ASIIN SEAL

Accreditation Report

Bachelor's Degree programme
Electrical Engineering and Automation

Provided by

Shanxi Datong University

Version: 12/12/2025

Status: *Final Version*

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name
电气工程及其自动化	Electrical Engineering and Automation (EEA)

Date of the contract: 29.07.2024

Submission of the final version of the SAR: 14.04.2025

Date of the onsite visit: 12.-13.05.2025

at: Shanxi Datong University

Expert panel:

Prof. Dr. Gustav Vaupel, Hamburg University of Applied Sciences

Dipl.-Inform. Ernst Blank, Formely Siemens AG

Dr. Jiayong Yan, Shanghai University of Medicine and Health Sciences

Mr. Qitong Lu, Bachelor student at University of Shanghai for Sciences and Technology

Representatives of the ASIIN headquarter: Dr. Siegfried Hermes, Dr. Xin Jiang (Trainee)

Criteria used:

European Standards and Guidelines as of May 15, 2015

ASIIN General Criteria as of March 28, 2023

Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering/Information Technology as of December 9, 2011

B Context of the Degree Programme

B-1. Numbers and facts

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[1]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Electrical Engineering and Automation	B.Eng.	Electrical Engineering	6	Full time		8 semesters	240 ECTS	Annually / 2012

B-2. Characteristics and features

Shanxi Datong University (SDU) is a public comprehensive university located in Datong City, Shanxi Province, China. Established through a merger in 2006, SDU emphasizes application-oriented education, integrating closely with regional economic and industrial needs. The university is designated as a key institution in Shanxi Province's strategic initiative aimed at developing high-level applied undergraduate institutions.

Under its strategic framework—the "14th Five-Year Plan and the Outline of the 2035 Vision Goals"—SDU seeks continuous improvement in teaching quality, industry collaboration, and internationalization. Recent developments include strengthening internal quality assurance systems and expanding enterprise collaborations, significantly enhancing practice-oriented teaching and student employability.

The Bachelor's programme in Electrical Engineering and Automation (EEA) was established to specifically address the regional industry's increasing demand for highly skilled professionals in electrical engineering, automation, and intelligent manufacturing. The programme is recognized as a provincial first-class undergraduate discipline and has closely followed regional industrial trends to tailor its educational approach.

Originally structured as a traditional four-year undergraduate programme, significant curricular reform was implemented recently with the introduction of a "3+1" model. This model allocates the first three academic years primarily to foundational theory combined with practical coursework, while the fourth academic year is entirely dedicated to profes-

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

sional internships and industry projects. This new structure is complemented by three additional mini-semesters scheduled during the summer breaks, creating an extended “8+3” semester format. These mini-semesters provide targeted intensive practical training sessions, specialized workshops, and hands-on experiences, thus deepening students’ professional readiness.

The EEA programme is reported to maintain strong cooperative links with numerous leading regional enterprises, facilitating internships, employment opportunities, and industry-influenced curriculum development. According to programme representatives, Industry professionals regularly contribute to course design and instructional activities, helping to ensure that the curriculum remains current with market and technological advancements.

The School of Mechanical and Electrical Engineering, which hosts the EEA programme, claims to have sufficient teaching resources, including modern laboratories and innovative educational technology. Reportedly, its effective collaboration with the university administration ensures strategic support and efficient resource allocation.

Quality assurance within the programme is put in place through an internal review process, incorporating regular student and industry feedback, and employer satisfaction surveys. Recruitment and selection of students are conducted through standardized national entrance exams, ensuring a stable and qualified student body.

Financially, the programme is predominantly supported by the university’s regular budget, supplemented by additional funding from enterprise collaborations for specific practical and training initiatives.

The current ASIIN accreditation procedure includes comprehensive documentation review, on-site evaluations, and stakeholder interviews to thoroughly assess the programme’s compliance with international accreditation standards. The detailed evaluation based on ASIIN criteria is provided in the subsequent sections of this report.

C Assessment of the Expert Panel

This accreditation report is based on the preliminary evaluation report for the degree programme under review. As the evaluation report strictly adheres to the relevant general and subject-specific accreditation criteria, no changes have been made to the evaluative chapters. The expert panel considered the statement and additional information of the HEI for its concluding remarks and recommended resolution.

The following sections of the report are based on the audit discussions the expert panel had with relevant stakeholder groups: Rectorate and College management, programme coordinators, teaching staff, students (and alumni), and industry representatives. In addition to the audit meetings, the expert panel relies on the documentation about the programme and the documentary respectively regulatory framework Shanxi Datong University has provided before, during and after the audit.

C-1. Objectives and learning outcomes of the degree programme [ASIIN 1.1]

Description of the current status

Evidence

1. SAR 1.1, 1.7
2. Appendix 03 Cooperation Agreement
3. Appendix 05.01 Programme Handbook
4. Appendix 07.01 Matrix – TC 02
5. Website: https://jdgcxy.sxdtdx.edu.cn/news-list-schoolprofile.html
6. Discussion on onsite-visit

The Electrical Engineering and Automation (EEA) Bachelor's programme at SDU outlines its intended learning outcomes through multiple frameworks. Section 1.1 of the Self-Assessment Report (SAR) presents six overarching dimensions with 18 sub-items, covering areas such as engineering knowledge, problem analysis, design and development, research capabilities, modern tool usage, and societal responsibility. In contrast, Appendix 05.01 (Programme Handbook) specifies twelve graduation requirements, each with 2-4 sub-descriptors, aligning more directly with China's national standards for undergraduate engineering education. A third variant of intended learning outcomes also appears in Appendix

07.01 and is used for mapping against the SSC 02 – Electrical Engineering and Information Technology.

During the on-site discussions, programme representatives confirmed that the twelve graduation requirements outlined in the Programme Handbook (Appendix 05.01) serve as the official competence profile for teaching and assessment. However, the SAR does not clarify the relationship between the three sets of learning outcomes, nor does it explain how consistency is ensured across internal documents.

The programme states that its learning outcomes are aligned with national qualification frameworks and that graduates are prepared for engineering roles in areas such as electrical system operation, automation control, and intelligent manufacturing. However, there is limited empirical evidence—such as labour market surveys, alumni tracer studies, or documented industry consultations—supporting the alignment between these intended outcomes and actual employer expectations. Section 1.7 of the SAR mentions general regional trends and industry demand for automation engineers but does not substantiate these with concrete data.

Moreover, while the programme emphasizes employability and professional relevance, no formal procedure has been presented for regularly reviewing or updating the intended learning outcomes. During the on-site meetings, faculty members described informal discussions with employers and feedback loops via graduate internship supervision. However, there appears to be no systematic process in place to involve stakeholders (e.g., employers, alumni, students) in the periodic review and validation of the programme objectives and outcomes.

Analysis and assessment of the expert panel

The expert panel acknowledges that the EEA programme demonstrates a strong commitment to cultivating practice-oriented engineers. The programme's stated aims to develop graduates who can work in electrical automation, energy systems, and industrial control are broadly in line with its curricular focus and regional labour market demands. It is also recognized that the programme benefits from an extensive network of industry collaborations and internship platforms, which contribute to the employability of its graduates.

Nonetheless, the presentation of learning outcomes across different institutional documents is inconsistent. The existence of three parallel frameworks (SAR 1.1, Appendix 05.01, and Appendix 07.01) creates confusion about which learning outcomes are authoritative for curriculum design, delivery, and (internal) assessment. The expert panel could not verify how these differing outcome formulations are aligned or reconciled. This issue poses a significant risk to the coherence and quality assurance of the programme.

Additionally, the expert panel notes the absence of a formal, transparent mechanism for defining and periodically reviewing programme objectives and intended learning outcomes. The involvement of relevant stakeholders—including students, academic staff, employers, and alumni—is not systematically documented. At present, such a process is either underdeveloped or insufficiently documented.

Furthermore, while the programme claims alignment with SSC 02, the mapping matrix provided in Appendix 07.01 refers to yet another version of programme outcomes, different from those in Appendix 05.01. The mapping is thus not verifiable and fails to establish equivalence with the exemplary outcomes defined in the Subject-Specific Criteria.

Finally, there is a notable lack of empirical evidence demonstrating that the programme outcomes are informed by systematic feedback from the labour market. The SAR and on-site interviews provided anecdotal observations but no quantitative data (e.g., employer survey results, tracer studies) that would confirm alignment with evolving industry needs.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 1.1:

The expert team considers the criterion to be partially fulfilled.

As the university did not respond to the expert team's critical comments on the programme-related learning outcomes and related occupational profile(s), the review team confirms the proposed requirements addressing these issues (see below, section F, A 1 and A 2).

C-2. Name of the degree programme [ASIIN 1.2]

Description of the current status

Evidence:

- SAR 1.2
- Appendix 05.01 Programme Handbook
- Appendix 06 Official Programme Name
- Website: https://jdgcxy.sxdtdx.edu.cn/news-list-schoolprofile.html
- Discussion during the on-site visit

The degree programme title "Electrical Engineering and Automation" (in Chinese: 电气工程及其自动化) adheres to the naming conventions prescribed by the Ministry of Education

of China. The designation is used consistently in the SAR, the programme handbook, and on the university's official website. As per national regulations, the programme name is aligned with a standardized list of degree titles, which ensures its recognition and acceptability across Chinese higher education institutions.

Analysis and assessment of the expert panel

The expert panel acknowledges that the programme title conforms with national standards and does not present any legal or formal inconsistencies. The naming follows the Ministry of Education's official taxonomy and is thus accepted within China's academic and professional systems.

However, during the on-site visit, the panel expressed concern regarding the actual curricular representation of "Automation" within the programme. The panel noted that automation-related content appears to be limited in scope and visibility, especially when compared to the dominant presence of general electrical engineering topics. Additionally, the use of "and" in the English programme title was questioned, as it may suggest a more balanced and explicit dual-focus than is currently evident in the curriculum.

In response, programme representatives explained that automation content is embedded within various integrated technical courses, and not always labelled or delivered under distinct automation modules. While this approach may be common in practice-oriented programmes, the lack of clarity may affect both internal consistency and external transparency, particularly in the context of international recognition.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 1.2:

The expert team considers the criterion to be fulfilled.

C-3. Curriculum [ASIIN 1.3]

Description of the current status

Evidence:

- SAR 1.3
- Appendix 05.01 Programme Handbook (including Graduation Requirements, Target Matrix, Course List)
- Appendix 08.01 Appendix 08.01 Study Plan or Curricular Overview-R

- Appendix 07.01 Matrix – TC 02
- Appendix 09 Module Description
- On-site discussions with faculty, students, and university leadership

The curriculum of the Bachelor's programme in EEA is divided into six main categories: General Education Courses, General Foundation Courses, Professional Foundation Courses, Professional Courses, Practical Education, and the Graduation Thesis. In total, the programme spans four academic years across eight semesters, with three additional summer semesters focused on practical training, resulting in an "8+3" structure.

The SAR presents a "Target Matrix" (pp. 9–12), which describes learning goals at the course level across dimensions of knowledge, skills, and competencies. Separately, the graduation requirements listed in Appendix 05.01 form the programme-level intended learning outcomes. While both frameworks aim to ensure outcome-based education, there is no transparent mapping between them, making it unclear how course-level objectives concretely support programme-level graduation outcomes.

A matrix mapping curriculum modules to the Subject-Specific Criteria (SSC 02) is provided in Appendix 07.01, although it appears to rely on a third set of outcomes. This further compounds the confusion over how curricular components relate to the overall intended competence profile of the programme.

Additionally, the SAR classifies courses according to type but does not illustrate how students' progress from basic to advanced knowledge. There is no provided prerequisite map or course dependency structure. Although the programme handbook groups courses by academic year and term, it does not fully clarify the internal logic of curricular sequencing.

Regarding student mobility, the SAR notes the existence of international cooperation initiatives; however, it does not present any structured or standardized mobility data, such as tables showing incoming and outgoing students per academic year, as required.

Internships are a cornerstone of the programme. The fourth year is dedicated largely to industry-based training (including an application-oriented thesis work), with company placements facilitated by the university or found by students themselves. The audit meeting with industry representatives clarifies that companies conduct a rigorous selection and placement process, including interviews and follow-up evaluations of the students' achievements. Students are assigned mentors and rotated through departments based on interest and profile (e.g., maintainer, designer, manager). Programme coordinators and lecturers pointed out that, to a certain degree, supervision of the internships by university

lecturers includes teaching small groups of students at the companies. However, clear information about the internship timetable is lacking.

Periodic curriculum reviews are described as part of a continuous improvement process. A quality assurance flowchart is included in the SAR, but it lacks accompanying documentation such as responsible units, policies, and processes. In particular, examples of recent revisions resulting from the review process are missing.

Finally, the current calculation of workload and ECTS equivalence assumes similar self-study hour ratios for technical and non-technical courses. During the on-site visit, the expert panel observed that non-technical courses—such as political education, military training, career development, and employment guidance—occupy a substantial share of the total credit volume.

Analysis and assessment of the expert panel

The expert panel appreciates the overall structure of the curriculum and the university's efforts to incorporate practice-oriented teaching. The addition of three summer terms dedicated to practical learning is commendable and contributes positively to the professional preparedness of students. However, from the experts' perspective, these summer terms are simply extensions of the reference spring terms and, as such, should not be counted as separate terms. This would mean that the EEA programme would span eight semesters instead of eleven, which is common for Chinese Bachelor's programmes. Programme-related information should be adapted accordingly (see also below C-5).

In addition, the current curriculum displays an imbalanced ratio between technical and non-technical content. Non-technical courses—many of which are mandated by national policies—are granted relatively high credit values, despite often requiring lower student workload compared to core technical modules. The expert panel sees considerable potential to strengthen the technical component of the curriculum, especially in automation, by recalibrating the credit allocation using realistic workload estimations and thereby reducing the volume of peripheral content.

Moreover, the programme lacks a clearly documented system for curriculum progression. Without an explicit structure of prerequisites or course dependencies, it is difficult to verify whether students are led from basic to advanced levels in a coherent manner. According to ASIIN Criterion 1.3, "*The order of the modules ensures that the learning outcomes can be achieved and that the programme can be completed within the standard period of study.*" This vertical coherence was not sufficiently demonstrated in the materials provided.

In this context, the expert panel also found the absence of a consolidated graphic overview showing the semester-wise progression of courses, credit distribution, and the distinction between mandatory and elective modules. Such a timetable would be essential for visualising the implementation of the ”3+1“ approach and for demonstrating curricular coherence and transparency in alignment with international documentation standards.

The panel also notes the lack of transparent procedures and documentation for systematic curriculum review and modernization. While faculty members referenced internal discussions and ad hoc revisions, no formal policy or record of implementation could be verified. As stated in the ASIIN standard, ”*The curriculum is periodically reviewed with regard to the implementation of the programme objectives; curricular changes are documented*.” The university is advised to establish such a documented process.

The panel positively notes the significant improvement in the students’ practical engineering skills resulting from the inclusion of substantial internships, particularly the industry-focused learning in the fourth year. The support provided by the university before, during and after the internship is also highly commended. However, a detailed module or course description of the internship – including its timetable, organisation, and assessment methods – is necessary and must be provided in order to allow for a conclusive assessment of this aspect (see below C-10).

Similarly, there was no accessible data demonstrating structured student mobility, despite references to cooperation agreements with international institutions. In this regard, the panel also felt that the very premise of accelerating the mobility of students and teachers, at least in terms of proficiency in spoken English, is limited on both sides: among the lecturers and the students. Consequently, it sees significant scope for improvement in this area.

The expert panel encourages the university to address these structural and documentation gaps to bring the curriculum in line with international standards and to improve transparency, coherence, and responsiveness to evolving academic and professional requirements.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 1.3:

Overall, the experts consider the criterion to be partially fulfilled.

They highly welcome the graphical macrostructure of the programme submitted by the university, which provides a clear overview over the programme structure, the sequence of modules/courses as well as distribution of student workload across the semesters. However, this presentation also highlights the fragmented nature of the curriculum, particularly, if not exclusively in the fourth year of study. Thus, theoretical and practical units of

professional subjects are included separately in the curriculum, even though these courses have complementary intended learning outcomes that, together, form the basis of comprehensive competencies. The experts therefore recommend revising the curriculum by combining theoretical and practical professional courses into larger learning units, in line with the intended learning outcomes (see below, section F, E 1).

They strongly advise the university to make this study plan also accessible for the major stakeholders on the website of the degree programme.

Understandably, due to the short time period, the university has not yet decided on any changes in the programme or taken concrete actions in response to the experts' assessment. In view of the future development of the programme, the experts therefore confirm the initially formulated requirement and recommendations with regard to strengthening the professional curriculum, a more systematic internal review approach, and capacity building in terms of improving the English proficiency of both the students and the lecturers (see below, section F, A 3, E 2 and E 3).

C-4. Admission requirements [ASIIN 1.4]

Description of the current status

Evidence:

- SAR 1.4
- Appendix 11 Admission regulations
- Appendix 12 Admission Rate Statistics
- Appendix 13 Recognition of externally acquired academic qualifications
- On-site discussions with university leadership and faculty members

The admission to the Bachelor's programme in EEA at SDU is regulated by the national Gaokao (College Entrance Examination) system of China. This centralized system ensures a uniform and transparent process for all applicants. Students are admitted based on their Gaokao scores, which are publicly ranked and managed through the provincial admission system. The university does not have independent admission authority and follows the placements made by the provincial education examination authority.

The programme does not currently admit international students, and no alternate admission pathway (e.g., based on prior professional qualifications or vocational training) is in

place. As such, there are no documented procedures for compensating missing prior knowledge or recognizing non-traditional qualifications.

Appendix 12.01 includes statistical data on the ratio between applications and admitted students over the past three years, indicating a continuous increase in the number of applications and, consequently, a decreasing enrolment ratio.

With regard to recognition of prior learning, there are currently no institutional policies or procedures in place for the formal recognition of learning achievements from other higher education institutions (HEIs), especially international ones.

Analysis and assessment of the expert panel

The expert panel recognizes that the programme's admission system is compliant with national Chinese standards and, overall, provides a fair, transparent, and competitive process for student selection. The centralized Gaokao system ensures that students admitted to the programme possess a minimum academic level suitable for undergraduate engineering studies.

Although limited, the admission statistics provide the panel with useful insights into trends in applicant interest, enrolment dynamics, and the overall attractiveness of the programme. While the statistical basis could generally be expanded, the available data can nonetheless support evidence-based improvements to admission strategies.

However, the programme lacks defined procedures for the recognition of prior learning (RPL), particularly from international HEIs. During the on-site visit, university representatives acknowledged this gap and expressed a willingness to explore recognition frameworks in line with international standards, including the Lisbon Recognition Convention. The absence of such mechanisms limits academic mobility and may complicate future efforts to internationalize the programme.

In addition to this, no compensatory measures or preparatory mechanisms are described for students admitted with potential deficits in prior knowledge. While the Gaokao system provides a robust filter, diversified pathways to higher education are becoming more common globally, and the institution may consider whether its current model sufficiently anticipates the future landscape.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 1.4:

The expert team considers the criterion to be partially fulfilled.

It is necessary in their view that the university establish and implement rules for the recognition of learning achievements acquired at other universities, in particular universities abroad. This requirement is explicitly maintained (see below, Chapter F, A 4).

C-5. Workload and credits [ASIIN 1.5]

Description of the current status

Evidence:

- SAR 1.5
- Appendix 05.01 Programme Handbook
- Appendix 14 workload verification
- Appendix 15 Conversion from Credit Points to ECTs Credits
- Appendix 09 Module Description
- On-site discussions with university administration, teaching staff, and students

The Self-Assessment Report (SAR) states that the total student workload for the Bachelor's programme in EEA is 240 ECTS credits, corresponding to a four-year programme with eight regular semesters and three additional summer semesters focused on practical training. However, this figure conflicts with Appendix 05.01, which indicates a graduation requirement of 248 credits and 7,230 total hours. Additionally, another section within the appendix refers to 166 credits and 2,352 hours, presumably reflecting the local Chinese credit system.

The discrepancy among these figures creates confusion regarding the programme's actual workload expectations. The SAR does not clearly clarify which of these values is the definitive standard, nor does it provide a unified methodology for how local credits and hours are converted into ECTS credits. The conversion method—if applied—is not transparently described.

Appendix 14 includes a set of workload verification documents that reflect time allocation across various course types and activities. However, there is no evidence of a structured or empirical process to monitor students' actual workload. During the on-site visit, it was confirmed that ECTS calculations assume equal self-study allocations for both technical and non-technical courses, despite differences in difficulty and time demand. Students reported that actual time spent on non-technical courses was often significantly lower than what is implied in the official workload distribution.

While faculty and administrators acknowledged the importance of accurate workload calculation, no formal mechanism (e.g., student workload surveys, workload audits, or curriculum-adjustment procedures based on workload feedback) appears to be in place.

Analysis and assessment of the expert panel

The expert panel acknowledges the university's efforts to align the programme with the ECTS system. The nominal workload of 240 ECTS credits for a four-year degree complies in principle with ASIIN requirements. The inclusion of summer "semesters" further enhances the programme's volume of learning activities.

However, the panel identified multiple inconsistencies in how total workload is calculated and communicated. The presence of conflicting figures across different documents undermines the credibility and traceability of the workload model. The absence of a transparent and standardized methodology to convert local credits into ECTS credits is particularly problematic.

According to the ASIIN criteria, a monitoring instrument or mechanism for student workload should be established. Currently, no such monitoring process appears to be in place. Students are not systematically involved in evaluating the appropriateness of workload estimates, and empirical data on actual student effort is not collected or used to revise module or course credits.

The panel further notes that assigning identical self-study hours to both technical and non-technical courses, regardless of complexity or time requirements, may lead to an inflated workload allocation for non-technical courses. This creates structural imbalances and may reduce the proportion of credits available for deepening the technical, particularly automation-oriented curriculum (see above C-3). A more evidence-based and differentiated workload model is required to reflect actual student learning experiences.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 1.5:

The expert team considers the criterion to be partially fulfilled.

As the university did not comment on the reliability of the student workload calculation underlying the credit allocation, the expert team confirms the requirement addressing this issue (see below, Chapter F, A 5).

C-6. Didactics and teaching methodology [ASIIN 1.6]

Description of the current status

Evidence:

- SAR 1.6
- Appendix 05 Objectives and Learning Outcomes
- Appendix 09 Module Descriptions
- Appendix 17 Examination Regulation
- On-site discussions with faculty, students, and university leadership

The SAR outlines the didactic strategy of the EEA programme, highlighting the use of diverse teaching methods including lectures, case-based learning, laboratory sessions, project-based tasks, and professional internships. These approaches aim to foster active student engagement and support the development of both theoretical understanding and practical competencies.

The programme emphasizes the integration of digital tools, multimedia, and simulation platforms to enhance learning. Practical training is implemented through dedicated laboratory courses and practice modules. Additionally, a “3+1” structure allocates the final academic year to off-campus professional practice and a graduation thesis, encouraging the application of learned knowledge in real-world settings.

While the SAR articulates a coherent teaching philosophy, the corresponding module descriptions in Appendix 09 provide limited insight into the actual didactic methods applied. In several cases, teaching approaches are simply labelled as ”Lesson”, “Practice”, or “Lecture”, with minimal elaboration. This reduces the transparency of how the didactic concept is operationalized across individual modules.

The programme includes a capstone project in the form of the Graduation Thesis, which serves as the main vehicle for developing independent scientific work. However, the SAR provides little detail on additional scaffolding for research skills development, such as literature review assignments, research methodology courses, or structured supervision processes.

Regarding the review of teaching methods, the SAR does not elaborate on any formal mechanism for evaluating the effectiveness of instructional practices. During the on-site discussions, it was indicated that teaching quality is monitored via student evaluations and

informal peer feedback, but these procedures appear to be ad hoc rather than systematically structured or documented.

Analysis and assessment of the expert panel

The expert panel commends the programme's overall commitment to practice-oriented and student-centered learning. The integration of multiple teaching formats—including laboratory training, case studies, and practical projects—supports the achievement of intended learning outcomes. The capstone structure and the emphasis on real-world application are in line with ASIIN standards.

The panel also acknowledges the university's efforts to include digital resources and multimedia tools in teaching, which enriches the learning environment and aligns with contemporary didactic expectations.

Although the module-level descriptions do not always fully reflect the comprehensive didactic approach outlined in the SAR, the panel found that teaching practices are consistent with the intended pedagogical goals. Nevertheless, module/course descriptions should offer more precise information about the didactical methods that are employed actually.

The development of independent scientific work is primarily achieved through the Graduation Thesis, and students benefit from adequate supervision and structured project implementation. However, due to the lack of detailed information on this matter in the SAR, the panel followed up with students regarding their training in scientific work – particularly in relation to their capstone projects. The students stated that they felt well prepared, attributing their competence to hands-on experimental and laboratory experience gained in the partner companies. They highlighted that they had many opportunities to work with cutting-edge equipment and technologies in real-world settings. The panel highly values this demonstrated and commendable commitment by the university's industry partners.

While the panel encourages the university to further formalize mechanisms for evaluating teaching effectiveness and documenting didactic alignment at the module level, it concludes that the current implementation of teaching and learning methods appropriately supports the programme's learning objectives.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 1.6:

The expert panel considers the criterion substantially fulfilled.

Suggested improvements relate to the information provided in the module/course descriptions (see below C-10, criterion 4.1).

C-7. Exams: System, concept and organisation [ASIIN 2]

Description of the current status

Evidence:

- SAR 2
- Appendix 05.01 Programme Handbook
- Appendix 17 Examination Regulation
- Appendix 09 Module Descriptions
- On-site discussions and review of archived course assessments and final exams (Chinese-language documentation)

The programme utilizes a traditional examination system comprising a mix of written exams, oral assessments, lab reports, and practical evaluations. Each module is accompanied by a form of summative assessment, with grades assigned using the standard Chinese numerical system. According to the SAR, students are informed of assessment types and grading criteria at the beginning of each course. Regulations exist for makeup exams, non-attendance, and students with special needs.

The Graduation Thesis serves as the programme's capstone project, designed to assess students' ability to independently complete a task relevant to their field of study. A supervising teacher is assigned to each student, and assessments are conducted via a combination of written submission and oral defense.

However, the SAR does not explicitly detail how examinations are systematically used to verify the achievement of intended learning outcomes, either at the course or at the programme level. There is no clear methodology described for aggregating module-level performance data to evaluate overall programme-level outcomes.

In contrast, on-site discussions and examination of archived exam documents (in Chinese) revealed that, starting from 2023, the programme has adopted a more outcome-based evaluation model. Each exam question is now mapped to specific course-level learning outcomes, and formative activities during the semester are aligned with these as well. Course instructors track and record the attainment level of multiple outcomes, not just final scores. This positive development is not documented in the SAR or appendices.

Furthermore, there is no evidence in the SAR or supporting documents of a formalised mechanism to review the appropriateness, difficulty, and effectiveness of exams in assessing learning outcomes. It remains unclear whether exams are routinely reviewed to

ensure alignment with course goals, appropriate workload, and consistent quality standards.

Analysis and assessment of the expert panel

The expert panel finds that the general examination system functions smoothly and covers a range of formats appropriate to the types of learning being assessed. The inclusion of a Graduation Thesis offers a valuable opportunity for students to demonstrate independent learning.

The panel positively acknowledges the recent shift toward outcome-based assessment practices, as reflected in the archived exams reviewed during the on-site visit. This shows a deliberate effort to meet the expectations of outcome-based education and better align assessments with defined learning objectives. However, the lack of mention of this practice in the SAR and supporting documents is a missed opportunity to demonstrate good practice.

Despite these improvements, the programme lacks a coherent strategy to evaluate the overall effectiveness of its examination system. There is no evidence of procedures for periodically reviewing whether assessments accurately measure the intended learning outcomes or whether adjustments are made in response to student performance or feedback. These quality assurance practices remain underdeveloped and should be improved.

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

The expert panel considers the criterion partially fulfilled.

The university's statement and additional information do not doubt the experts' concern about a more systematic approach to analyse the quantitative exam results and make use of the analysis for the purpose of targeted improvements in the program. The experts therefore confirm a requirement addressing this issue (see below, Chapter F, A 6).

C-8. Resources [ASIIN 3]

Description of the current status

Evidence:

- SAR 3.1–3.3
- Appendix 04 University Development Plan

- Appendix 19 Staff Handbook
- Appendix 20 HR Plan
- Appendix 08 Student Handbook
- Appendix 22 Student surveys and results
- On-site visit and interviews with faculty, staff, and students

Staff and staff development [ASIIN 3.1]

The SAR provides quantitative data regarding teaching staff, including their academic qualifications, departmental distribution, and average teaching workload. Staff CVs were provided as evidence that the qualifications of teaching staff generally meet expectations for delivering the programme content. However, several CVs indicate gaps in academic or professional careers, as well as overlaps between academic and professional employment.

Opportunities for professional development are mentioned, such as workshops and training sessions. However, documentation under the ”20 HR Plan“ folder only includes recruitment projections for 2023–2024 and lacks a broader institutional strategy or policy framework for academic staff development. On-site discussions revealed that participation in training is largely voluntary and not systematically coordinated. While the SAR refers to staff involvement in research activities, there is little concrete evidence demonstrating how these activities contribute to curriculum development or pedagogical enhancement.

Student support and student services [ASIIN 3.2]

The student support system includes university-wide services (counselling, psychological, and career guidance), faculty-based academic advisors, and class mentors. The Student Handbook outlines available services, and students confirmed their awareness and use of these resources. The SAR also refers to feedback mechanisms and advisory processes.

Funds and equipment [ASIIN 3.3]

The SAR outlines that the programme is funded through a combination of government resources and tuition fees. However, it lacks a structured presentation of financial planning, sustainability, or programme-specific budget allocations – although Appendix 04.01 does provide a compilation of the expenditures for the EEA programme between 2019 and 2024. University representatives confirmed stable funding but also noted that financial management is centralised and not programme-specific.

During the site visit, the expert panel visited study-related facilities, in particular the laboratories in use for the EEA degree programme. Documentation regarding laboratory safety standards was not submitted.

Analysis and assessment of the expert panel

Staff and staff development

The expert panel found that the teaching staff are academically qualified and sufficient in number to deliver the programme. Faculty members demonstrated strong commitment to teaching and student support. However, the panel noted the absence of a structured and documented strategy for staff development, particularly regarding didactic training and the integration of research into teaching. Furthermore, some of the submitted CVs contained gaps or overlapping entries that were not clearly explained. The university is therefore encouraged to develop a coherent institutional policy for staff development.

To finalize the assessment of this criterion, the university is requested to provide complete, standardised academic staff profiles that clearly reflect individual qualifications and professional trajectories.

Student support and student services

The panel observed that the student support system works in practice and generally meets student expectations. Students reported accessible and supportive services.

Funds and equipment

The expert panel confirmed that the existing infrastructure and financial support are adequate to deliver the programme. Nonetheless, the experts identified a lack of structured financial documentation. While they are convinced of the overall sustainable funding of the EEA degree programme, they would have appreciated a more concrete and precise overview of the budgetary planning for the programme over a period of several academic years. However, the panel does not consider this a shortcoming requiring immediate action by the university and therefore abstains from issuing a formal recommendation.

Laboratories are well equipped, and students confirmed their usability. Laboratory and workshop infrastructure is found to be appropriate and generally aligned with programme needs. Missing safety policy documentation for laboratory facilities are noted and should be provided to the panel in the further course of the evaluation procedure (if available).

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 3.1-3.3:

The expert panel considers the criterion and its sub-criteria to be substantially fulfilled.

They are grateful for the additional information on the academic and professional careers of some teaching staff presented in the revised staff handbook. The information adequately fills the information gap.

The expert panel notices that the submitted documents do not include any information on the universities laboratory policies or regulations. However, from the *in-situ* inspection of the facilities, they have the impression that the university adheres to strict safety rules in its educational mission. The panel therefore decides to give the university the benefit of the doubt in this respect, while also suggesting to share such information later, in case the university decides to undergo a subsequent accreditation process.

C-9. Quality management: Quality assurance and development [ASIIN 5]

Description of the current status

Evidence:

- SAR 5.1–5.3
- Appendix 02 Quality Management
- Appendix 04 University Development Plan
- Appendix 22 Student surveys and results
- On-site interviews with faculty, students, and quality assurance staff

The SAR outlines a general internal quality assurance (QA) system that operates at both the university and programme levels. It includes teaching evaluations, feedback from students via surveys, and academic committee discussions. The QA system is described as a cyclical process involving data collection, analysis, and targeted adjustments. A flowchart (Figure 5-1) in the SAR illustrates the basic structure of the QA process.

However, the SAR does not provide detailed evidence of how different stakeholder groups—particularly students and external industry representatives—are systematically involved in the QA cycle. Feedback mechanisms from employers or alumni are only vaguely

referenced, and no documentation of structured external engagement (e.g., advisory boards, formal consultations) is included.

While there are procedures for student evaluations of teaching and satisfaction, the SAR does not explain how these results are used to close feedback loops or improve the programme. Additionally, it remains unclear how the outcomes of quality assurance activities are communicated to students and external stakeholders.

During the on-site visit, faculty and administrators confirmed that evaluations are collected regularly and internal programme meetings are held to discuss improvement strategies. Nonetheless, there was no evidence of a formalized process that ensures the inclusion of student or employer feedback in these decisions. The university acknowledged that mechanisms for stakeholder involvement and communication of QA outcomes remain under development.

Analysis and assessment of the expert panel

The expert panel recognises that the university has established foundational structures for internal quality assurance, including survey instruments, programme-level coordination, and an overarching QA framework. These instruments provide a basis for ongoing improvement.

Nonetheless, the panel notes that stakeholder inclusion—particularly from industry and students—is not yet systematic. External feedback from employers or industry has not been institutionalised, nor is there an advisory body representing business interests. This limits the responsiveness of the programme to evolving market needs.

The mechanisms for communicating QA outcomes back to students and stakeholders are also underdeveloped. The panel found no documentation of how feedback results are shared or how derived actions are followed up in a transparent way.

Despite these gaps, the panel also notes that faculty and leadership demonstrate awareness of these shortcomings and have expressed a willingness to improve QA practices. The panel encourages the institution to build upon its existing structures by formalising processes, expanding stakeholder participation, and enhancing transparency in QA outcomes.

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

The expert team considers the criterion substantially fulfilled.

The experts appreciate the efforts that the university has made to improve its quality assurance strategies and mechanisms, particularly in response to the comprehensive evaluation by a national expert panel in 2020. The panel also acknowledges that various QA instruments have already been successfully implemented, and that management, lecturers and administrative staff are committed to continuously improving the quality assurance system. To support this process, the experts confirm corresponding recommendations they (see below, Chapter F, E 4 and E 5).

C-10. Transparency and documentation [ASIIN 4]

Description of the current status

Evidence:

- SAR 4.1–4.3
- Appendix 01 Student handbook
- Appendix 09 Module Descriptions
- Appendix 21 Graduation Certificates
- Programme Website: https://jdgcxy.sxdtdx.edu.cn/
- On-site interviews with faculty, students, and administrators

Module descriptions [ASIIN 4.1]

The SAR states that module/course descriptions are published and accessible to students and staff, and that a standardised format is used. Appendix 09 provides the compiled module/course handbook. The descriptions generally include required components such as title, content, workload, and teaching methods. However, the handbook is incomplete, as the expert panel notices.

During the on-site visit, staff confirmed that module/course descriptions are updated periodically, but no structured review cycle or responsible governance body was clearly defined.

Diploma and Diploma Supplement [ASIIN 4.2]

The SAR confirms that a Diploma Supplement (DS) is issued in English following graduation. A sample version was submitted as Appendix 21.02. While the document includes general programme information and student academic performance, it does not fully comply with the DS recommended by the European Commission, Council of Europe and UNESCO/CEPES.

In particular, the method for calculating the final mark is not clearly described, and no statistical grade distribution data is provided. The DS also includes a full transcript of records, which should be issued as a separate document according to best practice.

Relevant rules [ASIIN 4.3]

The SAR asserts that all academic regulations and student-related rules are in place and accessible for the major stakeholders (rules of admission, examination, completion of study). .

Analysis and assessment of the expert panel

Module descriptions

The expert panel acknowledges that module/course descriptions exist and are distributed through formal channels. As the submitted version of the handbook was found to be incomplete, the experts request a complete set of module/course descriptions, as these contain essential information about the programme's content, which cannot be fully assessed without the entire set. In addition, the expert panel notes that module/course descriptions are currently dispersed across individual documents. Therefore, it is advised that the university compile a complete and up-to-date set of all module/course descriptions into a single, navigable file. This should be submitted to the experts for their (final) assessment.

Particularly, the panel identified that two key modules—the Internship and the Graduation Thesis—are insufficiently documented. For both, essential aspects such as organisational structure, supervision mechanisms, duration, workload expectations, and assessment criteria are either missing or not clearly described. The university is therefore advised to revise and complete these module descriptions and ensure their integration into the official module/course handbook to be submitted to the experts.

Apart from this and based on a sample review of modules (e.g., Electrical CAD, Power System Automation), several inconsistencies and omissions are observed. Descriptions of learning outcomes and didactic approaches are often vague or generic. Specific issues include the absence of detailed workload breakdowns, unclear descriptions of assessment methods, lack of indication on how the module contributes to overall programme outcomes, and missing information such as the date of last amendment. Additionally, the ”3+1“ curricular model and recent structural updates are not yet reflected in the module/course handbook.

Diploma and Diploma Supplement

The expert panel appreciates that a Diploma Supplement is issued in English. Nonetheless, the current format does not meet the requirements. Key omissions include the explanation of the grading scheme and the absence of statistical grade distribution. Additionally, the inclusion of the Transcript of Records in the Diploma Supplement contradicts international practice and should be corrected.

Relevant rules

The panel found that academic and regulatory information is available in Chinese and students confirmed they had access to most academic documents, though sometimes with limited clarity or consistency across platforms.

Final assessment of the experts after the statement of the Higher Education Institution regarding criterion 4.1-.4.3:

The expert panel considers the criterion and the related sub-criteria partially fulfilled.

The experts acknowledge the revised version of the module/course descriptions submitted by the university. They note the inclusion of missing descriptions, including internships and graduation theses, as well as the new version's edited, readable design. They strongly suggest using this format when providing module descriptions to students and teachers.

However, they also note that, due to lack of time, the university has not yet fully revised the descriptions according to the indications given in the initial assessment by the experts. As compared to the graphical study plan, which presents a total of 72 courses, numerous module descriptions are still missing in the module handbook (Course Descriptions, Annex 2 of the submission). The panel therefore explicitly states that the course descriptions must be revised and completed and confirms a requirement in this regard (see below Chapter F, A 7).

In particular, the panel notes that the university's implementation of the ECTS system, its rationale for allocating ECTS credits to individual modules (e.g. internships and bachelor theses) and its distribution of ECTS credits across semesters is still only partially compliant with the European credit system's requirements. For instance, the module handbook presents implausible workload/credit ratios (90 hours for 4.5 ECTS instead of 3–3.5 hours, and 105 hours for 6 ECTS instead of 4 hours) and incorrectly identifies self-study hours as *contact* hours (e.g. 300 contact hours plus 300 self-study hours for the bachelor thesis). Furthermore, only the time invested by teaching staff in the guidance and supervision of students can be included as attendance or contact hours in the workload calculation. This does not apply to supervising or consulting hours invested by company supervisors, for instance. The experts strongly advise the university to realistically calculate students' self-study time and consider it appropriately in workload calculations. Regarding the conversion of Chinese

credit figures into ECTS, the panel highly recommends consulting the ECTS User's Guide to gain a better understanding of the rationale behind the system and ensure its correct and consistent application. The experts agree to supplement the proposed requirement concerning the workload monitoring system accordingly (see below, Chapter F, A 5).

5 In addition, the Diploma Supplement must be revised considering the panel's comments in the relevant paragraph (see below, Chapter F, A 8).

D Additional documents

1. Graphic timetable showing the logical sequence of courses and credits per semester (8-semester timetable), also clearly indicating the specifics of the “3+1 approach”, ideally also showing which courses are mandatory and which are electives. Otherwise, please provide a separate table clearly showing mandatory and elective courses. (ASIIN 1.3)
2. Revised version of staff CVs, filling time lapses in academic/professional career and overlaps in professional and academic employments (ASIIN 3.1)
3. Laboratory safety policies and/or regulations (ASIIN 3.3)
4. Complete set of module/course descriptions in a single file (with reading marks or navigation aids). Chinese credits and ECTS should be shown always in the same structure and the same name (best ECTS, not European credits or credits for Europe, and either credits for China or Chinese credits, no mixture). (ASIIN 4.1)
5. In particular including a description of the Internship and the Graduation Thesis: information on the organisational structure, supervision mechanisms, duration, workload expectations, and assessment criteria. (ASIIN 4.1)
6. Course description of the Internship and the Graduation Thesis: with information on the organisational structure, supervision mechanisms, duration, workload expectations, and assessment criteria. (ASIIN 4.1)

E Statement of the Higher Education Institution (25.06.2025)

The university has waived the option of directly commenting on the report, but submitted the following additional information/documents:

1. Graphical macrostructure of the Bachelor Electrical Engineering and Automation
2. Revised version of the module/course descriptions
3. Internship Course Scheme of Electrical Engineering and Automation Program in Shanxi Datong University
4. Revised and completed staff handbook
5. Notice of the General Office of the Ministry of Education on the publication of the list of national and provincial first-class undergraduate programs in 2020

The expert panel takes note of the additional information and supplementary documents in its final assessment at the end of each section of this report.

F Summary: Expert recommendations (06.08.2025)

Considering the additional information and the comments given by SDU, the experts summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engineering and Automation	With requirements for one year	30.09.2031	–	–

Requirements

A 1. [ASIIN 1.1] Revise the program learning outcomes and adapt them in accordance with the name of the program and its curriculum. Communicate them consistently and make them accessible to all stakeholders of the university, in particular the students and the teaching staff.

A 2. [ASIIN 1.1] Specify the occupational profile of graduates in alignment with the program learning outcomes and the curriculum.

A 3. [ASIIN 1.2, 1.3] Strengthen the professional curriculum and increase the defining automation focus – in line with the title of the program.

A 4. [ASIIN 1.4] Establish and implement rules for the recognition of learning achievements acquired at other universities, in particular universities abroad.

A 5. [ASIIN 1.5] Develop and implement a transparent mechanism for the evaluation and validation of the actual student workload. Thoroughly revise the application of the ECTS system and the attribution of ECTS credits to courses in the study plan and module descriptions.

A 6. [ASIIN 2] Expand the quantitative database on the achievement of learning outcomes in order to review the level adequacy and effectiveness of exams.

A 7. [ASIIN 4.1] Complete and adapt the course descriptions according to the indications in the report (title, content, workload and credits, and didactical methods). Structural changes to the curriculum must be considered. Make the descriptions accessible to the relevant stakeholders and revise them on a regular basis.

A 8. [ASIIN 4.2] Revise and adapt the Diploma Supplement according e. g. to the template provided. Characteristics of the study program, especially the program learning outcomes and the description of the Chinese system of Higher Education must be part of it. In addition, the Transcript of Records should but be presented as a separate document.

Recommendations

E 1. [ASIIN 1.3] It is recommended that theoretical and practical courses be combined into larger learning units in alignment with the intended learning outcomes.

E 2. [ASIIN 1.3] It is recommended that a more systematic and structured approach be developed to update and modernise the curriculum to keep it in line with new scientific developments in the field and the needs of industry.

E 3. [ASIIN 1.3, 3.2] It is recommended to further develop the (spoken) English proficiency of both teachers and students, e.g., through language courses, core courses given in English, visiting professors, student and teacher exchange, etc., in order to incentivise the international mobility of students and lecturers.

E 4. [ASIIN 5] It is recommended to more systematically include the feedback of the industry/business to the program and its graduates, e.g., by the establishment of an Economic Advisory Board.

E 5. [ASIIN 5] It is recommended to enhance and strengthen the existing quality assurance mechanisms to more effectively close feedback cycles.

G Comment of the Technical Committee 02 Electrical Engineering/Information Technology (02.12.2025)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and generally follows the experts' vote. However, they suggest converting requirement A6 into a recommendation, as they consider it to be too strict and to go beyond the criteria.

The Technical Committee 02 – Electrical Engineering/Information Technology recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engineering and Automation	With requirements for one year	30.09.2031	–	–

Proposed conversion of requirement 6 into a recommendation.

~~A 6. [ASIIN 2] Expand the quantitative database on the achievement of learning outcomes in order to review the level adequacy and effectiveness of exams.~~

E 6. [ASIIN 2] It is recommended to expand the quantitative database on the achievement of learning outcomes in order to review the level adequacy and effectiveness of exams.

H Decision of the Accreditation Commission (12.12.2025)

The Accreditation Commission discusses the procedure.

The Commission agrees with the argument of the Technical Committee that the requirement concerning the exam statistics is overreaching the substance of the related criterion. Therefore, it downgrades the requirement into a recommendation (see below recommendation 6). Other than that, the Accreditation Commission follows the assessment and judgment of the experts and the Technical Committee without further changes.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engineering and Automation	With requirements for one year	30.09.2031	–	–

Requirements

A 1. [ASIIN 1.1] Revise the program learning outcomes and adapt them in accordance with the name of the program and its curriculum. Communicate them consistently and make them accessible to all stakeholders of the university, in particular the students and the teaching staff.

A 2. [ASIIN 1.1] Specify the occupational profile of graduates in alignment with the program learning outcomes and the curriculum.

A 3. [ASIIN 1.2, 1.3] Strengthen the professional curriculum and increase the defining automation focus – in line with the title of the program.

A 4. [ASIIN 1.4] Establish and implement rules for the recognition of learning achievements acquired at other universities, in particular universities abroad.

A 5. [ASIIN 1.5] Develop and implement a transparent mechanism for the evaluation and validation of the actual student workload. Thoroughly revise the application of the ECTS system and the attribution of ECTS credits to courses in the study plan and module descriptions.

A 6. [ASIIN 4.1] Complete and adapt the course descriptions according to the indications in the report (title, content, workload and credits, and didactical methods). Structural changes to the curriculum must be considered. Make the descriptions accessible to the relevant stakeholders and revise them on a regular basis.

A 7. [ASIIN 4.2] Revise and adapt the Diploma Supplement according e. g. to the template provided. Characteristics of the study program, especially the program learning outcomes and the description of the Chinese system of Higher Education must be part of it. In addition, the Transcript of Records should but be presented as a separate document.

Recommendations

E 1. [ASIIN 1.3] It is recommended that theoretical and practical courses be combined into larger learning units in alignment with the intended learning outcomes.

E 2. [ASIIN 1.3] It is recommended that a more systematic and structured approach be developed to update and modernise the curriculum to keep it in line with new scientific developments in the field and the needs of industry.

E 3. [ASIIN 1.3, 3.2] It is recommended to further develop the (spoken) English proficiency of both teachers and students, e.g., through language courses, core courses given in English, visiting professors, student and teacher exchange, etc., in order to incentivise the international mobility of students and lecturers.

E 4. [ASIIN 5] It is recommended to more systematically include the feedback of the industry/business to the program and its graduates, e.g., by the establishment of an Economic Advisory Board.

E 5. [ASIIN 5] It is recommended to enhance and strengthen the existing quality assurance mechanisms to more effectively close feedback cycles.

E 6. [ASIIN 2] It is recommended to expand the quantitative database on the achievement of learning outcomes in order to review the level adequacy and effectiveness of exams.

I Appendix: Learning objectives and curricula

The **learning objectives and intended learning outcomes** for the Bachelor's degree programme of Electrical Engineering and Automation based on Appendix 05.01 of SAR a listed below. (It should be noted that there are other statements regarding the expected learning outcomes of this programme; see above C-1.)

Graduation Requirements

Graduates should possess the following qualities, knowledge, and abilities:

Requirement 1: Engineering Knowledge:

Mastery of foundational knowledge in mathematics, natural sciences, electronics, control, and computer science. Proficiency in specialized knowledge such as power electronics, power systems, and motors, applying acquired knowledge to solve complex engineering problems within the electrical engineering domain.

Requirement 2: Problem Analysis:

Utilize the fundamental principles of mathematics, natural sciences, and engineering sciences, aided by literature, to assess, identify, model, simulate, optimize, and resolve complex engineering problems within the electrical engineering domain.

Requirement 3: Design/Development of Solutions:

Addressing complex engineering problems within the electrical engineering domain, the ability to propose feasible solutions, design electrical modules or systems that meet specific functional requirements, demonstrate innovative thinking in the design phase, and evaluate the social, health, safety, legal, cultural, environmental, and sustainable impacts of the proposed solutions and engineering practices.

Requirement 4: Research:

The ability to conduct research on complex engineering problems within the electrical engineering domain based on scientific principles, utilizing scientific methods to design experiments, analyze and interpret data, and derive reasonable and effective conclusions through comprehensive information analysis.

Requirement 5: Use of Modern Tools:

For complex engineering problems within the electrical engineering domain, the ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools,

and information technology tools to analyze, predict, and simulate complex engineering problems while understanding their limitations.

Requirement 6: Engineering and Society:

Understanding of relevant national policies, laws and regulations, technical standards, and intellectual property rights in the field of electrical engineering, possessing the ability to conduct rational analysis of professional engineering practices and complex engineering problems based on professional background knowledge, evaluate the impact of problem-solving solutions on society, health, safety, law, and culture, and understand the responsibilities to be undertaken.

Requirement 7: Environment and Sustainable Development:

Understanding the essence and significance of environmental protection and social sustainable development, being capable of assessing the impact of complex engineering problems in the field of electrical engineering on the environment and social sustainable development.

Requirement 8: Professional Ethics:

Possessing exemplary morality, patriotism, a strong foundation in humanities and social sciences, and a sense of social responsibility, capable of understanding and adhering to professional ethics and norms in the field of electrical engineering, and fulfilling responsibilities.

Requirement 9: Individual and Team Skills:

Possessing organizational, communication, and interpersonal skills, capable of assuming roles as team members or leaders in multidisciplinary teams.

Requirement 10: Communication:

Engineers should be capable of effectively communicating and engaging with domestic and international peers and the general public on complex engineering issues within the electrical engineering field. This includes writing specialized reports and designing documents, making presentations, and responding clearly to instructions. Engineers should possess an international perspective and be able to communicate in cross-cultural contexts.

Requirement 11: Project Management:

Understanding and mastering the principles of engineering management and economic decision-making methods, comprehending the relationship and impact of electrical engineering with related disciplines, and possessing the ability to apply them in multidisciplinary environments.

Requirement 12: Lifelong Learning:

Having a consciousness of continuous self-directed learning, understanding the significant role of lifelong learning and being able to persist in it, possessing the ability to continuously learn and adapt to developments.

The **curriculum** is presented on the following pages (based on Appendix 08.01 of SAR):

Academic Year	Course Code	Course Name	ETCS Credits	Semester	Contact-hours	Self-study hours	Remark	Academic Year Total
First Year	2316181101	Ideological and Moral Cultivation and Legal Basis	2	1	32	28		64
	2317182101	Fundamentals of Computer Applications	2	1	32	28		
	2310183101	College English-Ⅰ	6	1	96	84		
	2309184101	College Physical Education-Ⅰ	2	1	32	28		
	2300400101	National Defense Education and Military Skills Training	4	1	64	56		
	2308200103	Advanced Mathematics B-Ⅰ	5	1	80	70		
	2323307101	Engineering Drawing	2	1	32	28		
	2323307102	Introduction to Major	0.5	1	8	7		
	2300186101	Safety Education	8	1	128	112		
	Semester Total		31.5		504	441		
	2316181102	Outline of Modern Chinese History	3	2	48	42		
	2310183102	College English-Ⅱ	6	2	96	84		
	2309184102	College physical	2	2	32	28		

		education-Ⅱ						
	2308200104	Advanced Mathematics B-Ⅱ	4	2	64	56		
	2312207101	College Physics Ⅰ	3	2	48	42		
	2317200102	C Language Programming	3	2	48	42		
	2323307103	Fundamentals of Circuits Ⅰ	3.5	2	56	49		
	2316181106	Situation and Policy	6	2	96	84		
		Semester Total	30.5		488	427		
	2323407401	Production Internship of "Metal Craft"	1	3	16	14		
	2323407402	Internship Awareness	1	3	16	14		
	Semester Total		2		32	28		
Second Year	2316181103	Outline of Modern Chinese History	3	4	48	42		64.5
	2310183103	College English Ⅲ	4	4	64	56		
	2309184103	College Physical Education 3	2	4	32	28		
	2308200114	Linear Algebra	3	4	48	42		
	2312207102	College Physics Ⅱ	2	4	32	28		
	2323207103	Engineering Electromagnetics	2	4	32	28		
	2323307104	Fundamentals of Circuits II	3	4	48	42		
	2323307105	Analog Electronics	3.5	4	56	49		

	2316400102	Comprehensive Practice of Ideological and Political Education	2	4	32	28		
	2300186102	Psychological Health Education	8	4	128	112		
	Semester Total		32.5		520	455		
	2316181104	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics	2	5	32	28		
	2310183104	College English Ⅳ	4	5	64	56		
	2309184104	College physical education Ⅳ	2	5	32	28		
	2300187101	Labor Education	2	5	32	28		
	2308200115	Probability Theory and Mathematical Statistics	3	5	48	42		
	2308200116	Complex Variables	3	5	48	42		
	2323307106	Digital Electronics	3	5	48	42		
	2323307107	Electric Machinery	4.5	5	72	63		
	2323307108	Electrical CAD	2	5	32	28		
	2323307109	Signal Analysis and Processing	2	5	32	28		
	Semester Total		27.5		440	385		

	2323407403	Motor Maintenance and Production Internship	1.5	6	24	21		
	2323407404	Comprehensive Training of Electronic Technology	1.5	6	24	21		
	2323407405	Comprehensive Training of Electrical CAD	1.5	6	24	21		
	Semester Total		4.5		72	63		
Third Year	2316181105	Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	7	48	42		60.5
	2323207104	MATLAB Application in Electrical Engineering	2	7	32	28		
	2323307110	Principles of Automatic Control	3	7	48	42		
	2323307111	Microcomputer Principles and Single-Chip Technology	3	7	48	42		
	2323307112	Power Electronics Technology	3	7	48	42		
	2323307113	Steady-State Analysis	3.5	7	56	49		

		of Power Systems						
	2323307114	Power Distribution Technology	3.5	7	56	49		
	2323407206	Course Design of Power Electronics	1.5	7	24	21		
	2323407207	Course Design of Power Distribution Technology	1.5	7	24	21		
	Semester Total		24		384	336		
	2323307115	Transient Analysis of Power Systems	2.5	8	40	35		
	2323307116	Power Distribution Technology	3.5	8	56	49		
	2323307117	Electrical Control and PLC Applications	3	8	48	42		
	2323307118	High Voltage Technology	2	8	32	28		
	2323307119	Electrical Parts of Power Plants	3	8	48	42		
	2323407208	Course Design of Power System Analysis	1.5	8	24	21		
	2323407209	Course Design of Electrical Part of Power Plant	1.5	8	24	21		
	2300185101	College Student Career Development	8	8	128	112		

	2300185102	College Student Employment Guidance	8	8	128	112		
	Semester Total		33		528	462		
	2323407410	Comprehensive Training of Electrical Engineering	1.5	9	24	21		
	2323407411	Electrical Control and PLC Production Internship	1	9	16	14		
	2323407412	Comprehensive Training of Relay Protection	1	9	16	14		
	Semester Total		3.5		56	49		
Fourth year	2323307120	Professional English	1	10	16	14		51
	2323307121	Literature Retrieval and Scientific Paper Writing	1	10	16	14		
	2323307122	Engineering Ethics and Project Management	1	10	16	14		
	2323307301	Industrial Robotics Fundamentals	2	10	32	28		
	2323307302	Internet of Things Engineering Fundamentals	2	10	32	28		
	2323307303	Fundamentals of Artificial Intelligence	2	10	32	28		

	2323307304	Introduction to Coal Mining	2	10	32	28	Elective Requirement: 4 Credits	
	2323307305	Electrical Engineering in Mining	2	10	48	42		
	2323307306	Internet of Things and Smart Mines	2	10	32	28		
	2323307307	Electrical Safety	2	10	32	28		
	2323307308	Primary Design of Substations	2	10	32	28		
	2323307309	Design of Overhead Transmission Lines	2	10	32	28		
	2323307310	Condition Monitoring and Fault Diagnosis of Electrical Equipment	2	10	32	28		
	2323307311	Comprehensive Automation of Substations	2	10	32	28		
	2323307312	Modern Control Theory	2	10	32	28		
	2323307313	Sensors and Intelligent Detection Technology	2	10	32	28		
	2323307314	Fieldbus Technology	2	10	32	28		
	2323307315	Motion Control Systems	2	10	48	42		
	2323307316	Transmission and Transformation	2	10	32	28		

		Technology						
	2323307317	Automation of Power Systems	2	10	32	28		
	2323307318	Introduction to New Electric Power Technology	2	10	32	28		
	2323407413	Graduation Internship	6	10	96	84		
		General Education Elective	8	10	128	112	At least 8 credits of electives must be taken	
	2300407601	Research Credits	4	10	64	56	Elective Requirements: At least 12 credits of electives must be taken	
	2300407602	Subject Competitions	4	10	64	56		
	2300407603	Quality Enhancement	4	10	64	56		
	2300407604	Cultural and Sports Activities	4	10	64	56		
	2300407605	Skills Credits	4	10	64	56		
	2300407606	Innovation and Entrepreneurship Training	4	10	64	56		
	2300407607	Social Practice	4	10	64	56		
	Semester Total		33		528	462		
	2323407514	Graduation Thesis (Design)	18	11	288	252		
	Semester Total		18		288	252		
Total			240					240