ASIIN Seal

Accreditation Report

Bachelor Degree Programme
Forest Engineer

Master Degree Programme
Forest Sciences

Provided by
Universidad Autónoma de Nuevo León (Mexico)

Version: 16. March 2021

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
Ingeniero Forestal	Forest Engineer	ASIIN	27.09.2013 – 30.09.2018 Prolongation for one year	08
Maestría en Ciencias Forestales	Forest Sciences	ASIIN	27.09.2013 – 30.09.2018 Prolongation for one year	08
Date of the contract: 06.09.2017 **Submission of the final version of the self-assessment report:** xx.xx.20xx **Date of the onsite visit:** 22./23.05.2019 **at:** Linares, Nuevo Leon (Mexico)				
Peer panel: Daniela Hernandez, Student peer from the University of Durango; Armando Delgado Anchondo, Independent Forester; Prof. Dr. Carsten Mann, University for Sustainable Development Eberswalde; Prof. Dr. Juergen Pretzsch, Technische Universität Dresden				
Representative of the ASIIN headquarter: Dr. Siegfried Hermes				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				

[1] ASIIN Seal for degree programmes

[2] TC: Technical Committee for the following subject area: TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture

Criteria used:

European Standards and Guidelines as of 15.05.2015

ASIIN General Criteria, as of 10.12.2015

Subject-Specific Criteria of Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture as of 09.12.2011

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
Forest Engineer	Bachelor of Sciences	n/a	6	Full time	n/a	9 Semester	213 ECTS	WS?? WS 1983/84
Forest Sciences	Master of Forest Sciences.	n/a	7	Full time	n/a	4 Semester	80 ECTS	WS?? WS 1992/93

For the Bachelor degree programme Forest Engineer the institution has presented the following profile in the self-assessment report (henceforward SAR; also published on the respective website):

"The aim of the Faculty of Forest Sciences is to enlarge advanced knowledge of natural resources management, forest operations, and natural resource conservation in a scientific and practical manner involving a critical understanding on sustainability. The Forest Engineer (FE) graduates should be able to solve complex and unpredictable problems in the forest and environmental field in a creative and innovative way, balancing production, utilization and conservation of forest resources. Furthermore, students should be proficient in managing complex technical and professional forest related activities and projects, taking responsibility for decision making in unpredictable work or study contexts, as well as for managing professional development of individuals and groups (Level 6 EQF)."

The specific objectives of the new programme are the following:

"O1: Train Forestry Engineers who, through logical, critical, creative and proactive thinking, have the capacity to make appropriate, relevant and innovative decisions in the field of forest resources management and use.

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

O2: Enhance leadership skills and achieve collaborative work with the private and government sector in order to formulate ecosystem management and restoration plans, environmental damage mitigation programs; as well as the generation of programs for the evaluation and prevention of forest fires, pests and forest diseases.

O3: Consider the diversity of social and cultural practices of the owners of forest resources and the planning of the use of natural resources using cutting-edge technologies to reduce the impact of anthropogenic activities on ecosystems.

O4: Reinforce the commitment towards the challenges of contemporary society through a critical attitude, respect and human commitment to consolidate the welfare and sustainable development of the community.

For the Master degree programme Forest Sciences the institution has presented the following profile in the self-assessment report (also published on the respective website):

„With regard to the Master of Forest Sciences Programme (MFS Programme), the Faculty of Forest Sciences enhances critical awareness and highly specialized knowledge in forest sciences and management, and at the interface between different fields. We encourage original thinking and innovation, involving our graduates in both, academic and research activities. Graduates should be skilled to solve specialized forest and environmental problems, developing new knowledge and procedures, as well as considering knowledge from different fields. Furthermore, students are expected to manage and transform complex and unpredictable work or study contexts, to develop new strategic approaches and to contribute to the forestry profession in a theoretic and practical way. Besides, they should take responsibility for reviewing the strategic performance of teams (Level 7 EQF).“

The Program educational objectives describe the career and professional accomplishments that programs are preparing graduates to attain within a few years of graduation.

Specific objectives of the MFS Programme are the following:

“O1) Provide knowledge of sustainable forest and nature management as well as forest conservation considering complex intercultural and international topics.

O2) Train to cope and balance with contemporary forest and nature challenges at multiple scales and perspectives.

O3) Enhance competences in leadership, capacity for teamwork and decision-making.

O4) Encourage to continue personal and professional development

O5) Promote student’s integration in professional societies on national and international level.”

C Peer Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

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

Evidence:

- Respective chapter of the SAR; see below appendix of this report
- Sample of Diploma Supplement for each degree programme, Appendix H of the SAR
- Objectives- Module-Matrix for each degree programme, SAR
- Audit discussions

Preliminary assessment and analysis of the peers:
The faculty took pains to define the skills and competences graduates are to gain in the Bachelor and Master programmes in Forestry. These programme objectives and intended learning outcomes do apparently correspond to each other. The peers positively note that immediately or within a few years after the completion of studies surveys of exit students, graduates and employers are conducted on a regular basis with a special focus on the appropriateness of the programme objectives and the graduates' study achievements. Principally, this process is adequate to ensure the actuality of the programme objectives and qualification needs of the labour market for Forest Engineers and Forest Scientists. However, a closer look at the formulation of the programme objectives reveals that they are broadly framed in terms of conservation, protection and restoration of nature and environmental ecosystems, and particularly forest ecosystems. On the one side, this fits perfectly well into the professed mission of UANL and, as far as can be said until here, takes well into account the ecological, climatic and biodiversity conditions in Northern Mexico. Otherwise, the Faculty of Forest Sciences offers a Bachelor programme Natural Resource Management Engineer as well as a PhD programme Sciences in Natural Resource Management with qualification objectives largely overlapping those of the degree programmes under review. If there were no occasional links to the "forest" in the formulation of the qualification objectives, these would be completely inextricable from those of the mentioned Natural Resources programmes of the faculty. Of course, to a large part this is owed to the factual conditions of the Northern Mexican biodiversity and natural resources situation. But if, as

the coordinators pointed out, the main focus of the forest programmes is on the conservation and restoration of the forest as opposed, primarily, to timber production areas such as Durango state, this and the accompanied qualification profile of the Bachelor and Master graduates need to be clarified. Moreover, the lines between different degree programmes partly dealing with the same topics, although under different focal points, must be drawn more transparently. It is noteworthy that the coordinators themselves trace the comparatively high dropout-rate, particularly in the Bachelor programme, at least partly to the limited course offerings in the few faculties of UANL located in Linares attracting students ultimately not interested in the career offered. This should be another bold incentive to more sharply draw the distinction between the neighbouring degree programmes of the Faculty of Forestry. In that respect, it is apparent that the programme objectives and learning outcomes in the case of the Master programme are much more interlinked with and closer to forest issues than in the Bachelor's case.[4]

Furthermore, when asked about the focus areas of the degree programmes, the programme coordinators mentioned "Agroforestry" as a focal point besides the conservation and restoration of forest ecosystems. The expert team found this barely reflected in the curriculum of either the Bachelor or the Master programme (one Agroforest management course in each programme). Following that path would require a certain curricular input in order to equip students with more knowledge and competences in the area of Agroforestry.

Apart from that, the peers acknowledge that students in both degree programmes shall develop management, communication and team competences as well as a sensitivity to the social and ethical aspects of their profession. The peers also positively state that the Faculty is thoroughly observing, where its graduates are being employed. It seems as if the expectations about possible fields of work are confirmed to a significant degree (predominantly Forest management, Wood industry, Social economy, Environmental protection respectively legislation, Wildlife and range management, Administration of enterprises). Regarding the adequacy of the programmes' qualification profile, the expert team generally recognizes that the Faculty conducts Alumni and Student exit Surveys as well as Employers Surveys about the respective respondents' opinion of the suitability of the Programme Learning Objectives (PEOs) and Student Outcomes (SOs). Here again though, they criticise

[4] In this connection, the peers noticed that the UANL Department of Undergraduate Studies hosts an English website for the Bachelor programme containing a comprehensive list of general, professional and specific knowledge, skills and competences (cf. https://www.uanl.mx/en/oferta/forest-engineer/; Access: 12.07.2019). Obviously, many of the specific skills and competences listed there are much closer to the discipline than those presented in the SAR. Since they cannot be found on the Faculty's websites and are not addressed formally as relevant study objectives and learning outcomes of the programme, the panel does not refer to them specifically.

the missing distinctiveness between the Forestry and the Natural resources programmes in framing the respective objectives and outcomes. Thus, the SAR stated "Employers agree unanimously with the natural resources management related PEOs", which is indicative of an essentially identical framing of the learning objectives for the Forestry and the Natural Resources Management programmes respectively.

Overall, the peers conclude that the forestry-related learning objectives of the programmes need to be specified so that they serve as a meaningful description of the actual qualification profile of the graduates. These learning objectives should also be included into the Diploma Supplement. In addition, the experts caution that if Agroforestry or other production-oriented forestry systems shall be a (future) focus area of the programme, the learning objectives and the curriculum should be adapted accordingly.

Criterion 1.2 Name of the degree programme

Evidence:

- Respective chapter of the SAR
- Sample of the Diploma Supplement, Appendix H of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:
The expert panel concludes that the names of the degree programmes do well reflect the programmes' learning objectives and curricular contents. In case of the Forest Engineer Bachelor programme, it takes note of the programme coordinators' argument that, irrespective of its special use of the engineering term – as compared to its European application –, the programme has a long tradition and is clearly identified and known by professionals in Mexico. The understanding of an "engineer" as a person with a set of knowledge oriented towards the use of techniques in solving multidisciplinary tasks much as an "engineer" dealing with technical issues in the proper sense, is plausible. Even with a view to the potential international mobility, misconceptions of the qualification profile of the Bachelor graduates will hardly occur given that their Diploma and/or Diploma Supplement sufficiently inform about the specific meaning of the title.

Criterion 1.3 Curriculum

Evidence:

- Respective chapter of the report
- Educational objectives and intended learning outcomes, Appendix of the Audit report

- Objectives-Module Matrices in the Module Handbooks, Appendix A of the SAR; see also Appendix of the Audit Report
- Module handbooks, SAR of the New Bachelor programme and Appendix B of the SAR
- Survey results (2012 – 2018) concerning the adequacy of the PEOs and SOs as well as the alignment of both
- Audit discussions

Preliminary assessment and analysis of the peers:
The peer panel observes a generally solid and reasonable curriculum design concerning the Bachelor and the Master programme in Forestry. The Bachelor programme aims at equipping students with fundamental and professional knowledge in a broad array of forest-related natural sciences (such as Chemistry, Botany, Zoology, Plant physiology, Ecology, Soil Sciences, Topography, Bioclimatalogy, Genetics, Dendrometry) and, additionally introduces them to the basics of social research, economics and management methods of the related fields. In comparison, the curriculum of the Master programme deepens the knowledge, skills and competences in the focus areas of the conservation and management of the forest and natural resources, while at the same time strengthening the scientific and research-oriented perspective. The peers appreciate that both programmes do encompass a considerable amount of electives each, offering the students opportunities to specialize and individually profile its study plan.

In principal, both the curricula and objectives-module-matrices show that the educational objectives are treated quite comprehensively, although this results at least to some degree from the fact that the intended PEOs have been formulated in a manner broadly covering the Faculty's Bachelor and Master programmes in the Natural Resources Management field as well (see above sec. 1.1). Thus, it is not surprising that the quality assurance department of the Faculty could provide high approval rates on average of alumni, recently graduated students and employers alike not only for the PEOs but also for the correspondent SOs. In this respect, it is principally laudable that the Faculty has developed the quality assurance mechanisms and instruments for its degree programmes to a considerable degree. In addition and with some reservation (see below sec. 6), it could also be said that the Faculty has established meaningful follow up-processes concerning the collection, analysis and utilization of the data and information collected by way of statistics and surveys. Obviously, the updated curricula of the degree programmes borrow from these instruments and processes.

Thus far, it is worth mentioning, that some of the below stated deficiencies of the curricula of both degree programmes have been identified in the quality assurance processes already and are even dealt with.

As characterized above, the degree programmes do consist of a series of forest-related disciplinary courses. At the same time, curriculum designers have been eager to integrate practical parts and field experiences into the theoretical lectures in order to provide room for students to apply newly acquired theoretical knowledge. Reportedly, the practical, application-oriented parts have been enlarged in the revised curricula. Although this is considered worthwhile and conducive to students' and employers' demands in terms of the employability of graduates, strengthening the practical and professional competences of students is by no means an end in itself. It is of great importance in these highly interdisciplinary programmes, that students do not only achieve fundamental and advanced knowledge of heterogeneous disciplines combining to what is called "Forest Sciences", but that they get a grasp of how these disciplines are interlinked in the programmes under review and in which way they could make use of the multidisciplinarity. Purely fostering the practical components of the programmes will hardly be sufficient in that respect, as the students indicate by addressing weaknesses with regard to a more comprehensive understanding of the taught disciplines. Otherwise, it is reasonable to point to the scientific and research-oriented approach of the Master programme. The expert panel appreciates that alumni of the programme and employers jointly stress the strong scientific and research competences of Master graduates, which is of eminent importance since it provides the very basis for the transition to the doctoral programmes of the faculty (one programme at present) and their quality level at the same time. Still, not all Master students are heading to an academic career. Moreover, a deepened understanding of the coherence of the disciplines is needed in the Master programme too. Therefore, the expert panel concludes that the students' ability to use their multidisciplinary knowledge to comprehensively understand and solve forest-related problems should be furthered through increasing the module-integrated field practical elements.

The expert panel sees that management competences are a constitutive part of both degree programmes. Consequently, it does not doubt the theoretical knowledge of students in this respect. However, as the discussions with both students and alumni as well as representatives of the employers reveal, a certain lack of social and communication skills vis-à-vis local communities, farmers, small enterprises, and foresters apparently prevails. Employers made it very clear, that these competences are expected from graduates, irrespective of their qualification level, but very often missed in case of the UANL graduates, despite their overall outstanding qualification record. Therefore, the expert panel strongly suggests

acting appropriately in order to strengthen the students' ability to work with local communities, farmers, small enterprises, and foresters, and to initiate and accompany innovation processes (such as integrated land management, agroforestry, forest conservation, or tree planting).

Both Bachelor and Master students have to prepare a (scientifically based) thesis at the end of their respective studies. This requires them to apply scientific means and methods in order to produce scientifically meaningful results. To make the students familiar with the methods and means of scientific work is therefore an important aspect of the first cycle programmes, in which students are normally introduced to science-based thinking, analysing, assessing and problem solving. Consequently, the peers positively highlight an introductory course related to scientific work in the former Bachelor curriculum and wonder why this course has been left out in the revised curriculum. It is taken note of the Faculty's explanation that in balancing the importance of the disciplinary and professional courses against this introductory course the latter one has been regarded as less important and thus skipped. By contrast, the expert panel considers the students' condensed introduction into the methods and instruments of scientific work a relevant factor for the quality level of the thesis work of the actual student cohorts. Following this insight, the peers strongly recommend to enlarge the students' competences to work scientifically through adequate curricular or extracurricular means.

Although an explicit PEO only in the case of the Master programme, the peers consider foreign language skills, in particular English language proficiency, as a valuable competency for Bachelor students too. In order to engage in the scientific discourse and in view of the mandatory production of a thesis, these students would also highly benefit from solid English language skills. By contrast, the expert panel receives the impression that English language competences could be improved, at best, which is very much in line with the documented results of the self-assessment of the alumni as well as the employers' perception of the graduates' foreign language competences. With a view to the rising job-market demands regarding language competences, the peers strongly suggest further developing the English language skills of the students of both programmes.

Criterion 1.4 Admission requirements

Evidence:

- Relevant chapter of the SAR
- General Regulation on procedures for admission and permanence of Students (Reglamento General sobre los Procedimientos de Admisión y Permanencia de los Estu-

diantes); available on the internet at: General Rules of International Relations; available on the internet at: http://transparencia.uanl.mx/secciones/normatividad_vigente/archivos/LyR09/06admision.pdf (Access: 12.07.2019); on the programme-specific website of the Faculty: http://www.fcf.uanl.mx/aspirantes/requisitos/ (Access: 12.07.2019)

- For the Master programme see: http://posgrado.uanl.mx/maestria-ciencias-forestales/ and http://www.fcf.uanl.mx/wp-content/uploads/2018/09/Requisitos-MCF-ENE-JUN-2019-.pdf (Access: 12.07.2019)
- Audit discussions

Preliminary assessment and analysis of the peers:
Student admission for all faculties and schools within UANL is defined in the "General Regulation on procedures for admission and permanence of Students" which is published in Spanish on the website. The admission requirements are clearly outlined on the course-specific websites and for all new students the same. Thus, students must take the National Enrolment Exam (EXANI II) provided by the National Center for Educational Evaluations C.O. (CENEVAL). This examination includes a section on Agri-Biological Sciences for applicants to the Forest Engineer Programme. The EXANI II consists of five modules and a section on General Education that includes 110 questions per test and an English Language section. An examination guide for applicants, including a general description of the exam, sample questions and their analysis, suggestions on how to answer them, a sample test, and other relevant information, is provided by UANL and CENEVAL. The minimum and maximum scores for the exam have been varying from one admission period to the next and steadily rising since the year 2013 (with the notable exception of 2014), thereby taking into account the significance of the scores in the light of the study success of applicants admitted to the programme. According to the admission statistics, the student numbers dropped during the last six years remarkably. As one explanation for this tendency, the Faculty points to the decentralization of the UANL in recent years, bringing some other faculties to Linares (such as "Nursery", "Law" and "Mechanics") and thus leading to a new allocation of the students across the faculties. The programme coordinators view this development as potentially helpful in reducing the relatively high dropout rate of students especially (but not only) in the Bachelor programme. They trace this high dropout rate partly to local students not really interested in the offered programmes, but limited to the offerings of the few faculties located in Linares. After all, Nuevo León is a Mexican state with a great demand in the industrial sector, correspondent salaries and job opportunities, and precisely the opposite in the natural resources sector.

Applicants to the Master programme have to show as a minimum the degree of Bachelor of Sciences, Engineer or an equivalent title of a recognized academic institution. The degree or title should be related with the Master programme and an average mark of 80 points (out of 100) is required. Besides, students are evaluated by the Committee of Postgraduate studies in order to know their research interests and motivation. Furthermore, students must take the Exam of English Competences (EXCI) provided by the UANL and the National Enrolment Exam (EXANI III) provided by CENEVAL. This examination includes a section on Agri-Biological Sciences. The minimum score for admission is 850 points out of 1300. The EXANI III consists of five modules and a section on General Education that includes 160 questions per test and an English Language section. As for the Bachelor programme, the UANL and CENEVAL provide a guide for applicants on its official website. Admission numbers have been relatively stable across the previous five years (roughly 20 students per study year).

Overall, the peers assume that the admission regulations contribute to the quality assurance of the programmes since minimum and maximum scores for the entrance examination are in place and have been adapted according to their prognostic value for the programme-related eligibility of the students. Nevertheless, the panel considers an additional entrance examination for the Master programme covering knowledge and competences normally evidenced through the Bachelor degree of a related discipline unusual. Dropout numbers, at times relatively high in a Master programme (as in the case of the cohorts 2011 – 2013 and 2013 – 2015) also do barely attest to a specific contribution of the entrance examination in terms of the eligibility of applicants. Since this procedural regulation applies nation-wide, the peers take not of it without further comment.

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

The peers are thankful for the comments and additional information provided by the UANL. Overall, they consider *not all aspects of the above criterion as fulfilled* yet.

Qualification profile and learning objectives / both degree programmes

The peers welcome the institutions' willingness to work out the programme-specific core learning objectives of the programmes under review. They again underline the fact that the Faculty of Forest Sciences offers different programmes at all higher education levels, which are closely interlinked thematically. The peers appreciate the additional information about the core areas of the forestry programmes in Linares – particularly in contrast to degree programmes of the same name in Durango State. Consequently, with a view to its own degree programmes and similar study programmes at other universities as well, the best

possible description of the singular character of its programmes would benefit the public image of the programmes. Apart from that, a precise summary of the programmes' intended qualification profile (learning objectives) is indispensable for their design and further development. The peers propose a requirement to that end (s. below, chapter F, A 1.).

In that respect, the peers also welcome the programme coordinators' remarks regarding the new Agroforestry policy of the government and the medium-term perspective of this focus area in the faculty's own degree programmes. They expect a growing importance of the Agroforestry theme, should that be intended and followed suit, to be adequately reflected in the qualification profile and thus the programme learning outcomes (see below, chapter F, E 1.).

Field practical elements in the curriculum / both degree programmes

The peers take note of the expected positive effect of the new Forest Engineer curriculum on the profession-related practical competences of the students. Irrespective of this, they received the impression that a larger share of practical and field training components is felt missing in both programmes. They are not fully convinced that the revision of the Bachelor curriculum at least has removed the deficiency already. For the Master degree programme, the task needs to be completed anyway. The peers confirm a slightly modified requirement ensuring the above condition (see below, chapter F, A 2.).

Communication and social management skills / both degree programmes

The peers thank for the programme coordinators remarks concerning the perceived lack of social and communication skills of graduates of both degree programmes in their professional cooperation with local communities, farmers, small enterprises, and foresters. However, in their view Communitarian services, social services and professional practices are not really new instruments and have been part of programmes of the Faculty in one or the other way. Still, employers, students and alumni have jointly complained about deficient competences in that respect. Therefore, the peers propose addressing the issue in a respective requirement (see below, chapter F, A 3.).

English proficiency / both degree programmes

The expert panel honours the efforts of the Faculty to improve the English language skills of students significantly. They also note that two English language modules have been included in the new Bachelor curriculum and that a profound shift in the foreign language policy of the government is underway encouraging better English competences of students in the future. Acknowledging these measures and political developments leads the expert panel to the assumption that there is no immediate need for action. Instead, the faculty

should monitor whether its language strategy is effective in the medium and long run (see below, chapter F, E 2.).

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Objectives-Module Matrices in the Module Handbooks, SAR; see also Appendix of this Audit Report
- Study plan (new curriculum) of each degree programme according to the SAR, see Appendix of this report
- General Rules of International Relations; available on the internet at: http://transparencia.uanl.mx/secciones/normatividad_vigente/archivos/LyR09/RelacionesInternacionales.pdf (Access: 12.07.2019)
- General Regulation on procedures for admission and permanence of Students (Reglamento General sobre los Procedimientos de Admisión y Permanencia de los Estudiantes); available on the internet at: General Rules of International Relations; available on the internet at: http://transparencia.uanl.mx/secciones/normatividad_vigente/archivos/LyR09/06admision.pdf (Access: 12.07.2019)
- Audit discussions

Preliminary assessment and analysis of the peers:

In general, the peers consider the curricula of both degree programmes as being adequately set up, with modules ordered in a plausible and logically consistent manner. Consequently, in the peers' view the modules are framed coherently as self-contained study units. This does not completely preclude any shortcomings in the curricular concept – as detailed in the respective sections of this report.

Against the background of its highly interdisciplinary character and the multidisciplinary basic education, the peers consider five elective modules in different categories ("Basic Training (2)", "Professional Fundamental Formation (1)" and "Professional Integrative Training" (2)) in the Bachelor programme adequate to deepen and/or broaden the subject-specific knowledge in the individual student's path of interest. Likewise, four electives in

the Master programme allow students to define an individual focus in their studies. However, students voiced critic about the past, when certain electives were occasionally dropped or substituted on short notice and without announcement. The expert panel understands that this might be unavoidable under special circumstances. However, it should be communicated adequately and in due time then in order to enable students to re-schedule accordingly.

Regarding the practical training parts, it is well received that the Bachelor as well as the Master curriculum foresees practices in field or forest as well as other practical components in many modules (like laboratory exercises, case studies or visits to industry related to forest sciences). In principle, this is considered a meaningful step in dealing with the essentially concurrent feedback from students, Alumni and employers that the practical competences of the students should be enlarged. As the peers pointed out in the previous section, the module-integrated field practical elements are especially important in terms of a comprehensive understanding of the multidisciplinarity of the study programmes and its utilization in solving problems in the professional sphere. Apart from that, it remains to be seen, whether the new curriculum of the Bachelor programme keeps its promises in terms of the profession-related practical skills of the students. Anyway, the peers deem an adequate share of practical training, for instance in methodically setting up, conducting and monitoring forest management programmes, to be of utmost importance for the acceptance of the Forest programmes' graduates in the job market.

Overall, the peers are convinced that the conceptual approach of the curriculum is conducive to the achievement of the intended objectives and learning outcomes – if the Faculty removes the mentioned deficits. With a view to the different stakeholder surveys on the PEOS and SOs, they particularly praise the feedback loops the Faculty has already implemented. The follow-up process should be strengthened along the line of the planned future steps, as for instance the prospected reorganisation of the Alumni-network (including employers), in order to enlarge the feedback-base of the surveys. With a view to a more systematic design and revision of the programmes, the peers suggest developing a process chart indicating the interrelation and dependency of the modules.

Internationalization of the degree programmes in terms of international mobility of students is supported by the Faculty by way of recognition of academic qualifications acquired at other universities or, alternatively, within the framework of an international academic exchange programme. A lack in English knowledge skills however appears to be a major hurdle in making use of these mobility opportunities. Peers are convinced that the Faculty and teaching staff will make every effort to adequately inform about the exchange opportunities and thus promote the mobility of the students. As regards the English language

skills, further efforts should be made to enable students to make more effective use of the already existing mobility opportunities.

Chapter VII of the General Regulation on procedures for admission[5] explains the rule and procedure for recognition of academic achievements gained at other (including foreign) institutions of higher education. Students have to submit proper documentation of the academic accomplishments elsewhere; an academic board analyses the documents and decides whether the achievements can be recognized as substantially equivalent to certain modules. The regulation essentially refers to levels of learning, grades or learning units, i. e. not directly to knowledge, skills and competences gained. In addition, the description of the recognition procedure in the SAR leaves little doubt that the Faculty implements the rules of recognition primarily by assessing the equivalency of module content and credit volume. Overall, the peers conclude that rules for the recognition of academic achievements are put into force and applied. However, giving more room for an assessment of acquired competences and qualifications – as opposed to contents and credits – would allow a greater flexibility in face of differences of curricula and credit point systems across countries.

Criterion 2.2 Workload and credits

Evidence:

- Respective chapter of the SAR
- Module handbooks, SAR of the New Bachelor programme and Appendix B of the SAR
- Study plan (new curriculum) of each degree programme according to the SAR, see Appendix of the Audit Report
- Information about the Credit Point System of UANL, "MODELO ACADÉMICO DE TÉCNICO SUPERIOR UNIVERSITARIO,PROFESIONAL ASOCIADO Y LICENCIATURA DE LA UANL"; available on the internet at https://www.uanl.mx/wp-content/uploads/2018/07/Modelo-Acade%CC%81mico-de-Te%CC%81cnico-Superior-Universitario-Profesional-Asociado-y-Licenciatura-de-la-UANL-versio%CC%81n-2015.pdf (Access: 12.07.2019)
- Sample of survey sheets for different stakeholders, see Appendix I of the SAR
- Audit discussions

[5] Capítulo VII: De la equivalencia y revalidación de estudios realizados en otras instituciones, tanto del Sistema Educativo Nacional como del extranjero

Preliminary assessment and analysis of the peers:
The UANL has devised a credit point system that is almost similar to the main features of the ECTS system. The estimated amount of students work for the completion of a module does include both attendance-based learning and self-study time. One credit point is awarded for 30 hours of student workload. Based on 20 weeks of attendance time per semester, the number of credit points awarded for each module accounts for the ratio of attendance time versus self-study time. Compared with the average student workload in a European study programme of approx. 30 ECTS points, the overall workload of students per semester is moderate, ranging from 21 to 26 credit points in the Bachelor programme and 18 to 26 credit points in the Master programme respectively.

In connection with this, the modules are limited in size and credit points, typically 3 credit point units in the Bachelor and 4 credit point units in the Master programme. It is also obvious that programme coordinators calculated an only limited proportion of self-study time for the modules/courses in the Bachelor programme (ranging from 1:5 to 1:8), thus attributing the major part of the learning process to the theoretical and practical attendance hours at the Faculty. Thus far, the panel agrees with the argument, that particularly students of Bachelor programmes, having only recently acquired their high-school certificate, need to be guided more closely in the transition phase to the university. Additionally, they concede that practical training units often integrated into the courses could be recognized as a guided form of self-study, although formally included into the attendance time. Notwithstanding this, the peers would have expected a steady increase in self-study time in the later study periods, which – aside from the Bachelor thesis – cannot be derived from the actual credit point distribution. At the same time, the workload calculation in the Master programme clearly shows that programme coordinators put considerable more weight on the students advanced competences and self-directed study time, the ratio of self-study to attendance time being normally 2:1. The expert panel considers this adequate, particularly with a view to the scientific and research competences students are supposed to demonstrate during their studies.

It is understandable that the Faculty is still experiencing the use of the UANL-version of an ECTS-style credit point system. It should be given time to closely monitor the students' workload over a certain time-period in order to adapt the actual credit point allocation, if necessary. Moreover, the students made no significant objections to the workload calculation and credit point attribution. According to the evaluation results provided by the programme coordinators, it seems that the student workload is broadly scrutinized and evaluated in the regular course evaluation. However, there is no evidence of an already existing monitoring mechanism regarding the student workload *and its alignment to the credit*

point allocation. The sample survey forms for graduated students and Alumni enclosed in the SAR do not include any question to this end. The peers consider it necessary to develop and implement such an instrument. Significant discrepancies between the actual student workload and its calculated correspondent could then indicate necessary changes in the credit point allocation or the volume of the course contents and spur a respective follow-up process.

The module descriptions too contain information about the students' workload, even if, in the case of the Bachelor programme, this can only be derived from the combined attendance time and credits award on the assumption that the semester consists of altogether 20 weeks.

Criterion 2.3 Teaching methodology

Evidence:

- Relevant chapter of SAR
- Module handbooks, SAR of the New Bachelor programme and Appendix B of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:
According to the SAR and the information in the module descriptions, different educational methods are in place in the degree programmes, with lectures, exercises, laboratories, field trips, projects, case studies, seminars, (research) projects, and summer internships as the most important. The peers are told that the choice, volume and weight of the applied teaching methods are up to the individual professor and decided on with particular attention to the intended learning outcomes. The intention is to look at specific topics from different angles and to see how different units can contribute to achieve the overall programme learning outcomes. Course-integrated field practical elements are or could be particularly valuable in that respect, as mentioned previously (see above sec. 1.3). The peers conclude that the teaching methods and instruments in use generally support the students in achieving the learning outcomes. The panel also observes a slight, but not yet widespread and intensive use of E-Learning and Blended learning methods. This is adequate since those methods are demanding didactical instruments, the use of which needs thorough preparation and deliberate execution.

However – apart from a vague hint to different teaching/learning methods in the module descriptions of the Master programme – no detailed information about teaching and learning methods is given in the module handbooks. This would be helpful with a view to the

whole concept of the module and, in particular, the coherence and interconnection of its intended learning outcomes, contents and didactical instruments. Therefore, the peers suggest supplementing the module descriptions accordingly.

From the quality level of the Bachelor theses in particular (see below sec. 3), the peers infer that until now (see above sec. 1.3) students have been introduced to scientific standards and enabled to work scientifically during their studies. Additionally, module-related evaluation forms such as “Documental research” and “Case studies” as well as “Presentations” and “Dialogs and debates” contribute to the students’ ability to deal with subject-related problems scientifically. This, in turn, underpins the necessity that the didactical means should be further detailed in the module descriptions.

Especially noteworthy in this respect is a special “Summer Internship Research Programme for Science and Technology” at UANL[6] giving students the opportunity to actively participate in research projects of the Faculty of Forest Sciences or other faculties of the university. As the peers positively noticed, this programme is explicitly devised to encourage students to learn new methods and/or technologies and to place her/his study activities in the framework of most recent theories and/or experiments.

Criterion 2.4 Support and assistance

Evidence:

- Respective chapter of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

Peers note positively that freshmen are well introduced into the Faculty, its services and the programme details in an introductory course at the beginning of the first semester. With respect to the counselling and advice of students and the monitoring of their study success, the tutoring system the university has put in place is an important effort to support students in achieving the intended educational objectives and thus assure the quality of the programmes. Tutors are assigned to each student at the beginning of her/his studies resuming the task to support students and provide advisory services in all study-related issues. It is laudable that tutors get a special training for their consulting activities.

[6] See http://investigacion.uanl.mx/provericyt-uanl/ (Access: 12.07.2019).

The students confirmed that they can turn to all professors for support and that a good communication environment is fostered at the Faculty of Forest Sciences. They also underlined their satisfaction with the support measures. Overall, the peers conclude that there are adequate resources available to provide individual assistance, advice and support for all students. They also underline that the allocated advice and guidance, namely the tutoring system, assist the students in achieving the learning outcomes and in completing the courses within the planned time. Furthermore, a way of informing students about changes in courses/times should be in place and such information be communicated in advance. As mentioned earlier, this information process should especially include announcements concerning the elective courses (see above sec. 2.1).

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

The peers are thankful for the comments and additional information provided by the UANL. Overall, they consider *not all aspects of the above criterion as fulfilled* yet.

English proficiency

See above final assessment criterion 1 and below, chapter F, E 2.

Credit point / workload distribution

The peers appreciate the programme coordinators' positive reception of their critical comments about the faculty's check on the student workload. As argued above, they advocate the implementation of a reliable monitoring process and propose a requirement in that respect fostering the further development of the quality assurance system (see below, chapter F, A 4.).

Students' competences to work scientifically / Bachelor programme

The peers welcome the reference to the new curriculum of the Bachelor degree programme, which in their opinion provide many opportunities to establish and deepen the students' skills in working scientifically. The panel considers a respective requirement envisaged during the onsite visit as dispensable.

Student information / both degree programmes

The peers appreciate the Faculty's announcement to establish a web-based communication system in order to ensure a proper and timely information about study-related issues. They support the idea and are of the opinion that the issue should be checked in the course of the reaccreditation (see below, chapter F, E 3.).

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Respective chapter of SAR
- Module Handbook
- General assessment regulations ("Reglamento General de Evaluaciones" as of 8 September 2011); available at: http://transparencia.uanl.mx/secciones/normatividad_vigente/archivos/LyR09/07evaluaciones.pdf (Access: 12.07.2019)
- Audit discussions

Preliminary assessment and analysis of the peers:
The Faculty strictly applies multi-component assessments to measure the achievement of course learning outcomes and thus the achievement of the intended learning outcomes on programme level. The possible forms of evaluation are defined in the "General Assessment Regulations" and include examinations, seminars, lab or field reports, homework, etc. The module descriptions contain an indication of the different components and of their individual weight for the overall assessment (e.g. "Practical Training (30%), Seminars (30%), and Examination (40%)").

The peers judge this examination approach as an appropriate instrument to ensure that the academic performance of the students is assessed in different ways and in a comprehensive manner. They welcome the comprehensive evaluation method as it at the same time aims at assessing different levels of competences. In this context, they also convince themselves that subject-related communication skills are monitored in a series of modules, where students have to give oral presentations. Overall, the Faculty conclusively demonstrated that the examinations do correspond with the intended learning outcomes and provide students a continuous feedback on their study progress.

During the course of a module, students usually present one final evaluation (oral or written). In the Bachelor programme, all modules additionally comprise two or three midterm examinations or homework assignments to ensure a continuous monitoring of the learning progress. Likewise, homework assignments, presentations or written reports complement a final examination in the Master programme. Despite the mostly small size of the modules and the resulting number of courses per semester particularly in the Bachelor programme, the students confirmed that the exams are well distributed across the semester and adequate in number too. The peers learn that there is a two weeks-period at the end of the

semester where students can prepare their last examination sections, handle field or lab reports, seminars or other work depicted in the instructions forms. Relating to that arrangement, the students also confirmed that there was sufficient preparation time for the final examination.

During the onsite visit, the peers have analysed a sample of examinations of both programmes and confirmed that they were of adequate standard at the level aimed at.

According to the "General Assessment Regulation" states, a student has altogether five extra opportunities to pass a module after failing one in the Bachelor programme compared to one extra opportunity in the Master programme. The number of repetition opportunities in the Bachelor programme appears to be unusually high, particularly compared to the only one extra opportunity in the Master programme. The expert panel sees the sole responsibility of the university to decide how many times students are allowed to repeat an examination. They also noticed that the students and the teaching staff concurrently consider the provision for the Bachelor programme in fact to be largely theoretical, stating its factual application in only very rare cases. As regards further aspects of the organisation of the exams (examination period, preparation time, application and deregistration, remediation period etc.), the peers found all issues adequately addressed in the exam regulations and respective work instructions.

At the end of their studies[7], students generally do have to prepare a thesis work comprising knowledge, skills and competences gained in the module work of the preceding semesters. In the Bachelor programme, students can choose "professional practices" of comparable size instead of a thesis project. According to the SAR and remarks of the programme coordinators, students choosing professional practices have to hand in a scientific report including analysis and a discussion section. The "professional practices" are an innovation in the new curriculum meant as a cooperative thesis to be conducted in close cooperation with a company, but supervised by university professors. A manual assuring the scientific quality of the report is planned, but not existent yet. Moreover, no description is available of the "professional practices", which might have been helpful in assessing whether the mandatory scientific report is equivalent to the Bachelor thesis. Equivalency of both categories of academic works ("Bachelor thesis" and "scientific report") would be necessary in the opinion of the expert panel to accept the "professional practices" as an alternative route to evidence that the student is able to solve a set disciplinary task on a scientific basis independently and within a limited period of time. For that purpose, meaningful information

[7] In the ninth semester in the Bachelor programme and (nominally) in the fourth semester in the Master programme. The Master Thesis de facto spans all four semesters, since students have to present milestones of their thesis projects in three seminars from the first to the third semester, before the submission and defence of the thesis in the fourth semester.

about the "professional practices" (respective module / course description) as well as evidence of relevant assessment standards should be provided.

Notwithstanding this, the peers gained the impression that the Bachelor and Master theses are thoroughly planned major academic projects conducted in several distinct stages from the submission of a proposal through an individual research and drafting stage to the final version and a presentation of his/her findings. The sample of theses inspected during the onsite visit on overage has illustrated a high problem awareness and the ability to take on subject-related issues methodically. In the case of the Master theses though, it became visible that many of them are treating research topics in the Natural Sciences area rather than application-oriented issues. This is certainly supportive of the academic advancement in a PhD programme of the Faculty. Otherwise, representatives from the professional world demonstrated a variety of applied research topics and projects, which have been followed through successfully in thesis works (for instance environment surveillance projects). In general, the panel considers the theses open to its introspection an excellent proof of the achievement of the respective study objectives and intended learning outcomes.

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

The peers take note of the comments and additional information provided by the UANL. Overall, they consider *the* above criterion as broadly, but *not completely fulfilled*.

Equivalency of the scientific report ("professional practices") and Bachelor thesis

The expert panel takes note of the programme coordinators' statement that a "manual" for the scientific report students have to deliver in case they choose professional practices (instead of a Bachelor thesis) will be developed and implemented. The panel deems this manual necessary to ensure the scientific quality of the report, if the equivalency of the professional practices and the Bachelor thesis is to be attested. Therefore, the peers request to have a look at the manual (or the draft manual), which should be proceeded in the course of the accreditation procedure. Additionally a meaningful course description for the "professional practices" would be worthwhile (see below, chapter F, A 7).

4. Resources

Criterion 4.1 Staff

Evidence:

- Respective chapter of the SAR

- Staff Curriculum Vitae, Appendix D of the SAR
- Academic Research Groups, Appendix E of the SAR
- Actualization of teaching staff, Appendix F of the SAR
- Professors Workload, additional document submitted after the on-site visit
- Audit discussions

Preliminary assessment and analysis of the peers:
Reportedly, 24 full-time professors, 6 partial-time professors and 30 more technicians are at the disposal for conducting the degree programmes under review. After consulting the Staff CVs, the peers conclude that the teaching personnel are generally well qualified to assume its teaching responsibility in the study programmes. Established research groups in programme-related fields like Terrestrial Ecosystems or Management of Forest Ecosystems are supporting the quality development in the Forestry degree programmes as well. However, the age structure of the staff seems somewhat imbalanced and criticism has been voiced in the audit discussions that the turnoff of staff could and should be managed more strategically, not least with a view to the adaptation and further development of the degree programmes in the light of new disciplinary and labour market demands. The expert panel considers this a serious issue. It strongly suggests that the Faculty should take appropriate steps to a more systematic management of recruiting new teaching staff with a sense of the programmes' adaptability to external demands.

The Faculty presented a calculation of the time the teaching staff spent on instruction, research, administrative and other activities. From this information source, the peers find their impression confirmed that the overall workload of the lecturers, including administrative, research and supervising activities, is very high (48 hours a week on average). The audit team suspects that these duties could hamper other activities, in particular the opportunity to participate in professional and didactical training opportunities (see next section). Reducing the overall workload, particularly the teaching load, of the permanent staff members might otherwise raise opportunities to bring in, for instance, forest managers as part-time lecturers and thereby enhance of the students' competences in the management and planning of Forest Resources.[8] Therefore, the experts recommend leaving more time for the teaching staff to participate in the professional and didactical training opportunities of the UANL.

[8] Cf. the low approval rates of the graduates' respective competency by the responding employers, according to the account given in the SAR, p. 100ff.

Criterion 4.2 Staff development

Evidence:

- Relevant chapter of the SAR
- Regulations for Sabbatical leave, inter alia, to be found in "Reglamento del Personal Académico"; available at: http://transparencia.uanl.mx/secciones/normatividad_vigente/archivos/LyR09/14personalacademico.pdf (Access: 12.07.2019)
- Audit discussions

Preliminary assessment and analysis of the peers:

Both the University and the Faculty are supporting the didactical and professional advancement of its teaching staff through various means. The University organizes workshops aiming at strengthening the teaching competencies of the teaching staff. Staff members regularly receive information about further training opportunities. As peers are told, the lecturers can apply for it and have to receive permission from their superiors to participate in it. Overall, it can fairly be stated that sufficient opportunities to further develop the professional and teaching skills of the staff are available.

In addition, manifold incentives to participate in significant research work (Sabbatical Leave, University Research Grant, research stays, participation in workshops, conferences and symposia, Academic Development Strengthening Program) are highly appreciated by the expert panel. Such incentives, related programmes and opportunities might contribute considerably to the Faculty's expertise and research capabilities and, although more indirectly, to the integration of the students in research activities. Plenty of already existing cooperation agreements could also benefit this perspective. However, all of this depends on a reasonable overall workload of the staff and will be undermined by overburdening the staff with teaching obligations and other assignments (see previous paragraph).

As the staff members appear to be impaired to a certain degree in making use of these opportunities, due to onerous teaching, administration and supervision/counselling obligations, the Faculty is advised to effectively reduce pressure on them and, hence, leave more room to broaden their didactical and/or subject-specific abilities.

Criterion 4.3 Funds and equipment

Evidence:

- Respective chapter of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:
As the SAR shows, the main financial source for the Faculty of Forestry Sciences is the state general fund allocated to the university and then transferred to each Faculty or department. The budget is provided on a yearly basis. The general funds are – according to the SAR – considered to support the study programmes' basic operating needs: faculty and staff salaries, supplies and physical services, and to some extent, equipment and specific requisitions. The peers especially noted that the Faculty also receives a significant amount of financial support from major external sources: funds from specific partnership agreements with private and state organizations such as Comisión Nacional Forestal (CONAFOR) or Mexican Petroleum (PEMEX), national and international research grants from state and private institutions and, in some instances, from donations. Summing up all this, the peers consider the financial basis of the degree programmes appropriate and secured for the re-accreditation period.

Concerning the Faculty's infrastructure, laboratories and lab equipment, the peers generally praise the high quality facilities. They note that the acquisition of major equipment and instruments to support the educational objectives is principally ordered and monitored by the University and Faculty. Special federal funds and research projects of the Faculty may also function as financial sources for the acquisition, maintenance and upgrading of major equipment. The basic equipment for the degree programmes, which the peers encountered during the onsite-visit, was found to be adequate, up-to-date and even modern.

Concerning the multidisciplinary approach of the Forest programmes and the necessity to develop an awareness of the coherence of heterogeneous disciplines, theories and methods, it would be especially helpful to intensify the cooperation of the faculties, which are already participating in the offerings of the programmes. The peer panel therefore suggests proceeding to deepen the relationship with other faculties involved in the programmes. Additionally, in order to reach the programmes' profession- and practice-oriented objectives, the panel considers the allocation of sufficient funds for excursions and practical courses an essential issue. To get a full picture of the financial resources allotted for this purpose, the panel asks for additional information about respective budgets (to be submitted along with the Faculty's statement).

As the peer panel understood the statements of the representatives of the UANL rectorate, a reallocation of the relation between the University and the Faculty is about to come as the policy of the federal state is changing its focus on agricultural and forestal issues of

environmental and climate politics. Despite the expectation of generally decreasing national funds for HEIs, this might also come along with an increasing importance and new strategic opportunities of the Faculty of Forest Sciences.

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

The peers take note of the comments and additional information provided by the UANL. Overall, they consider *the* above criterion as *fulfilled sufficiently*. Nevertheless, there is room for improvement in certain instances.

Recruitment policy, professional development

The peer panel appreciates the Faculty's efforts in recruiting highly qualified new staff and in promoting the didactical and professional competences of the staff member. Still, it encourages a more systematic recruitment approach (see below, chapter F, E 4.) and broader opportunities for staff members to participate in CPD courses (see below, chapter F, E 5.).

Cooperation with other faculties

The peers appreciate the already existing engagement of individual staff members of other schools and faculties of UANL the programme development and provision. Nevertheless, the collaboration with faculties representing disciplines included in the degree programmes under review should be fostered so as to develop the interdisciplinary nature of the programmes (see below, chapter F, E 6.).

Financial resources (excursions and practical courses)

The panel takes note of the exemplary list of financial resources available for excursions and practical courses (first half of 2019), which has been provided along with the statement of the Faculty. Overall, these funds seem to be sufficient, although very limited.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module handbooks, Appendices A and B of the SAR

Preliminary assessment and analysis of the peers:
The peers note that module descriptions are available for the (revised and in the Bachelor's case partly new) degree programmes. As a general observation, the information on learning outcomes, teaching and learning formats, examinations, practical training competences, workload distribution and responsible module coordinators is heterogeneous and scarce in many module descriptions of the Bachelor programme. By contrast, the module handbook of the Master programme does generally contain relevant information in the mentioned instances. Concerning the course descriptions for the Bachelor, supplementing the missed information would be worthwhile to get a more complete picture of the module and its place within the curriculum. This is especially true with respect to the learning outcomes of the modules, which are often put into generic phrases mixing learning outcomes with contents and / or summarizing the contents in a short list of keywords. In addition, no further information about the teaching and learning methods applied in each module is given except of few indications in the rubric "Evaluation Form". In order to understand the connection between the modules, their sequence and possible dependency, it would be necessary to know about respective prerequisites. Unlike the module handbook of the Master programme, module coordinators are not named yet for the Bachelor courses. As the module coordinator is the most important contact person for the respective module, naming him/her in each module description should be ensured. Eventually, the peers could not identify whether the module descriptions are accessible to all relevant stakeholders (particularly students and teaching staff). This is considered necessary too, if not done yet.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Certificate of Study (Transcript of Records) for each degree programme, Appendix G of the SAR
- Diploma Supplement for each degree programme, Appendix H of the SAR

Preliminary assessment and analysis of the peers:
The peers take note of samples of the Certificate of Study/Transcript of Records. Obviously, these documents provide detailed information about the individual achievements and performance of the student.

Furthermore, the experts notice that the Faculty issues a Diploma Supplement for each study programme containing information about the educational objectives, the structure and academic level of the degree programme as well as about the relevant national higher

education system. However, the Diploma Supplement does not include a qualification profile of the graduates of the respective programme. As the panel considers a revision of the programme objectives and learning outcomes necessary anyway, it assumes the reformulated qualification objectives will be included into the Diploma Supplement too.

External stakeholders should be able to classify the achievements and performance of the graduates and make them comparable to the performance of other graduates. Therefore, the peers acknowledge that the Diploma Supplement indicates the individual academic achievement within the class cohort in addition to the final grade of the individual student.

Criterion 5.3 Relevant rules

Evidence:

- Respective chapter of the SAR
- Relevant study regulations and provisions of UANL available on the internet: http://transparencia.uanl.mx/normatividad_vigente/leyesYreg.html (Access: 12.07.2019)

Preliminary assessment and analysis of the peers:
The auditors could see that the relevant regulations concerning the admission, study plan, examinations, quality assurance etc.) are clearly defined, put in place, and binding. All rules and regulations are published on the university website and hence available to all relevant stakeholders.

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

The peers take note of the comments and additional information provided by the UANL. Summarizing their assessment, they consider the above criterion as *largely fulfilled*.

Module descriptions

As argued in the previous sections and in the preliminary assessment above, the module / course descriptions need to be improved in certain instances from the peers' point of view (see below, chapter F, A 5.). The expert panel appreciates the Faculty's respective affirmation attested in its statement on the audit report.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Relevant chapter of the SAR
- Outline of Quality Management of the Faculty of Forestry, Appendix I of the SAR
- Samples of survey formats (2017; leaving students, alumni, employers), Appendix I of the SAR
- Teaching Staff evaluation results, aggregated data for all programmes of the Faculty 2014 – 2018; exemplary data for the Forest degree programmes 2018 (Bachelor) and 2019 (Master)

Preliminary assessment and analysis of the peers:

The peers note that the Faculty has put in place a process for defining, evaluating and assessing the educational objectives and student's outcomes for its degree programmes. It is also acknowleged that these processes are framed within a quality management system, which has already been subject to an accreditation process by TUEV SUED according to the standards of the ISO-9001-2015 (Quality Management Systems). This accreditation confirms that the Faculty's quality management covers the entire range of academic procedures offered to students through the effective application of the system, including processes for continuous improvement of the system.

As "indirect methods" to assess and evaluate the attainment of Programme Educational Objectives (PEOs) and Student Outcomes (SOs), the Faculty mainly relies upon a multitude of survey instruments (Student Exit Survey, Alumni Survey and Employer Survey). Results from these surveys from 2013 onwards were presented in the SAR, mostly as highly aggregated data. Evidently, the significance of these quality assurance tools with respect to their capacity in detecting weaknesses or major shortcomings of the programme highly depends on the respective response rate. The particular low feedback rate of employers markedly illustrates this issue. Programme coordinators themselves point to the fact that any meaningful conclusion in this case can be derived from the results only with reservation. Nevertheless, the Faculty has made a strong case for the use of the results in certain instances. Thus, the employers have shown discontent with the ability of Bachelor graduates to perform in the sustainable management of forest resources and, for that purpose, to prepare for and carry out forest inventories and ecosystem monitoring. As the SAR pointed out,

these results have been taken up in the revision process of the Bachelor curriculum in order to remedy these deficits. It remains to be seen whether the new curriculum turns out to be successful in this respect, but must be admitted that the established quality assurance cycle has been proven adequate to identify curricular deficits like the mentioned one.

As to the evaluation instruments, it is noted that course evaluations ("teacher evaluation") are conducted on a regular basis and the results taken into account in the ongoing quality development processes. Regarding the list of questions posed in the teacher evaluations, one might argue whether it might be enriched to some extent in order to provide even more meaningful information about the courses. The panel suggests rethinking the questionnaire and the expected results of the teacher evaluation from the angle of its quality assurance purpose. Moreover, feedback with the students in terms of discussing the results of the evaluations and possible action to remove obstacles seem to be rather accidental. Apart from this, the involvement and active participation of the students in the (further) development of the study programme appears to be generally low, while the employers report about an existing and generally working feedback mechanism. Consequently, the quality feedback cycle between students and teaching staff/Faculty needs to be systematically closed. The Faculty should envisage a mechanism to transparently document and communicate to the students and teachers, how the quality assurance results are made use of for the further development of the curriculum.

The only statistical data on student generations presented in the SAR show that the graduation and dropout rates of both degree programmes differ significantly between the student cohorts. Irrespective of this, graduation and dropout rate particularly in the Bachelor programme are distressing, as the programme coordinators admit. However, even in the Master programme the graduation rate in recent years is lower, the dropout higher than expected. Since the data do not exactly represent the study progress of students and (in the Master programme) the average duration of study, it is difficult to infer from the available data whether, when and why students drop out or change the programme. This, in turn, would be necessary, if the Faculty seeks information about possible hurdles in the programme that may lead to targeted measures of quality improvement. It is not surprising that the Faculty's explanation of the dropout rates (students not interested in the specialty) more hypothetical than evidence based. The expert panel suggests refining the collection, compilation and analysis of student-related statistics in order to extract meaningful information about possible study hurdles.

Nevertheless, in the peers view the Faculty has convincingly demonstrated its awareness of the quality assurance dimension of its degree programmes. To a certain extent, the documentation has already illustrated how the collected data and information have been rea-

sonably used in the revision of the programmes under review. Nevertheless, the peers consider the quality assurance system to be improvable, particular with a view to feedback and follow-up processes. Moreover, it is generally seen advisable to gather meaningful cohort-wise statistical data concerning the graduation rate, the drop-out rate, the examination failure rate and the duration of study. The latter is particularly desirable, if decisions with the purpose of improving the curricular and / or organizational structure of the programme are to be drawn on a quantitatively reliable basis.

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

The peers take note of the comments and additional information provided by the UANL. Summarizing their assessment, they consider the requirements regarding the quality assurance of the programmes as *broadly*, yet *not completely fulfilled*.

The expert panel welcomes the Faculty's efforts to further develop its quality assurance instruments and processes. However, vigorous further steps must be taken to close feedback cycles (see below, chapter F, A 6.). Moreover, the collection, compilation and analysis of student-related statistics could be processed more systematically, thus enabling the Faculty to derive meaningful information about deficiencies and possible study hurdles in the degree programmes. The peers propose addressing the latter issue in a recommendation (see below, chapter F, E 7.).

D Additional Documents

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

D 1. Information about the financial resources allotted for funding excursions and practical courses [ASIIN 4.3]

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E Comment of the Higher Education Institution (28.08.2019)

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

- Table Resources assigned to field and laboratory practices (January – June 2019)
- Evaluation of Teaching Staff Questionnaire and exemplary results (Bachelor: 2014 – 2018; Master: 2019)

The peers have considered that in their final assessment.

F Summary: Peer recommendations (09.09.2019)

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Forest Engineer	With requirements for one year	n/a	30.09.2025
Ma Forest Sciences	With requirements for one year	n/a	30.09.2025

Requirements

For both degree programmes

A 1. (ASIIN 1.1) Specify the forestry-related learning objectives of the programmes so that they serve as a meaningful description of the actual qualification profile of the graduates. These learning objectives must also be included into the Diploma Supplement.

A 2. (ASIIN 1.3, 4.3) Provide evidence that module-integrated field practical elements of the curriculum have been strengthened in such manner that the students are able to use their multidisciplinary knowledge to understand and solve forest-related problems.

A 3. (ASIIN 1.3) Take appropriate measures to strengthen the students' capacity to work with local communities, farmers, small enterprises, and foresters and to initiate and accompany innovation processes.

A 4. (ASIIN 2.2) Put in place a process for monitoring the students' workload and, if necessary, adapting the credit point allocation in order to continuously increase self-study time for preparing and following up the learning units.

A 5. (ASIIN 5.1) Rewrite the module descriptions in order to include more detailed information about the course-specific learning outcomes, teaching formats, examinations, practical training competences, workload distribution and responsible module coordinators.

A 6. (ASIIN 6) Implement a mechanism to transparently document and communicate to the students and teachers, how the quality assurance results (in particular concerning the teaching evaluation) are used for the further development of the curriculum.

For the Bachelor's programme

A 7. (ASIIN 3) Ensure that the (practise-oriented) "Scientific report" is equivalent to a Bachelor Thesis in scientific scope and level (for instance through an adequate course description and related guidelines).

Recommendations

For both degree programmes

E 1. (ASIIN 1.1, 1.3) If Agroforestry or other production-oriented forestry systems shall be a future focus area of the programme, the learning objectives and the curriculum should be adapted accordingly.

E 2. (ASIIN 1.3, 2.1) It is recommended to monitor the effect of the combined initiatives for improving the students' English skills.

E 3. (ASIIN 2.1) It is recommended to implement the proposed web-based communication system in order to ensure a timely student information.

E 4. (ASIIN 4.1) It is recommended to more systematically manage the recruitment of new teaching staff with a sense of the programmes' adaptability to external demands.

E 5. (ASIIN 4.2) It is recommended to leave more time for the teaching staff to participate in the professional and didactical training opportunities.

E 6. (ASIIN 4.3) It is recommended to improve the cooperation of faculties representing the different disciplines of the programme in order to strengthen the interdisciplinary approach of the study concept of the degree programmes.

E 7. (ASIIN 6) It is recommended to refine the collection, compilation and analysis of student-related statistics in order to extract meaningful information about possible study hurdles.

G Comment of the Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture (10.09.2019)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee agrees with the assessment of the peers and follows the recommended resolution without modification.

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Forest Engineer	With requirements for one year	n/a	30.09.2025
Ma Forest Sciences	With requirements for one year	n/a	30.09.2025

H Decision of the Accreditation Commission (20.09.2019)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission discusses the procedure. It follows the recommended resolution of the peers and the Technical Committee Agriculture, Nutritional Sciences and Landscape Architecture without any changes.

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Forest Engineer	With requirements for one year	n/a	30.09.2025
Ma Forest Sciences	With requirements for one year	n/a	30.09.2025

Requirements

For both degree programmes

A 1. (ASIIN 1.1) Specify the forestry-related learning objectives of the programmes so that they serve as a meaningful description of the actual qualification profile of the graduates. These learning objectives must also be included into the Diploma Supplement.

A 2. (ASIIN 1.3, 4.3) Provide evidence that module-integrated field practical elements of the curriculum have been strengthened in such manner that the students are able to use their multidisciplinary knowledge to understand and solve forest-related problems.

A 3. (ASIIN 1.3) Take appropriate measures to strengthen the students' capacity to work with local communities, farmers, small enterprises, and foresters and to initiate and accompany innovation processes.

A 4. (ASIIN 2.2) Put in place a process for monitoring the students' workload and, if necessary, adapting the credit point allocation in order to continuously increase self-study time for preparing and following up the learning units.

A 5. (ASIIN 5.1) Rewrite the module descriptions in order to include more detailed information about the course-specific learning outcomes, teaching formats, examinations, practical training competences, workload distribution and responsible module coordinators.

A 6. (ASIIN 6) Implement a mechanism to transparently document and communicate to the students and teachers, how the quality assurance results (in particular concerning the teaching evaluation) are used for the further development of the curriculum.

For the Bachelor's programme

A 7. (ASIIN 3) Ensure that the (practise-oriented) "Scientific report" is equivalent to a Bachelor Thesis in scientific scope and level (for instance through an adequate course description and related guidelines).

Recommendations

For both degree programmes

E 1. (ASIIN 1.1, 1.3) If Agroforestry or other production-oriented forestry systems shall be a future focus area of the programme, the learning objectives and the curriculum should be adapted accordingly.

E 2. (ASIIN 1.3, 2.1) It is recommended to monitor the effect of the combined initiatives for improving the students' English skills.

E 3. (ASIIN 2.1) It is recommended to implement the proposed web-based communication system in order to ensure a timely student information.

E 4. (ASIIN 4.1) It is recommended to more systematically manage the recruitment of new teaching staff with a sense of the programmes' adaptability to external demands.

E 5. (ASIIN 4.2) It is recommended to leave more time for the teaching staff to participate in the professional and didactical training opportunities.

E 6. (ASIIN 4.3) It is recommended to improve the cooperation of faculties representing the different disciplines of the programme in order to strengthen the interdisciplinary approach of the study concept of the degree programmes.

E 7. (ASIIN 6) It is recommended to refine the collection, compilation and analysis of student-related statistics in order to extract meaningful information about possible study hurdles.

I Fulfilment of Requirements (17.09.2020)

Analysis of the peers and the Technical Committee (07.09.2020)

Requirements

For all degree programmes

A 1. (ASIIN 1.1) Specify the forestry-related learning objectives of the programmes so that they serve as a meaningful description of the actual qualification profile of the graduates. These learning objectives must also be included into the Diploma Supplement.

Initial Treatment	
Peers	Fulfilled Justification: The forestry-related learning objectives have been specified. The profiles of the graduates of the Forest Engineering Program and the MFS Program are described accordingly for better expectation management.
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

A 2. (ASIIN 1.3, 4.3) Provide evidence that module-integrated field practical elements of the curriculum have been strengthened in such manner that the students are able to use their multidisciplinary knowledge to understand and solve forest-related problems.

Initial Treatment	
Peers	not (completely) fulfilled Justification: The mandatory time for practical elements/training has not been changed in the curriculum. However, options for students for practical training are provided with the module “Practical experiences” for FE Program but not for the MFS Program. Teachers will be encouraged to raise practical units. Yet, the lack of field practice will make it difficult for the students to develop their capabilities, specifically in the MFS program.
TC 08	Not (completely) fulfilled Justification: The Technical Committee follows the assessment of the pees.

A 3. (ASIIN 1.3) Take appropriate measures to strengthen the students' capacity to work with local communities, farmers, small enterprises, and foresters and to initiate and accompany innovation processes.

Initial Treatment	
Peers	not (completely) fulfilled Justification: About 14% of practice training/work is dedicated to enterprises and government. This percentage is intended to rise by encouraging teaching staff to allocate students more to these directions. While some modules have replaced some of the purely scientific disciplines to improve access to wider, development oriented labor markets, it would be helpful to get further proof of this.
TC 08	Not (completely) fulfilled Justification: The Technical Committee follows the assessment of the pees.

A 4. (ASIIN 2.2) Put in place a process for monitoring the students' workload and, if necessary, adapting the credit point allocation in order to continuously increase self-study time for preparing and following up the learning units.

Initial Treatment	
Peers	fulfilled Justification: Two independent surveys, one in the beginning and one at the end of the semester have been implemented to monitor students' workload. Prospectively, self-study time shall be increased and conditions to do so are currently prepared. However, this is constrained by university regulations. Would be good to get a proof of this later.
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

A 5. (ASIIN 5.1) Rewrite the module descriptions in order to include more detailed information about the course-specific learning outcomes, teaching formats, examinations, practical training competences, workload distribution and responsible module coordinators.

Initial Treatment	
Peers	Fulfilled

	Justification: The module descriptions have been rewritten and include more detailed information about the course-specific learning outcomes.
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

A 6. (ASIIN 6) Implement a mechanism to transparently document and communicate to the students and teachers, how the quality assurance results (in particular concerning the teaching evaluation) are used for the further development of the curriculum.

Initial Treatment	
Peers	Fulfilled Justification: A process to collect single course evaluations and to communicate results back to a) teachers and b) students is in place, to continuously improve lectures and programs.
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

For the Bachelor's programme

A 7. (ASIIN 3) Ensure that the (practise-oriented) "Scientific report" is equivalent to a Bachelor Thesis in scientific scope and level (for instance through an adequate course description and related guidelines).

Initial Treatment	
Peers	Fulfilled Justification: The nature/requirement of the "Scientific report" has been detailed in a so called Analytical Program. As the output of the module "Professional practices" it entails practical experiences and application of (scientific, I guess) knowledge that need to be integrated. As this is also the case in many BA Thesis, I consider this satisfactory. Also knowing that the faculty cannot change this alternative due to national regulations.
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

Decision of the Accreditation Commission (17.09.2020)

The Accreditation Commission follows the assessment of the peers and the Technical Committee and deem requirement 2 and 3 as not yet fulfilled.

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Forest Engineer	Requirement 2 and 3 not fulfilled	n/a	6 months prolongation
Ma Forest Sciences	Requirement 2 and 3 not fulfilled	n/a	6 months prolongation

J Fulfilment of Remaining Requirements (16.03.2021)

Analysis of the peers and the Technical Committee (05.03.2021)

A 2. (ASIIN 1.3, 4.3) Provide evidence that module-integrated field practical elements of the curriculum have been strengthened in such manner that the students are able to use their multidisciplinary knowledge to understand and solve forest-related problems.

Initial Treatment	
Peers	not (completely) fulfilled Justification: The mandatory time for practical elements/training has not been changed in the curriculum. However, options for students for practical training are provided with the module "Practical experiences" for FE Program but not for the MFS Program. Teachers will be encouraged to raise practical units. Yet, the lack of field practice will make it difficult for the students to develop their capabilities, specifically in the MFS program.
TC 08	Not (completely) fulfilled Justification: The Technical Committee follows the assessment of the pees.
Secondary Treatment	
Peers	Fulfilled Justification: The total numbers of practice-relevant/professional-related/field-practice subjects (15) have been increased, which is also reflected in the credit points.
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

A 3. (ASIIN 1.3) Take appropriate measures to strengthen the students' capacity to work with local communities, farmers, small enterprises, and foresters and to initiate and accompany innovation processes.

Initial Treatment	
Peers	not (completely) fulfilled Justification: About 14% of practice training/work is dedicated to enterprises and government. This percentage is intended to rise by encouraging teaching staff to allocate students more to these

	directions. While some modules have replaced some of the purely scientific disciplines to improve access to wider, development oriented labor markets, it would be helpful to get further proof of this.
TC 08	Not (completely) fulfilled Justification: The Technical Committee follows the assessment of the pees.
Secondary Treatment	
Peers	Fulfilled Justification: The total number of field-practice subjects has been increased, which is also reflected in the number of credits awarded to such subjects. This bears the potential to improve students capacity to interact with practitioners in a transdisciplinary way and to initiate and accompany innovation process. The university also provides a list that summarizes several collaborators where students can work on their social service within both programmes. All of these are well rooted in forest practices (e.g. policy, law, consultation, management.)
TC 08	Fulfilled Justification: The Technical Committee follows the assessment of the pees.

Decision of the Accreditation Commission (16.03.2021)

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Forest Engineer	All requirements fulfilled	n/a	30.09.2025
Ma Forest Sciences	All requirements fulfilled	n/a	30.09.2025

Appendix: Programme Learning Outcomes and Curricula

According to SAR (respective website), the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the graduates of the Bachelor degree programme Forest Engineer:

Objectives of the Forest Engineer programme are:

"O1: Train Forestry Engineers who, through logical, critical, creative and proactive thinking, have the capacity to make appropriate, relevant and innovative decisions in the field of forest resources management and use.

O2: Enhance leadership skills and achieve collaborative work with the private and government sector in order to formulate ecosystem management and restoration plans, environmental damage mitigation programs; as well as the generation of programs for the evaluation and prevention of forest fires, pests and forest diseases.

O3: Consider the diversity of social and cultural practices of the owners of forest resources and the planning of the use of natural resources using cutting-edge technologies to reduce the impact of anthropogenic activities on ecosystems.

O4: Reinforce the commitment towards the challenges of contemporary society through a critical attitude, respect and human commitment to consolidate the welfare and sustainable development of the community."

Specific Learning outcomes of the Bachelor programme shall be:

"C1: Develop ecosystem management plans using relevant social, biological, physical and economic data obtained through field tools or geographic information systems in order to use natural resources in a sustainable manner.

C2: Develop mitigation programs for environmental damage through the application of evaluation techniques of ecological processes and the analysis of stress factors in order to reduce the impact of anthropogenic activities on ecosystems.

C3: Restore ecosystems through the analysis of biodiversity and its relationship with physical and anthropogenic factors in order to achieve conservation of ecological processes and ecosystem productivity.

C4: Generate programs in order to evaluate and prevent the risk of forest fires, diseases and forest pests using ecosystem health criteria preserving and maintaining the productivity and diversity of ecosystems.

C5: Manage units of conservation, management and sustainable use of wildlife considering the principles of sustainability in order to diversify natural resources."

ASIIN SSC	Intended Learning Outcomes of the FE Programme	Corresponding Modules
Knowledge and Understanding		
Graduates		
know and understand the principles of natural sciences, social science, mathematics, medical science, and economics their discipline is based on;	C1, C2, C4	Mathematics, Calculus, Botany, Zoology, Chemistry, Physics, Ecology, Plant Physiology, Peace Culture
have a coherent knowledge in their discipline including knowledge of the latest findings in their discipline;	C1	Introduction to forest management, Seminar for professional performance
know concepts of identification and safeguarding of quality in their respective fields of work;	C1	Ethics and culture of legality, Peace culture, Sociology
know the essential legal regulations relating to their discipline;	C1, C3, C5	Environmental legislation and policy, Biodiversity conservation
Analysis and Methods		
Graduates		
have the required knowledge and understanding to identify and formulate problems arising in agronomy, nutrition science, or landscape architecture (which may contain aspects stemming from areas other than their field of specialization);	C1, C2, C3, C5	Geographic information systems, Principles of statistic, Sociology, Agroforestry management
are able to apply different methods orientated on fundamentals – such as mathematical, statistical, and experimental (laboratory) analysis;	C1, C2, C3, C4, C5	Statistical methods, Dendrometry, Forest measurement, Integrative forestry practices, Thesis
are qualified to plan and conduct respectively suitable experiments, interpret the data, and draw conclusions.	C2, C3	Restoration and rehabilitation of ecosystem, Management of arid and semi-arid zones
Investigations and Assessment		
Graduates		

ASIIN SSC	Intended Learning Outcomes of the FE Programme	Corresponding Modules
are able to pursue literature searches in a targeted way and to use data bases and other sources of information;	C1, C2, C3	Management of arid and Semi-arid zones, Wildlife sampling techniques
are qualified to carry out assessments on the basis of comparisons with literature references and plausibility considerations.	C1, C3, C5	Silviculture, Biodiversity conservation
Engineering Design		
Graduates are able	C1, C4	Forest inventories, Leadership, entrepreneurship and innovation,
to develop descriptive and comparative approaches;	C1, C2, C4	Soil sciences, Social responsibility and sustainable development, Bioclimatology, Basic forestry field practices
to work on the basis of concepts	C1, C4, C5	Hydrology, Biodiversity conservation, Ecology, Genetics
and develop strategies.	C1, C2, C3, C4, C5	Forest management, Agroforestry management, Restoration and rehabilitation of ecosystems, Forest entomology, Forest fires, Wildlife management, Management of forestry companies
Engineering Practice		
Graduates		
have the skills to solve practical problems;	C1, C2, C3, C4	Basic forestry field practices, Integrative forestry practices, Leadership, entrepreneurship and innovation, Forest inventory, Forest entomology, Forest fires, Forest diseases, Forest operations
can combine theory and practice to solve subject-specific practical problems;	C1, C2, C3, C4, C5	Forest management, Agroforestry management, Topography, Wildlife management
are able to select and apply suitable devices, processes, and methods;	C1, C4, C5	Geographic information systems, Forest inventories, Wildlife management principles, Topography
have developed an understanding of applicable techniques and methods and their limitations;	C1, C2, C3, C4, C5	Forest inventory, Geographic information systems, Seeds, nurseries and forest plantation, Forest management, Agroforestry

The following **curriculum** is presented:

Subject Code	FIRST SEMESTER	Lt	Lp	EA	Total	CPs
ACFGU	Peace culture	40	-	20	60	2
ACFB	Introduction to forest sciences	60	20	10	90	3
ACFB	Physics	60	20	10	90	3
ACFB	Mathematics	60	20	10	90	3
ACFB	Chemistry	60	40	20	120	4
ACFB	Botany	60	40	20	120	4
ACFB	Zoology	60	40	20	120	4
	TOTAL	**400**	**180**	**110**	**690**	**23**

Subject Code	SECOND SEMESTER	Lt	Lp	EA	Total	CPs
ACFGU	Ethics and culture of legality	40	-	20	60	2
ACFB	Calculus	60	20	10	90	3
ACFB	Principles of statistic	60	20	10	90	3
ACFB	Plant physiology	60	20	10	90	3
ACFB	Ecology	60	40	20	120	4
ACFB	Soil sciences	60	20	10	90	3
ACFB	Elective I curricular area of basic training	60	20	10	90	3
	TOTAL	**400**	**140**	**90**	**630**	**21**

Subject Code	THIRD SEMESTER	Lt	Lp	EA	Total	CPs
ACFP-F	Geographic information systems	40	60	20	120	4
ACFP-F	Hydrology	60	20	10	90	3
ACFP-F	Wildlife management principles	60	20	10	90	3
ACFP-F	Topography	40	60	20	120	4
ACFP-F	Statistical methods	60	20	10	90	3
ACFP-F	Bioclimatology	60	20	10	90	3
ACFB	English	60	20	10	90	3
ACFB	Elective II curricular area of basic training	60	20	10	90	3
	TOTAL	**420**	**260**	**100**	**780**	**26**

Subject Code	FOURTH SEMESTER	Lt	Lp	EA	Total	CPs
ACFGU	Social responsibility and sustainable development	40	-	20	60	2
ACFP-F	Wildlife sampling techniques	60	40	20	120	4
ACFP-F	Genetics	60	20	10	90	3
ACFP-F	Economy	60	20	10	90	3
ACFP-F	Dendrometry	60	40	20	120	4
ACFP-I	Basic forestry field practices	60	40	20	120	4

ACFB	Technical English	60	20	10	90	3
	TOTAL	**340**	**180**	**170**	**690**	**23**

Subject Code	FIFTH SEMESTER	Lt	Lp	EA	Total	CPs
ACFP-F	Sociology	60	20	10	90	3
ACFP-F	Wood anatomy and technology	50	30	10	90	3
ACFP-F	Legislation and environmental policy	60	20	10	90	3
ACFP-F	Administration of forestry companies	60	20	10	90	3
ACFP-F	Forest measurement	60	20	10	90	3
ACFP-F	Silviculture	60	20	10	90	3
ACFP-I	Forest diseases	50	30	10	90	3
ACFP-I	Forest products and environmental services	60	20	10	90	3
	TOTAL	**460**	**180**	**80**	**720**	**24**

Subject Code	SIXTH SEMESTER	Lt	Lp	EA	Total	CPs
ACFP-I	Biodiversity conservation	60	20	10	90	3
ACFP-I	Forest inventories	50	30	10	90	3
ACFP-I	Wildlife management	60	40	20	120	4
ACFP-I	Assessment of forestry projects	60	20	10	90	3
ACFP-I	Forest entomology	60	20	10	90	3
ACFP-I	Seeds, nurseries and forest plantations	50	30	10	90	3
ACFP-I	Forest fires	60	20	10	90	3
ACFP-F	Elective of the curricular area of professional fundamental formation	60	20	10	90	3
	TOTAL	**440**	**220**	**90**	**750**	**25**

Subject Code	SEVENTH SEMESTER	Lt	Lp	EA	Total	CPs
ACFGU	Leadership, entrepreneurship and innovation	40	-	20	60	2
ACFP-I	Forest management	60	20	10	90	3
ACFP-I	Agroforestry management	60	20	10	90	3
ACFP-I	Management of arid and semi-arid zones	60	20	10	90	3
ACFP-I	Restoration and rehabilitation of ecosystems	60	20	10	90	3
ACFP-I	Forest operations	60	20	10	90	3
ACFP-I	Elective I curricular area of professional integrative training	60	20	10	90	3
ACFP-I	Environmental impact evaluation	60	20	10	90	3
	TOTAL	**460**	**140**	**90**	**690**	**23**

Subject Code	EIGHTH SEMESTER	Lt	Lp	EA	Total	CPs
ACFP-I	Elective II curricular area of professional integrative training	60	20	10	90	3

Elective I and II of the Basic training (ACFB)	CPs
Literature research workshop	3
Scientific communication	3
Geobotany	3
Non timber forest products utilization	3
Electiv of the Professional fundamental formation (ACFP-F)	**CPs**
Management and conservation technics of habitats	3
Ecotourism	3
Forest Certification	3
Environmental education	3
Urban dasonomy	3
Biodiversity monitoring	3
Preparation of the justificatory technical study	3
Game management	3
Elective I and II of the Professional integrative training (ACFP-I)	
Case studies of forest management	3
Forestry resources management proposal	3
Research seminar	3
Elective III of the Professional integrative training (ACFP-I)	
Research internship	24
Professional practice	24

According to SAR (respective website), the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the graduates of the Master degree programme Forest Sciences:

Objectives of the Forest Sciences programme are:

“Specific objectives of the MFS Programme are the following:

“O1) Provide knowledge of sustainable forest and nature management as well as forest conservation considering complex intercultural and international topics.

O2) Train to cope and balance with contemporary forest and nature challenges at multiple scales and perspectives.

O3) Enhance competences in leadership, capacity for teamwork and decision-making.

O4) Encourage to continue personal and professional development

O5) Promote student's integration in professional societies on national and international level."

General Learning Outcomes of the Master programme are:

"C1) Understands and apply theoretical knowledge, sustainable forest and nature management including social and economic contexts.

C2) Cope with the challenges in contemporary forest and nature issues at multiple scales and perspectives.

C3) Implement and evaluate an integrated management of forests and nature, considering complex intercultural and international topics.

C4) Demonstrate competences in leadership, capacity for teamwork and decision-making.

C5) Willingness to continue personal and professional development.

C6) Participate in professional societies and conferences on national and international level."

Specific Learning Outcomes of the Master programme are the following:

"**Knowledge**

a. To provide foundations of forest sciences and natural resource management

b. Awareness of contemporary issues

c. To know the use of techniques, skills, and modern tools necessary for research development

Skills

a. To design and conduct experiments, as well as to analyze and interpret data

b. To design, develop and implement forest and natural resource management plans including constraints such as environmental, economic, social, political, ethical, health and safety, manufacturability, and sustainability

c. To be involved and effective in multidisciplinary team work and decision making processes

d. To develop experience in teaching and scientific research

Competences

a. To understand the professional and ethical responsibilities, to exercise management and supervision in contexts of work or study activities where there is unpredictable change

b. To take responsibility for managing professional development of individuals and groups to communicate effectively in both oral and writing forms

c. Recognition of the need for, and an ability to engage in life-long learning"

ASIIN SSC .	Intended Learning Outcomes of the MFS Programme	Corresponding Modules
Knowledge and Understanding		
have profound knowledge and understanding of their technical specialization and the further scientific context;	C2, C1, C3, C5	Advances studies Module: Forest management, Agroforestry management, Forest health, Elective II: Forest Inventory, Specialized wood anatomy.
have developed differentiated knowledge and critical awareness of the latest findings in their discipline;	C2, C4, C5	Basic studies module: Evaluation of forest resources, Ecology, Statistical Analysis, Elective I: Photogrammetry and photointerpretation, Geographic information systems, Forest economics.
have differentiated and advanced knowledge of the legal provisions relevant for their professional field;	C1, C3	Electives module I: Forest economics, rural sociology; Elective module II: Forest project evaluation; Elective module III and IV: Climate changes challenges and opportunities.
have advanced knowledge of quality standards and quality processes as well as their management.	C1, C3, C5	Applied studies module: Forest management, Forest health.
Engineering Analysis		
are qualified to formulate and solve problems arising in new and developing fields of the area of their specialization;	C1, C4, C5	Applied studies module: Forest management, Agroforestry management. Elective module III and IV: Climate changes challenges and opportunities.
are able to use their knowledge and understanding to design scientific models, systems, strategies, and processes;	C2, C4, C5	Basic studies module: Evaluation of forest resources, Statistical analysis. Elective module II: Forest inventory

ASIIN SSC	Intended Learning Outcomes of the MFS Programme	Corresponding Modules
are able to design and apply different methods – such as mathematical analysis, computer-aided model design, practical (laboratory) experiments or plans;	C2, C3, C4	Basic studies module: Evaluation of forest resources, Statistical analysis. Elective module II: Forest inventory, Elective module I: Geographic information systems Elective module III: Forest growth mathematical simulation, Mathematical programming
are able to recognize the relevance of the ecologic and economic framework conditions relating to social and health and safety issues;	C1, C3, C5	
are qualified to plan, conduct, and evaluate field and laboratory experiments.	C2, C3, C4	
Investigations and Assessment		
are qualified to apply suitable methods to pursue investigations or detailed research as to technical-scientific issues in accordance with the status of their knowledge and understanding;	C3, C4, C5	
are able to identify, locate, and procure required information;	C2, C4	
can define and conduct investigations using the means of analyzing, modelling, and experimenting;	C1, C3	
are qualified to assess data critically and to draw conclusions;	C2, C4	
are able to investigate the application of new emerging technologies in their scientific discipline.	C2, C4	
Engineering Design		
are qualified to solve problems which are incompletely defined or unusual	C3, C4	

ASIIN SSC	Intended Learning Outcomes of the MFS Programme	Corresponding Modules
and show conflicting targets or competing specifications;		
are able to analyze and assess system performance;	C4, C5	
are able to use their knowledge and understanding to develop solutions for unusual problems together with the integration of other disciplines;	C2, C1, C4	Basic studies module: Evaluation of forest resources
can apply their scientific ability to judge when working with complex, technically impure, and incomplete information;	C3, C1	Basic studies module: Statistical analysis. Elective II: Forest project evaluation
are qualified to apply innovative methods to problem solving processes.	C3, C4	Elective module II and IV: mathematical programming
Engineering Practice		
can combine theory and practice to achieve quality of structures, processes, and results;	C1, C3	Elective module II: Forest inventory, geographic information systems
can deal with complex facts and combine knowledge from different fields;	C4, C5	Elective module II and IV: Integrated plague management, Forest growth mathematical simulation
can develop and implement deductive and inductive methods;	C4, C5	Elective I: Rural sociology, Elective II: Forest project evaluation
have developed a comprehensive understanding of applicable theories, models, techniques, and methods and their limitations;	C3, C4	
recognize the social, economic, and ecological implications of practical engineering and can assess them.	C3, C4	
Social Competences		
fulfill the requirements on graduates of Bachelor's degree programmes with a view to key qualifications on the higher level of Master's degree programmes;	C5	
can work effectively as leaders of teams comprising different disciplines and levels;	C4	Rural sociology
can work and communicate in national and international contexts.	C3, C4	Seminar I, II, III

The following curriculum is presented:

Module (Course) Code	FIRST SEMESTER	L	S	CPs
MCF-100	Evaluation of forest resources	38	82	4
MCF-200	Ecology	38	82	4
MCF-300	Statistical analysis	38	82	4
MCF-I	Elective module I	38	82	4
	Seminar I		60	2
	TOTAL	**540 h**		**18**

Module (Course) Code	SECOND SEMESTER	L	S	CPs
MCF-400	Silviculture	38	82	4
MCF-900	Biodiversity preservation	38	82	4
MCF-300	Forest products	38	82	4
MCF-II	Elective module II	38	82	4
	Seminar II		60	2
	TOTAL	**540 h**		**18**

Module (Course) Code	THIRD SEMESTER	L	S	CPs
MCF-700	Forest management	38	82	4
MCF-800	Agroforest management	38	82	4
MCF-600	Forest health	38	82	4
MCF-III	Elective module III	38	82	4
	Seminar III		60	2
	TOTAL	**540 h**		**18**

Module (Course) Code	FOURTH SEMESTER	L	S	CPs
MCF-IV	Elective module IV	38	82	4
	Thesis		660	22
	TOTAL	**780 h**		**26**

Module (Course) Code	ELECTIVE MODULES/SUBJECTS	L	S	CPs
MCF-101	Photogrammetry and photointerpretation	38	82	4
MCF-102	Forest inventory	38	82	4
MCF-103	Geographic information systems	38	82	4
MCF-201	Macroecology and wildlife management	38	82	4
MCF-202	Geobotany	38	82	4
MCF-203	Edaphology	38	82	4
MCF-205	Ecopedology	38	82	4
MCF-401	Genetic forest improvement	38	82	4
MCF-402	Urban dasonomy	38	82	4
MCF-403	Plant nutrition in the tropics and subtropics	38	82	4
MCF-404	Reforestation in arid and semi-arid zones	38	82	4
MCF-405	Climate change challenges and opportunities	38	82	4
MCF-501	Economic botany	38	82	4
MCF-502	Specialized wood anatomy	38	82	4
MCF-503	Wood durability	38	82	4

Module (Course) Code	ELECTIVE MODULES/SUBJECTS	L	S	CPs
MCF-504	Use of wood in constructions	38	82	4
MCF-505	Sawmill technology	38	82	4
MCF-506	Ethnobotany	38	82	4
MCF-601	Forest mycology	38	82	4
MCF-602	Integrated plague management	38	82	4
MCF-603	Applied mycosilviculture	38	82	4
MCF-701	Forest economics	38	82	4
MCF-702	Mathematical programming	38	82	4
MCF-703	Forest project evaluation	38	82	4
MCF-704	Forest productivity	38	82	4
MCF-705	Forest growth mathematical simulation	38	82	4
MCF-801	Basin management	38	82	4
MCF-802	Arid zones management	38	82	4
MCF-803	Rural sociology	38	82	4
MCF-804	Wild fauna diseases	38	82	4
MCF-805	Wild fauna management	38	82	4
MCF-806	Aspects of animal nutrition with emphasis on ruminants bred for hunting	38	82	4
MCF-901	Productive systems and sustainable development	38	82	4
MCF-902	Evaluation and models of wild fauna habitats	38	82	4
MCF-903	Ecological restoration	38	82	4