of studies. They learn that the majority of students finishes their studies in time.

As the students confirm during the audit, the actual dropout rate is between 10 and 20 % and it is no problem to finish the degree programme within the expected 4 years. Actually, it is possible to finish the degree programme in 3.5 years if students take classes in the summer semester.

In summary, the auditors conclude that there is no general structural pressure on the quality of teaching and the level of education due to the workload. The total workload appears to be adequate and the students are able to complete the degree programme without exceeding the regular period.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

In the Bachelor's degree programmes AP, NF, PP and SI, several different educational methods such as lecture, seminar, practical laboratory work, and field training are applied.

The overall learning model at JUST is aimed at improving the students' competences through discussions, practical work, and lectures. Practical work is designed to impart good laboratory skills and is usually done as a group activity. The peers positively acknowledge that assignments and laboratory work are essential parts of many courses.

Students are regularly provided with assignments and homework that require answering, calculating, performing investigations, conducting comparative studies, analysing, exploring and coming up with conclusions. They are also given tasks such as writing projects and independent work that requires problem solving and higher order thinking. The field training can be performed in companies, at research institutes and laboratories or at JUST.

To help the students to achieve the intended learning outcome and to facilitate adequate learning and teaching methods JUST provides a digital learning platform. Teachers and students use it for presenting course material like papers and assignments and for communicating with each other.

In summary, the peer group judges the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes.

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

JUST provides a support system for all students on different levels. It includes consultations with an advisor for academic affairs about graduation requirements and general study regulations. On a more personal level, teachers are available for advice on each course. In addition, students have the opportunity to participate in student clubs and social activities.

The system of support and assistance, which results in a trustful atmosphere between students and teaching staff, is one of the strengths of JUST. The peers see that the teachers are accessible and there are enough resources available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay. The students are well informed about the services available to them.

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

Criterion 2.1

JUST presents a variety of possibilities for students and staff to participate in exchange programmes. The peers welcome these efforts to promote international mobility and encourage JUST to strengthen its commitment to facilitating students' exchange. The peers believe that one aspect that could help students to plan their stay abroad could be a defined window for mobility.

Criterion 2.2

The peers ask JUST to conduct a workload evaluation in order to verify if the actual students' workloadmatches the number of credits awarded. To check this, JUST needs to determine the actual individual workload of the students.

The peers consider criterion 2 to be **mostly fulfilled.**

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- General Regulations for awarding the Bachelor's Degree of the Jordan University of Science and Technology
- Discussions during the audit

Preliminary assessment and analysis of the peers:
According to the Self-Assessment Report, a variety of examination forms is used for assessing the intended learning outcomes. In the course of the degree programme, the students' achievements are assessed by different methods such as midterm exams, assignments and homework, laboratory reports, presentations, and the final exams. There is also an ongoing monitoring of the students' progress in their studies; it is evaluated by the teaching staff based on participation and preparation for the classes.

The form and contribution of each exam to the final grade is mentioned in the module descriptions that are available to the students via the JUST e-learning platform. The academic performance for each module is graded on a scale from 0 to 100. 40 points are allocated for the final examination, while 60 points are allocated for semester assignments consisting of written examinations and other type of assessment methods.

The final exam in each module is a written examination, which typically includes multiple-choice questions, essays, problem-solving or case-based questions and calculation problems. Most final examinations are paper-based, computer-based examinations are only held for classes with more than 100 students. At the end of each semester, students must attain a minimum of 50 points to pass the class. If a student fails a class, he can retake it as many times as he wants. It is also possible to repeat a class in order to improve the final grade. For repeating failed examinations, students can retake the course during the summer semester or within the regular course of the next academic term. The summer semester is an optional third term designed for students who have credit deficits or want to earn extra credits in order to be able to earlier complete the programme. The further details are determined in JUST's General Regulations. The students confirm during the audit, that there is a general exam schedule, overlaps are avoided and they are informed in time about the exam date.

The reviewers observe that an undergraduate thesis or a final project that meets international standards for independent scientific student work is missing. Paired with the overall lack of scientific competences conveyed in the study programmes, the peers conclude that an essential element is missing in the current setup of the Bachelor programmes, and that a final project or thesis must be added as a compulsory element in the curricula. The thesis or project shall address students' ability to independently search literature, plan and design experiments, collect data, analyse data and interpret their findings. Students should also gain experience in scientific communication by submitting a written final report and defending the results of their research in front of a faculty committee.

According to the interviewed students and graduates, such a final project is regarded as particularly advantageous from a career perspective. They share their experience that employers are regularly asking students about their final thesis, particularly during job interviews. The students agree that a final thesis would deepen their skills and competencies and would be beneficial when demonstrating their study-related qualifications.

During the audit, the peers inspect sample examination papers and are overall satisfied with the general quality of the samples.

The peers confirm that there is a form of assessment for each course and that all students are well informed about the form of assessment and the details of what is required to pass the course. The organization of the exams guarantees that delays in the study progress are avoided. The relevant rules for examination and evaluation criteria are put into a legal framework, as both students and lecturers confirm during the audit. The date and time of the exams and how the exams are taken is announced to the students in due time at the beginning of each semester.

The peers come to the conclusion that the examinations are mostly suitable to verify whether the intended learning outcomes are achieved or not.

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

JUST submits a decision by the Dean of the Faculty of Agriculture that all programmes under review will update their curriculum and add an undergraduate thesis or final graduation project as a compulsory course. The peers welcome this decision, but expect JUST to submit a new version of the curriculum together with the examination regulations as well as the module descriptions for all four programmes in order to consider this requirement fulfilled.

The peers consider criterion 3 to be **partly fulfilled**

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-Assessment Report
- Staff handbook
- Study plan
- Module descriptions

- Discussions during the audit

Preliminary assessment and analysis of the peers:
The auditors confirm that JUST has a sufficient academic staff and is well equipped for teaching. According to the Self-Assessment Report, there are currently 47 active faculty members in the Faculty of Agriculture (7 full professors and 2 assistant professors for AP, 6 full professors, 5 associated professors and 1 assistant professor for NF, 7 full professors, 7 associate professors and two assistant professors for PP and 7 full professors and 3 associated professors for SI). The academic staff members are supported by a number of part-time teaching assistants for laboratories (Master's students). In addition, every department has full-time and part-time laboratory supversiors mainly comprised of Master's students, and a full time secretary.

Almost all of the staff members at the Faculty of Agriculture have done their PhD abroad and have spent some time at an international university. The peers explicitly laude the international experience of the teachers and are convinced this will help to further promoting the internationalisation of the Department and the academic mobility of the students.

During the discussion with the faculty members, the auditors learn that there are enough resources for conducting research activities and that the teaching load is adequate.

In summary, the peers confirm that the composition, scientific orientation and qualification of the teaching staff is suitable for successfully implementing and sustaining the four Bachelor's degree programmes under review. There are enough resources available for administrative tasks, and supervision and guidance of students.

Based on their impressions during the audit and the submitted staff handbooks, the peers consider the proportion of female lecturers to be rather low and therefore recommend evaluating measures that could increase the number of female professors involved in the programmes.

The open-minded atmosphere among the staff members and their dedication to further developing the programme impress the auditors.

Criterion 4.2 Staff development

Evidence:

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

Preliminary assessment and analysis of the peers:
At JUST, there are sufficient offers and support mechanisms available for teachers who wish to further develop their professional and teaching skills. For example, there is a Faculty Development Center at JUST that offers workshops for faculty members to improve their teaching skills and to get acquainted with new didactical methods. All faculty members have to take part at a minimum of two workshops in order to get promoted. In addition, enough funds are available for spending time abroad e.g. for attending seminars, conferences or workshops or for taking part at research projects.

During the discussion with the peers, the teachers express their satisfaction with the support by the university and the opportunities for further didactic and scientific development.

A paid leave of absence for participating in international research projects is possible either during the summer time or for a whole semester (sabbatical) and several staff members graduated or received their Ph.D. from international universities and have personal contacts with international universities. A sabbatical can be taken once every six years. The auditors are particularly impressed by the regulation that double salary is paid by JUST during the sabbatical or the summer leave. In addition, JUST covers the cost for participating at international conferences. The international orientation of the staff members is one of the strong points of the study programmes.

Criterion 4.3 Funds and equipment

Evidence:

- Self-Assessment Report.
- Online-visit of the laboratories, classrooms, and the library
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Following the assessment of the self-assessment reports and supporting documents, videos and photos as well as the online meeting, the auditors notice that suitable and high-quality infrastructure and equipment are guaranteed for all four programmes. They acknowledge the JUST policy to share all technical resources and equipment among colleges and programmes in order to act flexibly when supporting the students' projects, even in case of limited capacities. The same counts for the laboratory places for which a transfer to other programmes' places is enabled in case of potential overbookings or lack of spaces. A good balance between running experiments and working in laboratories in group and independent self-study is also recognised by the peers. Sound structures are in place to train the students in terms of safety regulations and instructions.

The JUST library offers access to electronic scientific and educational resources and to the electronic library system, including current publications that are needed for study and research. Moreover, access to international scientific databases like SpringerLink and Scifinder is possible. Overall, the students are very satisfied with the available literature and services provided by the library. They also express their general satisfaction with the available resources and conditions of studying, thereby confirming the positive impression of the peer group.

The auditors conclude that there are sufficient funds and equipment and that the infrastructure (laboratories, library, seminar rooms etc.) in general complies with the requirements for sustaining the degree programme.

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

The peers understand that JUST does not discriminate against female lecturers. JUST has binding hiring regulations with equal opportunities for all genders. However, the peers keep up the recommendation to find ways to attract more female lecturers to apply for positions at JUST.

The peers consider criterion 4 to be **fulfilled.**

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- General Regulations for awarding the Bachelor's Degree of the Jordan University of Science and Technology
- Webpage Faculty of Agriculture: https://www.just.edu.jo/FacultiesandDepartments/FacultyofAgriculture/Pages/Default.aspx
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The auditors confirm that the module descriptions (syllabus) are accessible to all students and teachers via the university`s homepage and the e-learning platform. However, the uploaded syllabus files are not identical with the module descriptions that were attached to the self-assessment report. For this reason, the peers ask JUST to upload all relevant descriptions to the website, making them accessible for all stakeholders.

In the peers opinion it would also be helpful if the module descriptions indicate when they were last updated or renewed. Additionally, some of the module descriptions use outdated literature and should therefore be updated.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Sample Diploma Certificate
- Sample Transcript of Records

Preliminary assessment and analysis of the peers:
The peers confirm that the students of all four programmes are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all necessary information about the degree programme except the averge grades for every subject. Therefore, the peers ask JUST to add these average grades to the Diploma Supplement.

Criterion 5.3 Relevant rules

Evidence:

- Self-Assessment Report
- Webpage Faculty of Agriculture: https://www.just.edu.jo/FacultiesandDepartments/FacultyofAgriculture/Pages/Default.aspx
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The auditors confirm that the rights and duties of both JUST and the students are clearly defined and binding. All rules and regulations are available to the students via the e-learning platform. However, the auditors notice that not all relevant information about the degree programme (study plan, module descriptions, learning outcomes, job perspectives, programme objectives) is published on the department’s website and hence available to all relevant stakeholders.

The auditors, therefore, expect that all relevant course-related information is made accessible for all stakeholders, e.g. by publishing it on the department's webpage.

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

JUST has submitted an updated version of the Diploma Supplement and has uploaded all necessary documents to their website.

The peers consider criterion 5 to be **fulfilled.**

6. Quality management: Quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Discussions during the audit
- General Regulations for awarding the Bachelor's Degree of the Jordan University of Science and Technology

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

Internal evaluation of the quality of the four Bachelor's degree programmes is provided through course exit surveys, a graduate exit survey and an alumni survey.

First, there is a course exit survey that is conducted in all undergraduate and postgraduate degree programmes of JUST. It is organised centrally by the Academic Development Centre (ADC) with the purpose of evaluating the performance of the teachers. This evaluation is conducted in every course at the end of each semester just before the final exams take place. It includes the same questions for all programmes and is done online. All students have to participate; otherwise, they are not allowed to take part at the final exam. The results are collected and analysed by the ADC. Each teacher receives his course evaluation results, which should serve as a guide for any improvement in the teaching process.

As the peers find out during the discussions with the teaching staff and the students, the results of the course exit surveys are usually not discussed with the students. The programme coordinators confirm that there is no feedback to the students about the course evaluations. If there is negative feedback, the Dean of the College of Science and Arts talks to the respective teacher, analyses the problems, and offers guidance.

Some teachers also discuss with their students directly how to improve the course but that practise is not common usage. The auditors point out that the students' feedback has to be taken seriously by the teaching staff and changes should made if there is critique. For this reason, they expect that the students are informed about the result of the course surveys and that all teachers discuss with them how to improve the course. The peers also learn that there is a complaint box for the students that can be used for suggestions or criticism. The peers support this possibility but point out that this cannot substitute the feedback on the course evaluation results.

Secondly, JUST also conducts a graduate exit survey by asking graduating students to evaluate the importance of each course that they have taken during the course of their studies and to determine the students' level of satisfaction with the respective degree programme.

Finally, JUST conducts an alumni survey. It is designed to provide feedback on the job perspectives and fields of employment of the graduates.

External quality assessment of the degree programme is carried out by the national Jordanian Accreditation and Quality Assurance Commission for Higher Education Institutions.

Students of each department are represented by a member in JUST's student union. The student union itself is represented by its chair in the university council where he can convey student concerns or requests to the university administration. In addition, there is an Alumni Office at JUST that tries to keep in contact with the graduates and that regularly organises a student fair with possible employers.

During the discussions with the industry representatives, the peers learn that they would like to be more involved in the quality assurance processes of JUST.

In summary, the peer group confirms that the quality management system is suitable to identify weaknesses and to improve the degree programmes. The students are somewhat involved in the process but not all feedback loops are closed. The peers stress that it is necessary to develop a culture of quality assurance with the involvement of all stakeholders in the process.

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

JUST states that all departments are planning to ask their lecturers to inform students about the results of the evaluations and the measures derived. The peers appreciate this, as it will ensure that students are informed about what happens with their feedback. However, the peers ask JUST to issue a formal regulation that will be binding for lecturers to formalize this process.

In order to involve all stakeholders more in the curriculum development process, all programmes will organize an annual joint meeting, invite guest lecturers, initiate panel discussions and host job fairs. The peers welcome these steps as they create a better flow of inromation for all stakeholders. The bi-annual meeting of the advisory board and the annual meeting of all stakeholders will create a forum to share opinions on the study programmes.

The peers consider criterion 6 to be **mostly fulfilled**.

D Additional Documents

No additional documents needed.

E Comment of the Higher Education Institution (31.10.2022)

The university has submitted the following statement:

Please find below the response of the curriculum development committees for the four study programs at the Faculty of Agriculture to the requirements, comments, and recommendations of the ASIIN accreditation peers and evaluation committee.

Page	The Suggested Comments by the Accreditation Committee	JUST Response and Action Plan
11	Update the program learning outcomes (PLOs) to align with international standards serving for job finding problems.	PLOs for the four departments were extensively discussed and approved by all department councils to be aligned with the needs of the stakeholders and employers to reflect the market needs of professional assessment. In addition, development and updates to course contents and curricula will be reflected on these PLOs wherever they apply.
	Post the outcomes on the website to be accessible to the stakeholders	Outcomes are already posted on the department websites on about part of the dropdown sidebar (links follow): https://www.just.edu.jo/FacultiesandDepartments/FacultyofAgriculture/Departments/Animal-Production/Pages/Outcomes.aspx Department of Nutrition and Food Technology Department of Plant Production Department of Natural Resources and Environment The collection of all syllabi as per ASIIN format was compiled in one document (Module Handbook; Link1, Link2, Link3, Link4) and uploaded to each department's website under the Accreditation tab.

	Get the stakeholders involved in the curriculum development	Stakeholders will be more actively involved in current and future curriculum development through the faculty council periodical meetings as community members and departmental advisory board bi-annual meetings. The Faculty of Agriculture is planning to increase the participation of the stakeholders through job fairs, panel discussions, and other advocacy methods to get feedback on the requirements of the market needs and expose students to a variety of job opportunities.
12	Develop curriculum to includes scientific research	Two departments (Animal Production and Natural Resources and Environment) curricula already offer research courses as department elective courses (AP494 and NR494, respectively). The other two departments (Nutrition and Food Technology and Plant Production) plan to offer similar courses in the coming curriculum update cycle (i.e., within the next two years).
	Developing modules to include agricultural development and to include more specific courses	New content will be added to each module discussing the recent advances in different disciplines of agriculture. Regarding the suggestion of adding more elective courses, each department amended the offered elective courses by including newly adopted technologies (PP432 Soilless Culture Farming, AP431 Poultry Farm Management and Technology, AP445 Conservation of Animal Genetic Resources, PP431 Biotechnology in Agriculture, PP430 Organic Farming, NR411 Climate Change: Impact, Adaptation and Mitigation, NF459 Food Biotechnology) in the last curriculum modification in 2019. In addition, each department offers elective courses in the curriculum entitled “Selected or Special Topics”, designated to tackle new advances and developments in agriculture.

		This recommendation was highlighted in the departmental meeting with the professors to ask them to update the content of the courses they teach by including the outcomes of new scientific research, new technology, techniques and methods, and adopting up-to-date textbooks. As part of the requirement of the compulsory and elective courses offered in each study program, students are required to review and present journal articles tackling recent development in the field of agriculture.
15	Curriculum is lacking scientific focus and modern development	In the next curriculum update cycle, two new elective courses (3 credit hours) will be offered in each curriculum program that focuses on scientific methods, data analysis, and scientific writing. The courses will be named “Research Methods” and “Scientific Writing” (see attached documents with the email). The content of each module will be updated by the instructors to discuss the recent advances in different disciplines of agriculture. In addition, the previously mentioned elective courses (PP432 Soilless Culture Farming, AP431 Poultry Farm Management and Technology, AP445 Conservation of Animal Genetic Resources, PP431 Biotechnology in Agriculture, PP430 Organic Farming, NR411 Climate Change: Impact, Adaptation and Mitigation, NF459 Food Biotechnology) discuss new adopted agricultural technologies.

16	To increase the scope of the field training by inviting guest lecturers	The courses of field training offered in the four departments do involve lectures presented by guest lecturers from both public and private sectors involved in the agriculture industry to enable students to benefit from their experience and increase exposure to market needs. In addition, students are guided to apply for more than one training place during their summer training course. The departments also work on linking students with key stakeholders including research stations, the National Agriculture Research Center (NARC), the Ministry of Agriculture, private agriculture companies, nurseries, etc. Furthermore, the Faculty of Agriculture is developing its research and training units inside the campus by establishing multi-span greenhouses, tunnel greenhouses, developing the animal farm, opening a clinical nutrition clinic, and reforming the dairy factory.
	Suggestion to develop the curricula to reflect the international experiences	All faculty members have equal opportunities to attend international conferences, meetings, research projects, and workshops, and to spend sabbatical leaves at international, high-ranking institutions. Upon their return to the university, all experiences are incorporated to improve their teaching courses and their research activities. Teaching and research methodologies have evolved as a result of the knowledge gained from the faculty member's participation in international conferences and workshops. All these skills and experiences are also reflected in teaching methodology including online teaching, developing interactive teaching, problem-solving approach, and community-based teaching.
	Initiate exchange programs with international universities	The faculty of Agriculture, in collaboration with the Deanship of Academic Development and Quality

17	To improve the mobility program and student exchange	Assurance (Previously Center of Academic Development and Quality Assurance), work to find opportunities for collaboration with international universities either by applying to Erasmus-Plus student and staff exchange programs or by establishing new programs between institutions. Currently, efforts are being made to initiate a joint program with Reading University in clinical nutrition. The Department of Natural Resources and Environment was granted a fund by Erasmus Mundus for a joint and exchange program in soil science (the Erasmus Mundus Master in Soil Science () with different European Universities https://emissmaster.omu.edu.tr/.
	To organize information day for the students who went in international exchange program to inspire other students	All students who attended exchange programs will be mandated to deliver a presentation and a full report to their colleagues upon their return to share experience and acquired knowledge with their fellow students for career advancement and encourage them to apply to such exchange programs.
18	Specify the workload for a single credit hour	The credit hours of all courses offered by the four programs were converted to ECTS and included in the diploma supplement.
21	Include thesis or final project	All departments will update their curriculum in the next curriculum development cycle to include a course called “Thesis or Final Graduation Project” [3 credit hours (5 ECTS)] instead of the currently offered seminar (one credit hour) (see attached document with email).
23	Suggestion to hire more female staff	According to university regulations, both genders have equal opportunities for applying and hiring. The administrators at JUST university encourage all qualified individuals, especially females, to apply based on the university hiring matrix, irrespective of their gender.
25	Upload updated syllabi on the website	We have uploaded all updated syllabi on the website of each department. All the course modules were

26	Publisher post all study plan module description, the learning outcomes on website	written as per the requirement of ASIIN. All syllabi were pooled in one document "Module Handbook" for each program and uploaded on each department's website under the Accreditation tab.
27	Discuss the course exit surveys with students	All departments are planning to ask the instructors to hold a meeting each semester with the students, department chair, faculty members, and Quality Assurance Representatives to discuss the results of the previous semester's course exit surveys.
	Student complain box for the student	There is an electronic complaint system in place that students can access on the following link https://www.just.edu.jo/Pages/ComplaintForm.aspx . In addition, students are informed about this system upon their orientation. The portal offers the possibility to address complaints and suggestions for improvement for a selected department, program, or even faculty member.
28	Stakeholders should be involved more in the quality assurance	All programs will organize an annual joint meeting at the beginning of the first semester of each year with stakeholders (Advisory Board members) and students to get their feedback on the offered courses and discuss the areas of improvement.
	Student feedback should be considered more in quality assurance	

F Summary: Peer recommendations (17.11.2022)

Taking into account the additional information and the comments given by JUST, the peers summarise 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 Animal Production	With requirements for one year	-	30.09.2028
Ba Nutrition and Food Technology	With requirements for one year		30.09.2028
Ba Plant Production	With requirements for one year		30.09.2028
Ba Soil and Irrigation	With requirements for one year		30.09.2028

Requirements

A 1. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders. In particular, students need to be informed about the results of the course evaluation surveys not only about the measures that are taken to improve the courses.

A 2. (ASIIN 1.3 & 3) An undergraduate thesis or final project must become a compulsory part of the curriculum.

A 3. (ASIIN 1.3) It has to be ensured that students learn how to work scientifically.

A 4. (ASIIN 2.2) Ensure that the awarded credits correspond with the actual workload of the students.

Recommendations

E 1. (ASIIN 2.1) It is recommended to further develop the internationalization strategy and a future oriented vision for all study programmes.

E 2. (ASIIN 2.1) It is recommended to provide students with more opportunities to improve their soft skills with respect to team leading, presentation, and communication.

E 3. (ASIIN 2.1) It is recommended to define a window for students' mobility and to further promote the academic mobility of the students.

E 4. (ASIIN 4.1) It is recommended to consider which measures could increase the proportion of female academics in the teaching staff.

E 5. (ASIIN 5.1) It is recommended to update the literature references in the module descriptions and to indicate when the module descriptions were last updated.

G Comment of the Technical Committee (21.11.2022)

Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the assessment of the auditors.

The Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Animal Production	With requirements for one year	30.09.2028	–	–
Ba Nutrition and Food Technology	With requirements for one year	30.09.2028	–	–
Ba Plant Production	With requirements for one year	30.09.2028	–	–

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Soil and Irrigation	With requirements for one year	30.09.2028	–	–

H Decision of the Accreditation Commission (09.12.2022)

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

The Accreditation Commission discusses the procedure. They agree with the assessment of the auditors and the technical committee.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Animal Production	With requirements for one year	30.09.2028	–	–
Ba Nutrition and Food Technology	With requirements for one year	30.09.2028	–	–
Ba Plant Production	With requirements for one year	30.09.2028	–	–
Ba Soil and Irrigation	With requirements for one year	30.09.2028	–	–

Requirements

A 1. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders. In particular, students need to be informed about the results of the course evaluation surveys not only about the measures that are taken to improve the courses.

A 2. (ASIIN 1.3 & 3) An undergraduate thesis or final project must become a compulsory part of the curriculum.

A 3. (ASIIN 1.3) It has to be ensured that students learn how to work scientifically.

A 4. (ASIIN 2.2) Ensure that the awarded credits correspond with the actual workload of the students.

Recommendations

E 1. (ASIIN 2.1) It is recommended to further develop the internationalization strategy and a future oriented vision for all study programmes.

E 2. (ASIIN 2.1) It is recommended to provide students with more opportunities to improve their soft skills with respect to team leading, presentation, and communication.

E 3. (ASIIN 2.1) It is recommended to define a window for students' mobility and to further promote the academic mobility of the students.

E 4. (ASIIN 4.1) It is recommended to consider which measures could increase the proportion of female academics in the teaching staff.

E 5. (ASIIN 5.1) It is recommended to update the literature references in the module descriptions and to indicate when the module descriptions were last updated.

I Fulfilment of Requirements (08.12.2023)

Comments of the peers and the Technical Committee (21.11.2023)

A 1. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders. In particular, students need to be informed about the results of the course evaluation surveys not only about the measures that are taken to improve the courses.

Initial Treatment	
Peers	fulfilled Justification: The experts believe that the stipulation mentioned above is met as the university demonstrates a proactive approach to disseminating the outcomes of quality assurance processes to various stakeholders. The structured sessions involving advisory board members, alumni, and students indicate a commitment to transparency and engagement. The regularity of these sessions ensures a continuous and responsive connection between the academic programs and the broader community, fostering a collaborative environment for improvement.
TC 08	fulfilled Justification: The technical committee discusses the procedure and follows the assessment of the expert team.

A 2. (ASIIN 1.3 & 3) An undergraduate thesis or final project must become a compulsory part of the curriculum.

Initial Treatment	
Peers	fulfilled Justification: The experts acknowledge that JUST has incorporated a mandatory graduation project into the curriculum. However, they express concerns about the overall credit load, deeming it relatively low. Consequently, they emphasize the importance of scrutinizing whether the actual workload for the preparation is accurately reflected and recommend adjusting the number of credits to align with the true workload if underestimated. In general, the experts suggest that JUST contemplate assigning a larger credit load to the graduation project to ensure

	that students have a meaningful amount of time to independently engage in a substantial project.
TC 08	fulfilled Vote: unanimous Justification: The technical committee discusses the procedure and follows the assessment of the expert team.

A 3. (ASIIN 1.3) It has to be ensured that students learn how to work scientifically.

Initial Treatment	
Peers	fulfilled Justification: JUST has incorporated courses like scientific writing and scientific research methods into the curricula. Consequently, the experts deem this requirement to be met.
TC 08	fulfilled Vote: unanimous Justification: The technical committee discusses the procedure and follows the assessment of the expert team.

A 4. (ASIIN 2.2) Ensure that the awarded credits correspond with the actual workload of the students.

Initial Treatment	
Peers	fulfilled Justification: The provided mechanism for converting credit hours to ECTS demonstrates a comprehensive approach by considering various factors, including theoretical and practical components, as well as feedback from students. The unified conversion mechanism aligns with the standard practice of estimating the workload for different credit hours, accounting for both class time and independent study. The adjustment made based on student feedback and monitoring reflects a commitment to ensuring that the awarded credits accurately represent the actual workload of the students. The exception for summer training is duly noted, and the inclusion of factors like self-study, lab work, and exam preparation in the workload estimation contributes to meeting the requirement of aligning awarded credits with the students' actual workload.
TC 08	fulfilled Vote: unanimous Justification: The technical committee discusses the procedure and follows the assessment of the expert team.

Decision of the Accreditation Committee (08.12.2023)

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Animal Production	All requirements fulfilled		30.09.2028
Ba Nutrition and Food Technology	All requirements fulfilled		30.09.2028
Ba Plant Production	All requirements fulfilled		30.09.2028
Ba Soil and Irrigation	All requirements fulfilled		30.09.2028

The Accreditation Committee for Degree Programmes decides to include the following reference into the letter of notification:

“The workload and the corresponding credits of the Bachelor’s theses will be examined thoroughly during the re-accreditation of the Bachelor’s degree programmes.”

Appendix: Programme Learning Outcomes and Curricula

For all programmes these general courses are presented:

Table 1.3.2: University Compulsory Requirements; 16 credit hours (CH)

Course No.	Course Title	CH	Theory	Practical	Prerequisite
MS 100*	Military Sciences	3	3	0	-
ARB 101	Arabic Language	3	3	0	-
HSS 110	Social Responsibility	3	2	1	-
LG 112	English Language (2)	3	3	0	Pass LG 99 or passing with more than 50% in the level examination
HSS119	Entrepreneurship and Innovation	2	2	0	-
HSS 129	General Skills	2	2	0	LG 112
Total		**16**	**15**	**1**	

* This course is required from Jordanian students only. Students graduating from Royal Military faculty and military candidate's school and equivalent institutes are exempted from taking this course: Non-Jordanian students may take a substitute for this course from the elective courses and, in this case, the grade will count towards their grade point average (GPA)

Note: All non-Arabic speaking students may study a substitute for ARB 101and HSS110

Table 1.3.3: University Elective Requirements; 9 credit hours (CH)

Course No.	Course Title	CH	Theory	Practical	Prerequisite
First Group: Humanities					
ARB 200	Appreciation of Literary Texts	3	3	0	-
HSS 115	Islam and Recent Problems	3	3	0	-
HSS 116	Economic System in Islam	3	3	0	-

HSS 121	Principles of Sociology (For Non-English Language Students)	3	3	0	-
HSS 126	Principles of Psychology (For non-Nursing and Midwifery Students)	3	3	0	-
HSS 127	Educational Technology	3	3	0	-
HSS 131	Islamic Civilization	3	3	0	-
HSS 132	Jerusalem History	3	3	0	-
HSS 133	Modern Culture and Civilization	3	3	0	-
HSS 135	Islamic Culture	3	3	0	-
HSS 137	Human Rights	3	3	0	-
HSS 161	Contemporary Problems	3	3	0	-
HSS 211	Principles of Sociology (**Arabic**)	3	3	0	-
HSS 213	Individual and Society (English)	3	3	0	-
HSS 251	Music appreciation	3	3	0	-
HSS 231	History of Sciences in Islam	3	3	0	-
Second Group: Science and Agriculture					
ES 103	Environmental Protection (for non- Environmental Sciences students)	3	3	0	-
ME 102	Introduction to Renewable Energy (for non- Mechanical Engineering Students)	3	3	0	-
NE 200	Principles In Nuclear Energy and its Peaceful Applications	3	3	0	-
CHE 191	Introduction to Nanotechnology	3	3	0	-
NF 177	Food Preservation "In English" (for non-Nutrition & Food Technology Students)	3	3	0	-
PP 200	Home Gardens (For non-Plant Production and Soil And Irrigation Students)	3	3	0	-
PP 201	Beekeeping (For non-Plant Production students)	3	3	0	-
NR 200	Natural Resources and Man (For non-Plant Production and Soil And Irrigation Students)	3	3	0	-

NR 207	Earth Problems and Solutions (For non-Plant Production and Soil And Irrigation Students)	3	3	0	-
Third Group: Health Sciences					
NUR 100	Health Promotion (for students not in Medicine or Nursing and Midwifery)	3	3	0	-
NUR 109	Family health	3	3	0	-
ADS 100	Oral and Dental Health (for non-Dental and Allied Sciences Students)	3	3	0	-
PH 104	Community Health and Nutrition (students not in Medicine or Nursing and Midwifery)	3	3	0	-
VM 212	Pet Animal Care (For non-veterinary and Animal Production Students)	3	3	0	-
VM 213	Animal behavior and welfare	3	3	0	-
OT 100	Disability and the Society (Not Allowed For Rehabilitation Science Dep. Students)	3	3	0	-
P.T 100	Wellness & Lifestyle (Not For Physical And Occupational Therapy)	3	3	0	-

Table 1.3.4: Faculty Compulsory Requirements; 20 credit hours (CH)

Course No.	Course Title	CH	Theory	Practical	Prerequisite
BIO 103	General Biology	3	3	0	-
BIO 107	General Biology Laboratory	1	0	3	BIO 103 or concurrent
CHEM 103	General Chemistry	3	3	0	-
CHEM 107	General Chemistry Laboratory	1	0	3	CHEM 103 or concurrent
PHY 103	General Physics	3	3	0	-
MATH 102A	Calculus (for biological sciences students)	3	3	0	-

PP 204	Principles of Agricultural Economics	3	3	0	As per department programme
PP 262	Extension and Transfer of Agricultural Technology	3	3	0	As per department programme

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Animal Production:

Objectives of a bachelor degree in Animal Production include:

1. To equip graduates with broad theoretical and practical skills and knowledge in basic disciplines on animal production that serves the local and global market.
2. To Provide the animal production industry with skilled and qualified personnel in order to be able to fit in the job market and develop their computer skills.
3. To prepare students that understand and apply basic research methods, including experimental design, data analysis, and interpretation in order to conduct scientific and applied research related to animal agricultural needs.
4. To prepare our students for critical thinking and reasoning, skeptical inquiry, and scientific approach to solve problems.
5. To provide and teach processes and scopes of integrated management to optimize the use of various farm resources to solve problems in animal agriculture.
6. To prepare our graduates for a wide variety of post-baccalaureate paths, including graduate school, professional training programmes, or entry-level jobs in any area of animal production.

Programme Learning Outcomes (PLOs):

Upon completion of the BSc. in **Animal Production degree**, the students will be able to:

PLO.1. Ability to effectively communicate knowledge of various disciplines of animal production.

PLO.2. Ability to apply concepts of breeding, feeding, nutrition, physiology, reproduction, meat science, herd-health and management into practical and profitable animal production enterprises.

PLO.3. Possessing the basic skills to employ modern animal production management technologies and practices.

PLO.4. Demonstrate basic problem-solving skills through applying scientific principles to a variety of animal production issues.

The following **curriculum** is presented:

Table 1.3.7: First year recommended plan for Animal Production Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
HSS 110	Social Responsibility	3	ARB 101	Arabic Language	3
LG 112	English Language (2)	3	MATH 102A	Calculus (for biological sciences students)	3
CHEM 103	General Chemistry	3	PHY 103	General Physics	3
CHEM 107	General Chemistry Laboratory	1	MS 100	Military Sciences	3
BIO 103	General Biology	3	HSS 129	General Skills	2
BIO 107	General Biology Laboratory	1	AP 234	Animal Behavior and Welfare	2
Total		**14**	**Total**		**16**

Table 1.3.8: Second year recommended plan for Animal Production Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
CHEM 112	General Organic and Biological Chemistry	3	AP 232	Feeds and Feeding	3
PP 204	Principles of Agricultural Economics	3	HSS 119	Entrepreneurship and Innovation	2
PP 202	Principles of Plant Science	3	PP 262	Extension and Transfer of Agricultural Technology	3
AP 206	Principles of Animal Science	3	AP 321	Animal Physiology	3
AP 213	Introduction to Biostatistics	3	AP 405	Animal Physiology Laboratory	1
BIO 231	General Microbiology	3		University Elective	3
Total		**18**	**Total**		**18**

Table 1.3.9: Third year recommended plan for Animal Production Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
AP 311	Sheep and Goat Production	3	AP 302	Seasonal Field Practices (I)	1
AP 313	Broiler Production	2	AP 304	Animal Nutrition Laboratory	1
AP 315	Table and Hatchery Egg Production	3	AP 312	Dairy Cattle Production	3
AP 333	Range Animal Nutrition	3	AP 318	Beef Cattle Production	2
AP 349	Animal Genetics	2	AP 336	Poultry Nutrition	3
AP 407	Poultry Production Laboratory	1		Specialization Elective	3
	University Elective	3		Specialization Elective	3
Total		**17**	**Total**		**16**

Table 1.3.10: Summer semester session for Animal Production Programme

Summer Semester (Third Year)		
Course		**Credits**
AP 399	Summer Training- Practical	6
Total		**6**

Table 1.3.11: Fourth year recommended plan for Animal Production Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
AP 401	Seasonal Field Practices (II)	1	AP 406	Artificial Insemination Laboratory	1
AP 403	Feed Milling Laboratory	1	AP 408	Carcass Evaluation Laboratory	1

AP 423	Reproductive Physiology	3	AP 424	Environmental Physiology of Farm Animals	3
AP 433	Animal Health	2	AP 434	Poultry Diseases and Parasites	2
AP 435	Ruminant Nutrition	3	AP 442	Animal Breeding	3
AP 491	Seminar	1	AP 446	Meat Science	3
	Specialization Elective	3			
Total		**14**	**Total**		**13**

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Nutrition and Food Technology:

Objectives of a bachelor degree in Nutrition and Food Technology include:

1. Qualified in the fields of food analysis, processing, quality control, and safety as well as ensuring their acknowledgment of food quality and food safety requirements which are addressed through the use of systems and programmes that include quality management, quality assurance, quality control, Hazard Analysis Critical Control Point (HACCP) system and Good Manufacturing Practices (GMPs).
2. Able to provide nutrition care through knowledge and skill development in communication, nutritional assessment, meal planning, diet therapy implementation, and counseling, in preparation for the dietetic profession.
3. Develop nutrition interventions and education programmes tailored for high-risk populations that experience health disparities.
4. Able to promote food and nutrition research that focuses on health, quality of life, obesity, chronic disease, and bioactive food components.
5. Able to work in an environment that supports interdisciplinary and collaborative research for faculty and students.

Programme Learning Outcomes (PLOs)

Upon completion of the BSc. in **Nutrition and Food Technology** degree, students will be able to:

PLO.1. Demonstrate knowledge and comprehension of core concepts, which includes food-related knowledge such as food chemistry, technology, processing, safety and microbiology and nutrition-related knowledge such as nutrition assessment, medical nutrition therapy, meal

planning, counseling, education, as well as basic sciences necessary for understanding these core concepts and to explore how their interaction may influence health and wellbeing.

PLO.2. Apply laboratory skills to identify physical, chemical and biological properties of different foods and to study the effect of different environmental factors on these properties.

PLO.3. Recognize the effects of food processing, preservation, packaging, and storage on the quality and safety of food products.

PLO.4. Demonstrate fundamental experience and competence in applying knowledge to real-world situations in food systems and nutritional needs that promote the health and wellness of the community as well as dietetic practices in health care settings.

PLO.5. Demonstrate knowledge of contemporary issues in food and nutritional sciences as well as skills of effective reading, writing, critical thinking, oral presentations, and problem-solving skills.

The following **curriculum** is presented:

Table 1.3.14: First year recommended plan for Nutrition and Food Technology Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
ARB 101	Arabic Language	3	PHY 103	General Physics	3
BIO 103	General Biology	3	LG 112	English Language (2)	3
BIO 107	General Biology Laboratory	1	CHEM 217	Organic Chemistry	3
CHEM 103	General Chemistry	3	NF 275	Principles of Food Science	3
CHEM 107	General Chemistry Laboratory	1	NF 281	Principles of Nutrition	3
HSS 110	Social Responsibility	3			
HSS119	Entrepreneurship and Innovation	2			
Total		16	Total		15

Table 1.3.15: Second year recommended plan for Nutrition and Food Technology Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
AP 206	Principles of Animal Science	3	PP 204	Principles of Agricultural Economics Human Nutrition	3
CHEM 262	Biochemistry	3	NF 288	Human Physiology	3
CHEM 266	Biochemistry Laboratory	1	NF 288	Human Physiology	3
NF 282	Meal Planning	3	CHEM 233	Analytical Chemistry	3
MATH 102A	Calculus (for biological sciences students)	3	CHEM 234	Analytical Chemistry Laboratory	1
HSS 129	General Skills	2	AP 213	Introduction to Biostatistics	3
MS 100	Military Sciences	3			
Total		**18**	**Total**		**16**

Table 1.3.16: Third year recommended plan for Nutrition and Food Technology Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
BIO 231	General Microbiology	3	NF 377	Food Microbiology	3
BIO 232	General Microbiology Laboratory	1	NF 382	Diet Therapy (2)	3
NF 371	Food Chemistry and Analysis	3	PP 262	Extension and Transfer of Agricultural Technology	3
NF 372	Food Chemistry and Analysis Laboratory	1		Specialization Elective	3
NF 375	Food Technology	3		University Elective	3
NF 381	Diet Therapy (1)	3			

NF 383	Nutritional Case Evaluation	3			
Total		**17**	**Total**		**15**

Table 1.3.17: Summer semester session for Nutrition and Food Technology Programme

Summer Semester (Third Year)		
Course		**Credits**
NF 399	Summer Training- Practical	6
Total		**6**

Table 1.3.18: Fourth year recommended plan for Nutrition and Food Technology Programme

First Semester			**Second Semester**		
Course		**Credits**	**Course**		**Credits**
NF 477	Food safety	3	NF 476	Food Quality Control	3
NF 453	Food Product Development and Sensory Evaluation	3	NF 479	Technology of Dairy Products	3
NF 485	Nutritional Education	2	NF 451	Food Laws and Regulation	2
	University Elective	3	NF 491	Seminar	1
	Specialization Elective	3		Specialization Elective	3
				University Elective	3
Total		**14**	**Total**		**15**

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Plant Production:

Objectives of a bachelor degree in Plant Production include:

1. To provide our students with an outstanding education, scientific skills, and practical training that enable them to compete in the local and international job markets.
2. To conduct research that aims at solving problems and enhancing agricultural productivity.
3. To serve our local community by providing technical and practical support to our agricultural and rural communities, through our extension programmes.

Programme Learning Outcomes (PLOs)

Upon completion of the BSc. in **Plant Production** degree, the students will be able to:

PLO.1. Acquire, integrate, and apply knowledge of plant science and crop production management to optimize the production of major economic crops in Jordan.
PLO.2. Apply concepts of plant biology, plant physiology, systematics, ecology, and genetics to manage and improve plants and their products.
PLO.3. Apply methods of propagation, training, pruning, and production to vegetable crops, fruit crops, and ornamental plants in the field and protected environments.
PLO.4. Apply different plant production operations including land preparation using farm machinery, irrigation techniques, fertilization, pest management, harvesting, and post-harvest handling, and marketing of agricultural produce.
PLO.5. Recognize major plant pests and explain how pests impact crop production and demonstrate skills to diagnose common plant pests and disorders and discuss potential control strategies.
PLO.6. Develop, identify, and employ good agricultural practices that lead to sustainable solutions and outcomes.
PLO.7. Demonstrate professionalism and proficiency in skills that relate to plant production systems.

The following **curriculum** is presented:

Table 1.3.21: First year recommended plan for Plant Production Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
BIO 103	General Biology	3	MATH 102A	Calculus (for biological sciences students)	3
BIO 107	General Biology Practical	1	PHY 103	General Physics	3
CHEM 103	General Chemistry	3	ARB 101	Arabic Language	3
CHEM 107	General Chemistry Lab.	1	PP 202	Principles of Plant Science	3
HSS 110	**Social Responsibility**	3	HSS119	Entrepreneurship and Innovation	2
ENG 112	English Language	3	PP203	Plant Science laboratory	1
Total		**14**	**Total**		**15**

Table 1.3.22: Second year recommended plan for Plant Production Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
CHEM 104	Organic Chemistry	2	NR 241	Principles of Irrigation and Drainage	3
NR 202	Principles of Soil Science	3	BIO341	Molecular Genetics	3
PP 204	Principles of Agricultural Economics	3	PP 224	Plant Physiology	3
MS 100	Military Sciences	3	PP 262	Agricultural Extension and Technology Transfer	3

HSS 129	General Skills	2	PP213	Introduction to Biostatistics	3
University Elective course		3	University elective course		3
Total		**16**	**Total**		**18**

Table 1.3.23: Third year recommended plan for Plant Production Programme

First Semester			**Second Semester**		
Course		**Credits**	**Course**		**Credits**
PP 311	Field Crops Production	3	PP 314	Seed Production and Technology	3
PP 323	Landscape Plants	3	PP 321	Vegetable Crops Production	3
PP 341	Entomology	3	PP 322	Deciduous Fruit Trees	3
PP 371	Agricultural Machinery	3	PP 343	Plant Pathology	3
Specialization elective course		3	PP 342	Weed Science	3
			University Elective course		3
Total		**15**	**Total**		**18**

Table 1.3.24: Summer semester session for Plant Production Programme

Summer Semester (Third Year)		
Course		**Credits**
PP 399	Summer Training- Practical	6
Total		**6**

Table 1.3.25: Fourth year recommended plan for Plant Production Programme

First Semester			**Second Semester**		
Course		**Credits**	**Course**		**Credits**

PP 425	Post-harvest Handling and Storage of Horticultural Crops	3	NR 412	Soil Fertility and Fertilizers	3
PP 421	Evergreen Fruit Trees	3	PP 324	Landscape Design and Management	3
PP 430	Organic Agriculture	2	PP 446	Economic Entomology	3
PP 442	Diseases of Horticultural crops	3	PP 411	Plant Breeding and crop improvement	3
PP 491	Seminar	1	Specialization Elective		3
Specialization Elective		3			
Total		**15**	**Total**		**15**

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Soil and Irrigation:

Objectives of a bachelor degree in Soil and Irrigation include:

1. To educate and train students with theoretical knowledge and skills in soil, water, and irrigation to produce high-quality graduates with a broad-based education in agriculture, land, and water management issues.
2. To develop the innovative capacity of students for increasing agricultural production with scarce water resources available.
3. To prepare for further graduate studies, careers in agricultural, land-water, irrigation, and environmental sectors.
4. To understand ethical issues and societal responsibility of serving the society and the environment at large.
5. To apply knowledge of soil and irrigation sciences coupled with life sciences, to formulate and solve soil, water and irrigation problems that address contemporary issues within a global, societal, and economic context.
6. To prepare leaders in agricultural and irrigation sectors to function on multi-disciplinary teams who can practice soil-water and irrigation sciences to serve national and regional companies, and government agencies.

Programme Learning Outcomes (PLOs)

Upon completion of the BSc. in **Soil and Irrigation degree**, the students will be able to:

PLO.1. Demonstrate both basic and advanced knowledge of the core curriculum in soil and irrigation sciences.

PLO.2. Demonstrate knowledge of contemporary issues in soil and irrigation.

PLO.3. Demonstrate knowledge in the area of modern natural resources management practices.

PLO.4. Apply scientific methods to design and conduct experiments, as well as to analyze and interpret data.

PLO.5. Using the techniques, skills, and modern scientific and technical tools necessary for professional practice.

PLO.6. Apply scientific knowledge for achieving sustainable management of natural resources.

PLO.7. Employ the gained knowledge to evaluate soil properties and its suitability for various agricultural uses.

PLO.8. Discuss and propose solutions to the fundamental problems of the sectors of soil and irrigation.

PLO.9. Solve ecological and agricultural problems through adaptive management to achieve a sustainable environment.

The following **curriculum** is presented:

Table 1.3.28: First year recommended plan for Soil and Irrigation Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
LG 112	English Language (2)	3	HSS 129	General Skills	2
HSS 110	Social Responsibility	3	BIO 103	General Biology	3
MATH 102A	Calculus (for biological sciences students)	3	HSS 119	Entrepreneurship and Innovation	2
CHEM 103	General Chemistry	3	BIO 107	General Biology Laboratory	1
MS 100	Military Sciences	3	PHY 103	General Physics	3
CHEM 107	General Chemistry Laboratory	1	NR 210	Introduction to Natural Resources Management	3
			ARB 101	Arabic Language	3
Total		**16**	**Total**		**17**

Table 1.3.29: Second year recommended plan for Soil and Irrigation Programme

First Semester	Second Semester

Course		Credits	Course		Credits
BIO 231	General Microbiology	3	CHEM 217	Organic Chemistry	3
BIO 232	General Microbiology Lab.	1	PP 213	Introduction to Biostatistics	3
NR 202	Principles of Soil Science	3	CHEM 233	Analytical Chemistry	3
PP 202	Principles of Plant Science	3	CHEM 234	Analytical Chemistry Laboratory	1
PP 262	Extension and Transfer of Agricultural Technology	3	PP 204	Principles of Agricultural Economics	3
NR 241	Principles of Irrigation and Drainage	3		University Elective	3
Total		**16**	**Total**		**16**

Table 1.3.30: Third year recommended plan for Soil and Irrigation Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
NR 342	Hydrology	3	NR 306	Soil-Plant-Water Relations	3
NR 301	Soil Physics	3	NR 312	Environmental Soil Chemistry	3
NR 333	Soil Conservation and Land Management	3	NR 340	Principles of Hydraulics	3
	Specialization Elective	3	NR 361	Geographical Information Systems (GIS)	3
	University Elective	3		Specialization Elective	3
Total		**15**	**Total**		**15**

Table 1.3.31. Summer semester session for Soil and Irrigation Programme

Summer Semester (Third Year)		
Course		**Credits**
NR 399	Summer Training- Practical	6
Total		**6**

Table 1.3.32: Fourth year recommended plan Soil and Irrigation Programme

First Semester			Second Semester		
Course		**Credits**	**Course**		**Credits**
NR 421	Environmental Microbiology	3	NR412	Soil Fertility and Fertilizers	3
NR 447	Irrigation Systems Design	3	NR 444	Agricultural Drainage	2
NR 491	Seminar	1	NR 414	Soil Reclamation	3
NR 413	Soil Chemistry and Fertility Analyses	2	NR 432	Soil Genesis and Classification	3
NR 411	Climate Change: impact, adaptation and mitigation	3	NR 446	Water Resources	2
	University Elective	3		Specialization Elective	3
Total		**15**	**Total**		**16**