ASIIN Seal

Accreditation Report

Bachelor Degree Programme
Electrical Engineering

Master Degree Programme
Electrical Engineering

Provided by
The University of Danang – University of Science and Technology

Version: 06 December 2024

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
Đại học ngành Kỹ thuật điện	Bachelor's Degree Programme in Electrical Engineering	ASIIN	AUN-QA, 05.05.2018-04.05.2023	02
Thạc sỹ ngành Kỹ thuật điện	Master's Degree Programme in Electrical Engineering	ASIIN	/	02
Date of the contract: 17.02.2022 **Submission of the final version of the self-assessment report:** 05.04.2023 **Date of the onsite visit:** 18.-19.05.2023 **at:** University of Danang				
Peer panel: apl. Prof. Dr.-Ing. Rein-hard Moeller, University of Wuppertal Prof. Dr. Sebastian Azer, Jade University of Applied Sciences Nguyễn Bửu Châu, OmniTech Corp Nguyễn Tuấn Anh, student at Hanoi University of Science and Technology				
Representative of the ASIIN headquarter: Paulina Petracenko				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				
Criteria used: European Standards and Guidelines as of May 15, 2015				

[1] ASIIN Seal for degree programmes

[2] TC: Technical Committee for the following subject areas: TC 02 - Electrical Engineering/Information Technology.

ASIIN General Criteria, as of December 07, 2021 Subject-Specific Criteria Technical Committee 02 – Electrical Engineering/Information Technology as of September 23, 2022	

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
Ba Electrical Engineering	Đại học Kỹ thuật điện/ Bachelor of Engineering		6	Full time		8 Semester	130 CP	1975
Ma Electrical Engineering	Thạc sỹ Kỹ thuật điện Master of Engineering		6	Full time		4 Semester	60 CP	1997

For the Bachelor's degree programme Electrical Engineering, the institution has presented the following profile on its website:

"The Faculty of Electrical Engineering (FEE) was established in 1975. It was among the first four faculties of Danang University of Science and Technology. Currently, three levels of education is offered by the Faculty, namely: undergraduate, Master's and PhD programs.

Bachelors graduated from the Electrical Engineering Programme, University of Science and Technology, The University of Danang meet the requirements of 6-level framework of The Vietnam National Qualification as follows:

- An ability to apply knowledge of Mathematics, basic science, technology and engineering in practice, analysis, design, evaluation and research problems in the field of Electrical Engineering.
- An ability to demonstrate systematic thinking, critical thinking, creative thinking, entrepreneurial mindset in the field of Electrical Engineering.
- An ability to recognize professional responsibility based on ethical and legal principles, to acquire and apply new knowledge and to use appropriate learning strategies.
- An ability to organize and deploy effectively teamworks.

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

- An ability to communicate effectively and to use foreign languages in professional works.
- A foreign language proficiency of TOIEC 450 or an equivalent certificate and basic skills of information technology prescribed in Circular No. 03/2014/TT-BTTTT.
- An ability to conceptualize and design systems, components or processes in the field of Electrical Engineering to meet desired needs in real-life conditions.
- An ability to plan, manage and operate professional activities suitable to the context of the enterprise, society and environment.

Students graduating from university (Bachelor) in Electrical Engineering are suitable for the following positions:

- Technical specialists or consultants, who design and maintenance for equipments and systems in the field of electricity at companies, corporations, factories, domestic and international enterprises such as power companies, power plants, substations, transmission companies, power grid management and operation units and agencies related to electricity use and exploitation.
- Technical specialists or consultants, designers in companies that design and operate lighting electrical systems, electrical systems of industrial enterprises, electricity for civil works.
- Technical specialists, maintenance man or consultants design electricity for companies and enterprises in industrial parks.
- Technical specialists in power management agencies, energy auditing agencies, electricity trading and trading companies, electrical equipment manufacturing companies;
- Self-opening business in the field of electricity.
- Teaching at universities, colleges, professional and vocational schools in the field of electricity.
- Graduates of this program can continue to participate to specialized training programs to receive an Engineering Degree or a Master's program in the same or similar field.”

For the Master's degree programme Electrical Engineering, the institution has presented the following profile on its website:

"The objective of the master program is to provide learners with deeply theoretical and practical knowledge in the field of Electrical engineering. After graduation, learners will become experts at the field of electrical engineering; they own many skills including research, analysis and synthesis, and problem-solving skills to enhance the effectiveness of work relating to electricity production, transmission and distribution; they are also able to undertake tasks requiring high-level qualifications such as teaching and research at universities and colleges, research institutes, etc; they are able to work as manager, leader, etc at companies relating to electrical engineering.

Students can choose between a research-oriented profile and an application-oriented profile.

Research Orientation

- Students graduated from a research-oriented postgradute programme of Electrical Engineering of The University of Danang - University of Science and Technology achieve:
- Deep, broad and advanced scientific knowledge in both theory and practice supporting for researching and solving complex technical problems in Electrical Engineering and interdisciplinary, meeting health standards, safety, environment and socio-economic development requirements;
- Critical and creative thinking, an ability to adapt and do self-directed in-depth research;
- An ability to proficiently use tools for research and development and apply advanced technologies in order to provide methods, initiatives, and draw expert conclusions;
- An ability to conceive, design, implement, operate and improve systems, components or processes in the field of Electrical Engineering;
- An ability to make reports and scientific articles;
- Teamwork skill and knowledge transfer skill in the field of Electrical Engineering;
- Organizational and administrative skills, an ability to effectively manage and improve professional activities;
- A level 4 of foreign language proficiency according to the 6-level Foreign Language Competency Framework of Vietnam or equivalent.

Application Orientation

Students graduated from an application-oriented postgradute programme of Electrical Engineering of The University of Danang - University of Science and Technology achieve:

- Deep, broad and advanced scientific knowledge in both theory and practice supporting for researching and solving complex technical problems in Electrical Engineering and interdisciplinary, meeting health standards, safety, environment and socio-economic development requirements;
- Critical and creative thinking, an ability to adapt and carry out self-directed research and development and specialized career;
- An ability to proficiently use tools and apply advanced technology in the Electrical Engineering;
- An ability to conceive, design, implement, operate and improve systems, components or processes in the field of Electrical Engineering;
- Teamwork skill and knowledge transfer skill in the field of Electrical Engineering;
- Organizational and administrative skills, an ability to effectively manage and improve professional activities;
- A level 4 of foreign language proficiency according to the 6-level Foreign Language Competency Framework of Vietnam or equivalent.”

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:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Diploma Supplements
- Websites of all study programmes
- Discussion during the audit
- Appendix: "Programme Objectives and Programme Outcomes" per programme
- Objective-module-matrix per programme

Preliminary assessment and analysis of the peers:

The experts base their assessment of the learning outcomes on the information provided on the websites, the Diploma Supplements, the objective-module-matrices and in the Self-Assessment Report of the two degree programmes under review.

The peers refer to the Subject-Specific Criteria (SSC) of the Technical Committee Electrical Engineering and Information Technology as a basis for judging whether the intended learning outcomes of the two programmes correspond with the competences as outlined by the SSC. As a result, they come to the following conclusions:

Graduates of the Bachelor's programme Electrical Engineering should have:

- "Knowledge of fundamental sciences, comprehensive professional knowledge in the field of Electrical Engineering, mastering the principles and laws of nature - society;
- Fundamental practical skills in the field of Electrical Engineering;

- Communication and teamwork skills, foreign language proficiency to work in a multicultural environment;
- Ability to self-study, to self-update knowledge, to work independently, creatively and to solve technology and technical problems in the field of Electrical Engineering.

Furthermore, they should meet the following requirements, which are in line with the level 6 framework of The Vietnam National Qualification:

1. An ability to apply knowledge of Mathematics, basic science, technology and engineering in practice, analysis, design, evaluation and research problems in the field of Electrical Engineering.
2. An ability to demonstrate systematic thinking, critical thinking, creative thinking, entrepreneurial mindset in the field of Electrical Engineering.
3. An ability to recognize professional responsibility based on ethical and legal principles, to acquire and apply new knowledge and to use appropriate learning strategies.
4. An ability to organize and deploy effectively teamworks.
5. An ability to communicate effectively and to use foreign languages in professional works.
6. A foreign language proficiency of TOIEC 450 or an equivalent certificate and basic skills of information technology prescribed in Circular No. 03/2014/TT-BTTTT.
7. An ability to conceptualize and design systems, components or processes in the field of Electrical Engineering to meet desired needs in real-life conditions.
8. An ability to plan, manage and operate professional activities suitable to the context of the enterprise, society and environment."

Students of the Master's programme Electrical Engineering can choose between the research-oriented profile and the application-oriented profile.

Graduates of the research-oriented profile should have acquired the following competencies:

1. "Deep, broad and advanced scientific knowledge in both theory and practice supporting for researching and solving complex technical problems in Electrical Engineering and interdisciplinary, meeting health standards, safety, environment and socio-economic development requirements;
2. Critical and creative thinking, an ability to adapt and do self-directed in-depth research;
3. An ability to proficiently use tools for research and development and apply advanced technologies in order to provide methods, initiatives, and draw expert conclusions;

4. An ability to conceive, design, implement, operate and improve systems, components or processes in the field of Electrical Engineering;
5. An ability to make reports and scientific articles;
6. Teamwork skill and knowledge transfer skill in the field of Electrical Engineering;
7. Organizational and administrative skills, an ability to effectively manage and improve professional activities;
8. A level 4 of foreign language proficiency according to the 6-level Foreign Language Competency Framework of Vietnam or equivalent."

Graduates of the application-oriented profile should have acquired the following competencies:

1. "Deep, broad and advanced scientific knowledge in both theory and practice supporting for researching and solving complex technical problems in Electrical Engineering and interdisciplinary, meeting health standards, safety, environment and socio-economic development requirements;
2. Critical and creative thinking, an ability to adapt and carry out self-directed research and development and specialized career;
3. An ability to proficiently use tools and apply advanced technology in the Electrical Engineering;
4. An ability to conceive, design, implement, operate and improve systems, components or processes in the field of Electrical Engineering;
5. Teamwork skill and knowledge transfer skill in the field of Electrical Engineering;
6. Organizational and administrative skills, an ability to effectively manage and improve professional activities;
7. A level 4 of foreign language proficiency according to the 6-level Foreign Language Competency Framework of Vietnam or equivalent."

The experts are convinced that the intended qualification profiles of the two programmes under review allow graduates to take up an occupation, which corresponds to their qualification. From the discussion with the employers, who are very satisfied with the qualification profile of the graduates, the experts gain the impression that they are well prepared for entering the labour market and can find adequate jobs in Vietnam.

The degree programmes are designed in such a way that they meet the goals set for them. The objectives and intended learning outcomes are concise, and transparently anchored and published. In order to verify that the intended learning outcomes of the two degree programmes are covered by the respective curriculum, DUT has submitted a matrix for each degree programme that shows, in which course which learning outcomes are targeted. The peers can deduce the correlation of the programmes' competence profile with

the SSC and see how each course contributes to achieving the intended learning outcomes from the provided Matrix for each programme.

However, the experts note that the objectives of the research-oriented profile and the application oriented-profile in the Master's programme are almost identical. The only difference is that graduates of the research-oriented profile additionally possess "the ability to write reports and scientific articles" and "the ability to competently use research tools". Therefore, the experts agree that the learning objectives of the two profiles should be edited and sharpened so that the respective profiling becomes more evident.

The experts confirm that the objectives and learning outcomes are regularly analysed and further developed. Students, alumni and industry partners are regularly consulted in this context and contribute to the development process.

The peers conclude that the objectives and intended learning outcomes of the degree programmes adequately reflect the intended level of academic qualification (EQF 6 for the Bachelor's programme and EQF 7 for the Master's programme). The programmes also correspond sufficiently with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee Electrical Engineering.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report
- Diploma Supplements

Preliminary assessment and analysis of the peers:
With regard to the Master's programme, the experts confirm that the English translation and the original Vietnamese name of the degree programme correspond with the intended aims and learning outcomes as well as the content of the degree programme. In case of the Bachelor's programme, however, the experts detect discrepancies between the title of the programme and its content. The general name "Electrical Engineering" suggests that a broad spectrum of electrical engineering, particularly its fundamentals, is covered in the degree programme. Yet, after careful inspection of the curriculum, the experts find that the Bachelor's programme does not offer the diversity of subjects in electrical engineering implied in the title. Instead, a large part of the technical modules focuses on power engineering (e.g. "High Voltage Engineering", "Power Systems", "Fundamentals of Power Electronics", "Electrical Parts in Power Plants and Substations", "Relay Protection in Power System"). In addition, the experts note a relatively high proportion of Math courses. On the other hand, the experts miss modules in the areas of information technology and computer science. Currently, the only IT element integrated in the curriculum is the course "Basic IT

Applications", which is compulsory for all students, but has a small scope and is not credited. Since basic skills in computer science and information technology such as high-level programming are a fundamental component of electrical engineering studies, the experts agree that these subjects must be integrated into the Bachelor's programme so that the title "Electrical Engineering" and the curriculum are aligned with each other. Alternatively, the name of the programme must be changed in order to reflect the focus on power engineering. During the audit, the programme coordinators explain that they are not allowed to change the title of the programme due to state regulations. In this case, the experts suggest importing courses from the Department of Information Technology at DUT into the Bachelor's programme. In particular, the programme must provide students with the opportunity to acquire competencies in high-level programming such as Python and C+++ to be able to to control i.e. semiconductor- based circuits, network technology and communication devices. The experts suggest removing a few less relevant courses on substation and circuit theory and Math, and replacing them with programming course. Furthermore, the auditors urge DUT to ensure that these programming courses are taught at a scientific level equivalent to EQF level 6, as currently many courses are taught from an operator's perspective.

Criterion 1.3 Curriculum

Evidence:

- Study plans of the degree programmes
- Module descriptions
- Discussions during the audit
- Self-assessment report

Preliminary assessment and analysis of the peers:

The Bachelor's degree programme Electrical Engineering is designed for four years, offered as a full-time programme, and encompasses 130 Vietnamese credit points. The curriculum consists of

- Math & Natural Sciences (30 credits) providing students with knowledge of mathematics, possibility statistics, physics and environment;
- Engineering Fundamentals (29.5 credits) offering students with specialized knowledge and skills in the field of EE;
- Compulsory Specialized Subjects (17.5 credits) providing students with specialized knowledge and skills in the field of EE;

- Elective Specialized Subjects (8 credits) teaching students knowledge and skills in the field of Power System or Industrial Electricity in EE major;
- The Project, Internship and Graduation thesis (21 credits) helping students gain practical experiences and train their problem-solving skills;
- General Knowledge (15 credits) teaching students basic knowledge of political thoughts, theories, and laws;
- Supplementary knowledge (9 credits), which in turn consists of foreign language studies (7 credits), Economics and Business Management (2 credits), Basic IT Applications, Physical Education, and Military Training.

As part of the Elective Specialized Studies, students have the opportunity to choose courses from the two minors Power System and Industrial Electricity.

After reviewing the study plans and module descriptions of the Bachelor's programme, the experts conclude that the curriculum enables students to achieve the intended learning outcomes of the programmes and that it is in line with the SSC of the Technical Committee Electrical Engineering and Information Technology. However, as mentioned in chapter 1.2, the experts see a discrepancy between the name of the degree programme and its content, since contrary to the generic title, the degree programme has a clear focus on power engineering and lacks elements from the fields of computer science and information technology. For this reason, courses in the aforementioned areas should be integrated so that the degree programme covers the spectrum of elementary electrical engineering, as indicated in the title. In addition, the auditors can see that the curriculum corresponds to the EQF level 6. However, as many courses are taught in an application-oriented way, the experts insist that DUT ensures that the newly introduced courses in information technology and computer science are taught at a scientific level that matches EQF level 6.

The Master's degree programme is designed for two years and offered as a full-time programme. Students need to achieve 60 credit points, in order to complete the programme successfully. The programme offers two tracks: the research-oriented profile and the application-oriented profile. The table below illustrates the study components of both the research- and application-oriented tracks:

1. Research Orientation

Knowledge Clusters	Total credits	Compulsory Credits	Elective Credicts
1. General and Supplementary Knowledge	3	3	
2. Specialized Knowledge	30	13	17
3. Projects, Research Topics	12	12	
4. Mater Thesis	15	15	
Total	**60**		

2. Application Orientation

Knowledge Clusters	Total credits	Compulsory Credits	Elective Credicts
1. General and Supplementary Knowledge	3	3	
2. Specialized Knowledge	42	13	29
3. Graduation Intership	6	6	
4. Graduation Project	9	9	
Total	**60**		

In the research-oriented profile, it is mandatory that students carry out four research projects and write a research report for each of the project. In the application-oriented profile, on the other hand, students are not completing research projects but an internship and a graduation project. Overall, the focus here is on the application of source technologies for technological solutions, management processes and the development of complete tools for the different needs of people.

After reviewing the study plans and module descriptions of the Master's programme, the experts conclude that the curriculum enables students to achieve the intended learning outcomes of the programme and that it is in line with the SSC of the Technical Committee Electrical Engineering and Information Technology. Yet, as outlined in chapter 1.1, the differences in the curriculum and competencies gained in the two profiles, must also be reflected in the programme learning outcomes.

The experts confirm that both programmes are reviewed annually and changes are made if requested by the stakeholders.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- University Website

- Decision: *Regarding the Establishment Of The Admission Council And The Admissions Secretariat Of The University Of Science And Technology*
- *Enrolment And Training For Master Degree*
- *Promulgating the Regulations On Universal Recruitment, College Recruitment In Early Education*
- *Annex D: D. Requirement for Learners Or Enrollment Students 2022*, DUT
- Audit Discussions

Preliminary assessment and analysis of the experts:
Danang University of Science and Technology (DUT) is a member university of the University of Danang (UD). Next to DUT, the UD consists of five other member universities, namely the (Danang) University of Economics, (Danang) University of Science and Education, (Danang) University of Foreign Language Studies, (Danang) University of Technology and Education, as well as the Vietnam-Korea University of Information and Communication Technology.

The UD annually handles the admission process and operates as the centre for all admissions across its member universities, institutions, or units. Each year, the UD assigns and delegates an admission quota to all its member institutions based on societal needs and available resources, and subsequently reports to the Ministry of Education and Training. This admission quota for each member university is based on three primary factors: The student-lecturer ratio, the ratio of the gross floor area of all university buildings to the number of students, and lastly, the societal demand for human resources for each programme. The admissions council is set up annually with DUT's approval and disbands once the admission task has been fulfilled. This council is responsible for planning, managing, and overseeing the admissions process at DUT.

Admission processes for undergraduate programmes are held annually before September. DUT publishes detailed information about the admissions process through its website, faculty and division pages, brochures, flyers, as well as through online admission counselling sessions for high-school students. During the latter, candidates are also informed about scholarships and post-graduation job opportunities.

High school graduates can apply to degree programmes offered by two faculties at the Da Nang University of Technology (DUT) through one of six available admission methods. The admission council determines and approves the admission conditions for each admission method. These methods include

- Direct admission in accordance with the regulations of the Ministry of Education and Training for candidates with notable e.g. civil, educational, or military achievements, with disabilities or who come from disadvantaged backgrounds;
- Admission based on the University's unique procedure for candidates with excellent high school performance and student competitions;
- Admission based on scores from the National high school graduation examination and additional criteria outlined annually by DUT;
- Admission based on scores from the National Ho Chi Minh City University competency assessment test,
- Admission based on scores from the Hanoi University of Science and Technology thinking assessment test, and
- Admission based on high school study results or transcript reviews.

To assist applicants from economically disadvantaged families, ethnic minorities, individuals with disabilities, and applicants from different regions, priority points are granted during the application process. Foreign applicants can secure direct admission into DUT's degree programmes if their competence in knowledge and Vietnamese language proficiency meets the criteria set by the Ministry of Education and Training.

For the Master's programme, the candidates must meet the following conditions: they must have a regular undergraduate degree in a major relevant to the industry or major in Electrical Engineering, the foreign language ability at Level 3 or higher according to the 6-level Foreign Language Competency Framework for Vietnam, and meet the general requirements of the training program standards promulgated by the Ministry of Education and Training and according to the regulations of the training programme. Candidates applying for admission to a research-oriented program additionally require a graduation rank of "good" or higher or have a scientific publication related to the field of Electrical Engineering. The faculty of Electrical Engineering reviews the university academic transcripts of every candidate to see if the enlisted modules are in line with the Master's programme. If the modules fail to be in line with those in the Master's programme, the faculty will develop plans to supplement knowledge for these finalists.

According to the statistics provided by the DUT, an average of 228 students enroll in the Bachelor's programme and 28 students in the Master's programme each year.

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

learning outcomes. The students confirm as well the information campaigns outlined in the Faculties' self-assessment report and the clarity of admission procedures.

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

DUT recognises the experts' opinion that the presentation of the two qualification profiles for the research-oriented profile and the application-oriented profile in the Master degree programme are very similar. They submit revised qualification profiles. However, the experts are still unable to recognise a clear distinction between the two profiles. For this reason, they are still of the opinion that the learning objectives of the two profiles should be revised and sharpened so that the respective profiling becomes clearer.

Furthermore, DUT acknowledges that the Bachelor degree programme is more geared towards energy technology, while the title "Electrical Engineering" suggests a broader spectrum of electrical engineering. In particular, the experts miss more elements in information technology and computer science. DUT states that they will take this feedback into account when further improving the degree programme. As no changes have yet been made, the experts maintain their demand that the name and content of the degree programme should be aligned.

Criterion predominantly fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Module descriptions
- DUT Degree Regulations
- Discussions during the audit

Preliminary assessment and analysis of the peers:
As detailed in Chapter 1.3, the programmes under review are structured transparently into sensible curricular sections and modules. They do so following the Vietnamese National Qualification Framework and DUT's "Curriculum Development Guidelines".

The Bachelor programme spans a standard study period of four years. The Master's spans four semesters, equating to a two-year standard period of study. An academic year is structured into two main semesters, with each semester encompassing fifteen weeks of study and four weeks allocated for assessments. The third summer semester, which takes place between the two regular semesters, allows students to repeat courses they have failed or take courses in advance to shorten their overall study time.

Students of the Bachelor's programme are required to carry out an internship of 120 academic hours/6 weeks, which is awarded with 2 credit points and carried out in the eighth semester. The internship should be completed in an enterprise in the field of electrical engineering and serve as a preparation for the graduation project. The final project can be carried out either at DUT or in cooperation with a company. During the audit, the experts learn that students have the option to carry out the graduation thesis in form of a capstone project. In this case, student spend 15 weeks at a company gathering data for their project.

A mandatory internship is also part of the application-oriented profile in the Master's programme. Here, students carry out the internship of 360 hours (6 credits) in the fourth semester alongside the Graduation Project. In the research-application track, students are completing their Graduate thesis in the form of a research project at DUT. The experts find that the internships are well integrated in both study programmes and support the achievement of the respective programme learning outcomes.

In the Bachelor's programme Elective courses are divided into the two minors "Power System" and "Industrial Electricity". Students can choose four courses from altogether nine electives (9 credits). The experts appreciate that students have the possibility to individualize their studies by choosing between two minors. Nevertheless, they consider the offer of nine electives to be rather low and recommend expanding the range of electives and subjects in the Bachelor's programme.

In the Master's degree programme, students can choose from a wider selection of electives. In the research-oriented profile, 17 credits are allocated to elective subjects, in the application-oriented profile, students must take elective subjects totalling 29 credits.

In summary, the peers confirm that all degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. They can see that the modules are structured in a way that ensures that the learning outcomes can be reached.

International Mobility

The rules for recognising achievements and competence are binding and transparent. A committee consisting of the head of the school, the dean or associate dean of the department for educational affairs, the dean or associate dean of the faculty responsible for education and the head of the departments supervising the faculty's educational focal points assesses whether the externally acquired achievements can be transferred to the respective degree programme.

With regard to student mobility, the expert group learns that, so far, only about 1% of the University's student body pursue temporary studies abroad each year. The experts inquire the reasons for the low numbers of student mobility. The programme coordinators explain that tuition fees at foreign universities are too high for most Vietnamese students and that DUT has only a limited budget to support students abroad. Therefore, they are currently trying to increase mobility options within Vietnam to enable all students to spend an exchange semester. For example, a Memorandum of Understanding (MoU) between different Vietnamese universities aims to strengthen student mobility within Vietnam. The experts welcome the efforts of DUT to increase national mobility options. However, they also see the need for more international exchange opportunities. During the audit discussions, students express a clear interest in affordable opportunities to study abroad. For this reason, the auditors recommend that DUT develops an international exchange mobility strategy to increase the number of outbound (and inbound) students. As part of this, the expert group suggests that DUT also increases the funding policies for low-income students such as scholarships to enable these students to participate in international student mobility.

Criterion 2.2 Work load and credits

Evidence:

- Self-Assessment Report
- Program Specifications, all programmes, DUT
- Module Handbooks, all programmes, DUT
- Study Plans (Curricula), all programmes, DUT
- *Regulations On Training At Undergraduate Level of University Of Science And Technology*
- *Instruction: Converting credit equivalents of University of Science and Technology – the University of Danang to the European Credit Transfer and Accumulation System (ECTS)*
- Student and graduate survey forms and results

- Audit Discussions

Preliminary assessment and analysis of the experts:

The Bachelor's programme in Electrical Engineering accounts for a total of 130 credits, the Master's programme accounts for 60 credits.

One semester typically encompasses 15 course weeks. A typical module consists of 2-3 Vietnamese Credits. Each classroom period lasts for 50 minutes; self-study is measured in hours of 60 minutes. As mentioned before, the third "summer semester" can be used by students to retake classes or take courses in advance to shorten their overall study time; it is not part of the regular study structure.

DUT has rules regarding the maximum and minimum credits students can undertake each semester. This allows students to select and plan their study regime most suitably in order to complete their degree programme in a timely manner. Students who fail to accrue sufficient credits within each semester will face expulsion.

As per the applicable regulations, one credit at DUT equates to 50 hours of workload; encompassing attendance in lectures, self-study, experiential learning, and assessments.

One credit of 50 hours of workload can be obtained through varying compositions of in-class attendance, self-study, practical or project work; depending on the course type. The workload calculation presented by the University is depicted in the following table:

Course type	In-class periods (one period =50 minutes)	Self-study hours (one hour = 60 minutes)	Total study hours (one hour = 60 minutes)
Theoretical lecture	15	30	42.5
Practice, experiment or discussion	30	30	55
Internship	-	-	50
Project, graduation project	-	-	50

Taking the European Credit Transfer System (ECTS) with one ECTS credit equalling 30 hours of work as comparison, one credit at Da Nang University of Technology (DUT) is equivalent to (42.5/30 =) 1.42 ECTS credits for theoretical lectures, (55/30 =) 1.83 ECTS credits for practical applications and experiments, and (50/30 =) 1.67 ECTS credits for internships and projects.

In view of the above and the provided evidence, the experts recognise that a transparent credit point system is established that accounts for the workload required from students, encompassing both attendance-based learning and self-study. This includes all compulsory subject-related elements of the degree.

According to the documents provided by DUT, students in the Bachelor's programme take an average of about 5 years/10 semesters to complete their studies. About 20% of students drop out during the course of their studies. In the Master's programme, students need an average of 2.5 years/5 semesters to finish their studies. The experts discuss the reasons for the relatively high dropout rate in the Bachelor's programme with the different groups in the audit. Both the programme coordinators and the students explain that the main reason is the English language requirements that students have to fulfil by the time they graduate. As mentioned earlier, students in the Bachelor's programme must have reached English level 3 according to the Vietnamese Language Proficiency Framework, which is equivalent to CEFR B1 or IELTS 4.0/4.5. The experts are informed that many students have difficulties passing the English courses and reaching the required English level, which is why they eventually drop out of the programme. Other than that, the students report to be content with the workload of the two programmes to be accredited. The experts acknowledge the factor of the English language requirement and are glad to hear that students do not refer to structural or academic challenges.

In conclusion, the experts recognise that a credit point system is established that accounts for the workload required from students, encompassing both attendance-based learning and self-study.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- Program Specifications, all programmes, DUT
- Module Handbooks, all programmes, DUT
- Study Plans (Curricula), all programmes, DUT
- *Vision, Mission, Educational Philosophy And Core Values Of University Of Science & Technology - The University Of Danang 2020*, Decision No. 1803/QD-ĐHBK, DUT, 27 July 2020
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Teaching staff at DUT apply various teaching and learning methods, which are outlined in the module handbooks and linked narrowly to the respective course learning outcomes:

Table 2.3.1. Alignment between teaching and learning methods and PLOs

Teaching and learning methods	PLOs							
	1	2	3	4	5	6	7	8
I. Direct instruction								
1. Lecture	x							
2. Explain in detail	x	x						
II. Indirect instruction								
1. Open question	x	x	x					
2. Case study	x	x	x		x		x	
III. Experiential learning								
1. Paradigm	x	x		x	x	x	x	
2. Internship			x	x	x			
3. Experimental	x			x				
IV. Interactive teaching								
1. Discussion		x			x			
2. Teamwork	x	x		x		x	x	
3. Teaching research team (TRT)	x	x	x	x		x	x	x

The following table illustrates the variety of teaching approaches and activities in more detail:

Table 2.3.2. Summary of Teaching and Learning activities

Teaching and Learning Approach	Teaching and Learning Activities
1. Direct Instruction: using LMS, MS Teams for online teaching	Lecture, Homework, Brain Storming, Reading, Practice Exercises,
2. Indirect Instruction: using LMS, MS Teams for online teaching	Open question, Case-Study, Demonstration Debate, Brain Storming,
3. Experiential Learning: on-campus teaching for Lab courses	Drill and Practice, Demonstration, Experiential Learning, Role Play
4. Interactive Learning	Drill and Practice, Demonstration, Problem solving, Brain Storming, Modelling, Simulation, Problem solving Experiential Learning, Role Play,
5. Independent Study	Drill and Practice, Demonstration, Problem solving, Brain Storming, Modelling, Simulation Reading, Experiential Learning, Role Play, Debate

During the audit, the teachers particularly emphasise the role of internships and project-based learning in the curriculum in the context of student-centred learning as well as the University's mission and philosopher. Furthermore, teachers of both programmes heavily

employ the problem-based learning method. Here, students can choose topics, and then propose design methods concerning technical, environmental, and economical factors. In the practical courses, students learn how to conduct experiments on electrical and electronics circuits, electric machines, power electronics, measurement techniques, etc. with indirect instruction approach.

The Master's programme focuses on developing the students' skills in autonomously carrying out and solving (research) projects. Thus, teaching and learning methods mostly include projects and essay assignments.

In summary, the expert group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concept of the two programmes under review comprise a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Report
- Audit Discussions

Preliminary assessment and analysis of the experts:
Da Nang University of Technology (DUT) offers a comprehensive range of student services from enrolment to graduation, involving its Department of Student Affairs, Faculty members, student unions, and academic supervisors.

Students have access to student accommodation, sports facilities and well as medical and psychological care. DUT moreover supports students' engagement in various activities through the establishment of clubs that cater to diverse interests, ranging from culture and art to sports, science, technology, and start-ups. Students are also encouraged to participate in social initiatives like green campaigns, blood donations, charity work in disadvantaged areas, and visits to underprivileged children.

The Center for Student Support and Business Relations (CSSBC) facilitates the link between students and businesses by providing career counselling and job opportunities.

Scholarships are awarded to high-performing students by DUT's Academic Affairs Office as an incentive and financial aid. The scholarship policy is widely communicated to students

through various channels. Furthermore, financial assistance is available to students facing financial difficulties through tuition waivers and extensions on tuition payments.

During their exchange with the auditor group, students confirm the availability of financial assistance, including scholarships made available offered by the university based on students' grade point average (GPA) as well as such offered by industries based on specific criteria. However, as described in chapter 2.1, students wish for more monetary support particularly in terms of student mobility. Therefore, the audits recommend increasing the scholarships for international exchange opportunities.

The experts conclude that sufficient resources are available to provide individual assistance, advice and support for all students. They judge that the support systems help students to achieve the intended learning outcomes and to complete their studies successfully and within the expected study duration.

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

Overall, the experts are satisfied with the implementation of DUT with regard to criterion 2. Yet, they recommend introducing more elective classes in the Bachelor programme since currently, students have very few opportunities to specialize their knowledge in an area of their choice. Moreover, they suggest developing a mobility strategy in order to enhance student mobility and increasing policies for the funding of low-income students (particularly in terms of mobility conditions).

Criterion fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module Handbooks, all programmes, DUT
- Program Specifications, all programmes, DUT
- *Annex: On the plan of final exam, the organization of preparing and managing the final exam questions and the review plan for the second semester of the academic year 2021-2022,*

- *Regulations On Evaluation Of Academic Performance Of Undergraduate Students, Graduate Students* (…)
- Audit Discussions

Preliminary assessment and analysis of the experts:
Assessment methods at DUT include attendance, assignments, quizzes, midterm exams, and final exams; the latter consisting of multiple choice assessments, calculations, essays, question and answers, report writing, or a combination of these. Assessment in most modules consists of a mid-term exam and a final exam.

At the onset of the academic year, both lecturers and students are informed about the teaching schedule and exam dates of the study plan. In the first lesson, the teaching staff ensures that students receive a syllabus. Students who miss out on more than 20% of the course may be declined participation in the final exam. Internships are assessed through a committee of lecturers based on students' provided internship reports and a presentation and Q&A to be held by the students, as well as students' ability to work in groups. To ensure that students observe standards of academic writing, a plagiarism checking software is utilised at the Faculties.

Grades are initially given on a 10-point scale, then translated into a 4-point scale and a letter grade. Students failing a course must retake the course. Students who have successfully passed a course may re-enrol to improve their grades. If students cannot attend the exam due to unavoidable reasons (such as illness, accident, death of family members, etc.), they can log into their academic personal account and register for exam postponement.

During the audit, the experts discuss with the teachers the reasons why students who have failed the exam always have to re-take the entire course in the next semester. The teachers explain that the intention of DUT is to ensure that all students have achieved the learning outcomes of the respective module. By retaking the whole course, students are more likely to illustrate in the end that they have learned the subject and achieved the respective learning outcomes. They add that students to repeat failed courses can use the summer semester. This way, their study time will not be extended either. The examiners understand DUT's motives. Nevertheless, they suggest that students who narrowly fail the exam should be given the opportunity to retake the exam without repeating the entire course. This would save students the time of repeating the whole course.

As their final study performance, students have the option to structure their graduation thesis around either a capstone project, a scientific research project, or a combination of the two. Students undertake these graduation projects within the faculty under the supervision of lecturers. On the Master's level, students may either write their thesis within the

faculty or in partnership with the industry depending on whether they have chosen the research-oriented or application-oriented track. Supervision of theses is accordingly conducted through academic and industry supervisors.

The peers discuss with the students how many and what kind of exams they have to take each semester. They learn that for most courses there is one mid-term exam and one final exam in every semester. Usually, there are additional practical assignments or oral tests. The final grade is the sum of the sub-exams. The students confirm that they are well informed about the examination schedule, the examination form, and the rules for grading.

The peers also inspect a sample of examination papers as well as Bachelor's and Master's theses and are overall satisfied with the general quality of the samples.

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

In conclusion, the experts view the criterion to be fulfilled. They recommend, however, rewriting the examination regulation so that student can retake an exam without retaking the entire course.

Criterion fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-Assessment Report
- Staff Handbooks for both programmes including CVs of all teachers
- Audits discussions

Preliminary assessment and analysis of the peers:

At DUT, the staff members have different academic positions. There are professors, associate professors, and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities.

All fulltime members of the teaching staff are obliged to be involved in teaching/advising, research, and administrative services. However, the workload can be distributed differently

between the three areas from teacher to teacher and also depends on the academic position. For example, full professors spend more time on research activities and less on teaching than associate professors or lecturers.

According to the staff handbook, 79 staff members are involved in the teaching of the Bachelor's programme (1 full Professor, 14 Associate Professors). Overall, 57 of the 79 teaching staff possess a PhD. In the Master's programme, there are 22 staff members involved in teaching (1 full Professor, 5 Associate Professors). Here, 21 teachers have a PhD. Besides graduates from Vietnamese higher education institutions, various lecturers from both programmes hold degrees obtained abroad in France or Italy, amongst others.

The peers confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- Staff Handbooks of both programmes
- *Regulation: On Internal Expenditure of University of Science and Technology*
- Audit Discussions

Preliminary assessment and analysis of the experts:
DUT encourages its academic staff to enhance their professional qualifications through, amongst others, scholarships for doctoral projects. The general rule at the DUT is that teachers must have started their doctoral project three years after taking up their position as a teacher at the DUT (unless they already have a doctorate); otherwise they will be asked to leave the DUT. Therefore, most of the teaching staff possesses a PhD. Furthermore, DUT encourages its staff members to pursue a PhD abroad and offers scholarships as an incentive. As a result, a number of teachers have earned their doctorates in Grenoble, Milan or Taiwan, among other places.

Moreover, DUT seeks to create opportunities for lecturers to partake in short-term training courses, teaching training, and quality assurance. New academic staff is required to complete compulsory teacher training.

During the audit, the peers discuss with members of the teaching staff about their obligations to do research and incentives to reach for higher levels of professorship. In response,

the experts learn that teaching staff cannot solely be lecturers but are obliged to devote 30% of their time to research. In terms of their career progression, however, the present staff indicate that the financial benefits of aiming e.g. for full professorship are not in relation to the additional responsibility and workload.

Upon examining the CVs of the teaching staff of both programmes, the experts note that most of the teachers have not worked in the industry themselves but have directly transferred to teaching after completing their training. They inquire in the audit to what extent teachers are in contact with the industry and how they receive up-to-date information about new developments in the industry. The teachers state that they are regularly invited by the companies to visit them and learn about the newest technologies and processes. By supervising student projects carried out in companies, the teachers also establish contacts with various companies and occasionally start their own projects with them. The auditors appreciate the teachers' contact with the local industry. However, they recommend improving the exchange between teachers and industry so that teachers get a deeper and broader insight into industry. They suggest, for example, that teachers should do a practical semester every now and then and work in a company for several months. This would strengthen their practical background and ensure that they are up to date with the latest developments in the field.

To sum up, the auditors confirm that DUT offers sufficient training opportunities for members of the teaching staff, but recommend increasing the cooperation with the industry.

4.3 Funds and equipment

Evidence:

- Self-Assessment Report
- Visitation of participating institutes and laboratories during the audit
- Audit Discussions

Preliminary assessment and analysis of the experts:

As of 2022, the Ministry of Education and Training designated DUT as being responsible for financing its regular expenditures. To ensure sufficient operational funds, DUT has developed a financial plan and has adjusted the tuition fees for the 2022-2023 academic year in compliance with the state's regulations for universities.

The primary funding sources of DUT consist of allocations from the state budget, income derived from non-commercial activities such as tuition fees, income generated from international training cooperation programmes, earnings from scientific research and technology transfer, and revenue from the provision of services and the utilisation of facilities.

The collected revenue is primarily utilised for staff remuneration, investment in infrastructure, the facilitation of scientific research activities, and the provision of student scholarships.

The DUT main campus houses 133 classrooms, 12 computer rooms and 2 multimedia classrooms. In addition, students and staff can use the Learning Resource and Communication Centre with 4 conference rooms and 8 seminar rooms for discussions and seminars. The Faculty of Electrical Engineering has an Electrical Experiment Centre, which consists of 14 laboratories, a workshop and an outdoor practice ground.

During the audit, the experts find that the facilities and laboratories are adequate and contain everything necessary for the programme's objectives. However, they note that much of the equipment in the laboratories, while still functioning, is clearly outdated. They therefore propose to modernise the laboratory infrastructure for both programmes. Furthermore, they recommend introducing power generation laboratories for the Bachelor's programme. Currently, the study programme addresses the subject of grid technology. However, the experts find that the field of power generation e.g. solar, water or wind power technology, and other emerging technologies from the power sector should also be addressed and practically applied in the programme.

With regard to library capacities, DUT is connected to the University of Danang's Academic Library Network, connecting ten libraries of UD's affiliated network. The general catalogue provides access to 200,000 titles, including books, serials, theses, scientific reports and more, in addition to digital and electronic databases. Additionally, the library website provides access to a range of online publishing databases. During the audit, students express their satisfaction with the respective programmes' facilities as well as with the library capacities and available literature. Nevertheless, they express the wish to be able to borrow equipment such as microcontroller boards so that they can continue practising at home for the courses. The experts share the students' idea and suggest that the faculty lend certain equipment to the students so that they can also practise at home.

In view of the above, the experts judge the funding for the facilitation of the programmes under review to be sufficiently secured, the physical facilities to be adequate, and library capacities to be sufficient.

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

In conclusion, the experts view the criterion to be fulfilled. They recommend, however, increasing the cooperation with the industry to strengthen the practical background of the teachers. In terms of the equipment, they suggest lending equipment to students so they can practice at home as well as modernizing the overall lab infrastructure. With regard to the Bachelor's programme, they also recommend introducing power generation labs.

Criterion fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module Handbooks for both programmes

Preliminary assessment and analysis of the peers:
The experts review the module descriptions for the programmes and see that they provide adequate information about all relevant and required aspects: module identification code, respective content, learning outcomes, examinations, credit points and workload distribution, grading, person responsible for the module, teaching methods, admission requirements, recommended literature, and date of last amendment made. The students confirm during the discussions that information about the courses are always available online and that details concerning examinations and contents are provided at the beginning of each course by the teaching staff.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Sample Diploma
- Sample Diploma Supplement

Preliminary assessment and analysis of the peers:
The peers confirm that the students of the three programmes are awarded a Diploma Certificate and a Transcript of Records upon graduation. The Transcript of Records lists

all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA. The Diploma Supplement contains all necessary information about the degree programme. DUT informs the experts that the Diploma Supplement in the current version has been introduced only recently and therefore has not yet been awarded to their graduates.

Criterion 5.3 Relevant rules

Evidence:

- Self-Assessment Report
- All relevant regulations as published on the university's webpage

Preliminary assessment and analysis of the peers:
From the documents provided and the discussion during the audit, the peers learn that DUT follows a policy of transparent and open rules and regulations. All required rules, regulations are made accessible to students at any time online. The discussion with the students confirms that they feel well informed about regulations and comfortable about the access to any information about their degree programmes and the courses.

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

The experts see all aspects of the criterion fulfilled.

Criterion fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- *Development Strategy Of University Of Science And Technology - The University Of Danang To 2025 With A Vision Toward 2035*
- Student and graduate survey forms and results, DUT
- Survey Form On Graduate Quality And Educational Program For Employer, DUT
- Audit Discussions

Preliminary assessment and analysis of the experts:
The quality assurance process at DUT is overseen by the Educational Quality Assurance Council and the Scientific and Educational Council. These bodies report their findings to the Board of Rectors, i.e. the Rector and Vice-Rector responsible for quality assurance. The work of the Educational Quality Assurance Council is informed by evaluations conducted by the Department of Educational Testing & Quality Assurance. At the Faculty level, the faculty-specific Scientific and Educational Quality Assurance Councils carry out surveys, assess quality, and consult with the Faculty Board of Directors.

In terms of internal quality assurance mechanisms, DUT primarily relies on a range of surveys conducted with all stakeholders. In line with this, the auditors discern during their exchanges with students, alumni and industry representatives that regular feedback surveys are conducted both on course and programme levels. Both groups present during the audit confirmed their satisfaction with the conducted surveys, and that they feel their voices are generally heard for the purpose of programme development. However, they state that the results of the surveys are never communicated to them directly. The programme coordinators and teaching staff confirm that the evaluation results are not passed on to the students. Instead, the head of the faculty sends the evaluation results to the respective teaching staff, who in turn should initiate improvement measures if necessary. The auditors welcome that the evaluation results are used effectively. However, it is necessary that teachers also discuss the (anonymous) results of the course questionnaires directly with students and what could be improved in the respective courses. In line with criterion 6, DUT must ensure that the feedback loops are closed.

In terms of external quality management, the University adopts several sets of quality management standards, which include domestic quality accreditation standards for degree program assessment from the Ministry of Education and Training (MOET), and international quality accreditation standards from the likes of CTI (France), AUN-QA, and ASIIN. To evaluate the effectiveness of its internal quality assurance system, the University has invited both domestic (MOET) and international (HCERES) institutions for reviews in the past years. Furthermore, the University has resorted to international accreditation bodies, such as CTI, AUN-QA, and ASIIN, to review its degree programs.

All in all, the peers are content with the University’s quality management system, which they find to be multi-layered and effective.

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

In conclusion, the experts view the criterion to be fulfilled. They recommend that DUT launches a feedback conversion between teachers and students after having submitted the evaluation questionnaires.

Criterion fulfilled.

D Additional Documents

No additional documents needed.

E Comment of the Higher Education Institution (26.10.2023)

The following quotes the comment of the institution:

"Criterion 1.1

The profiles of the two orientations of Master's programme are different.

Regarding the programme learning outcomes of the two orientations, they look relatively similar, but when carefully comparing them in pairs, they are different as indicated in the table in the additional evidence in the folder "Criterion 1.1_Additional evidence".

However, in the near future we also plan to consider updating them to further differentiate them in the next update cycle of the programmes along with other updates from stake-holders' comments to further develop the programmes.

Criterion 1.2 and Criterion 1.3

The percentage of math in the training program is relatively high because the University previously oriented the program to ABET standards.

In particular, in our current Bachelor's programme, the following courses use software for calculation, algorithm development, and programming as follows:

- Basic IT Applications;

- Calculation Methods *(Use Matlab, Python)*;

- Logic Control *(Use PLC programming software)*;

- Calculation and Simulation Softwares in Power System *(Use ETAP software, PowerWorld Simulator… for analysis, simulation, monitoring, control, optimization, and automation of electrical power systems)*;

- Some other Specialized Courses *(Use Software for analysis, simulation, control, optimization…)*.

The comments of the auditors are very helpful to us and we will continue to consider to further enhance competencies in IT, programming for students by adding relevant courses or parts in courses to further improve the programme in the near future.

Criterion 2.1

We agree with the auditors that we should increase the number of elective courses in the Bachelor's programme to offer more opportunities for students.

Regarding International Mobility, we always realize that it is a useful activity for students and we know students want to participate in this activity. However, as we discussed in the meeting: "*tuition fees at foreign universities are too high for most Vietnamese students and DUT has only a limited budget to support students abroad*" and the funding for this activity is not enough to meet the needs of DUT students. However, we will continue to give feedback to DUT to consider improving the funding policy for this activity in the future. In addition, the DUT in general and the Faculty of Electrical Engineering in particular should further strengthens international cooperation to get more support from partners, including supporting international exchange mobility opportunities for students.

Criterion 4.2

However, we would like to provide more information to further clarify a couple of important points related to staff development:

1) Research Center on Electricity and Electronics (RCEE):

- DUT has RCEE and the Faculty of Electrical Engineering is in charge of this Center's expertise.

- The Center's Director and most of its staff are from the Faculty of Electrical Engineering.

- The Center has three main activities: Training, Scientific research and technology transfer, Design consulting, supervision and installation.

Through participating in the Center's activities, Faculty of Electrical Engineering staff have many opportunities in cooperation with the industry. This is one of the very important and advantageous points of the Faculty of Electrical Engineering in industrial cooperation activities and it helps enhance the practical professional capacity of the Faculty's staff.

2) New Regulations on the Organization and Implementation of Graduation Internships and Graduation Projects in the form of Capstone Project:

On February 28, 2023, the Rector of DUT issued a Decision promulgating new Regulation on the organization and implementation of Graduation Internships and Graduation Projects in the form of Capstone Project and compared to the previous Regulation, this Regulation further encourages lecturers' cooperation with the industry."

F Summary: Peer recommendations (13.11.2023)

Taking into account the additional information and the comments given by DUT the peers 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	With requirements for one year	30.09.2029	–	–
Ma Electrical Engineering	With requirements for one year	30.09.2029	–	–

Requirements

For all programmes

A 1. (ASIIN 6) DUT must launch a feedback conversation between teachers and students after having submitted the evaluation questionnaires.

For the Bachelor programme

A 2. (ASIIN 1.2; 1.3) Ensure that the name of the degree programme and its content correspond with each other.

For the Master programme

A 3. (ASIIN 1.1) Ensure that the programme learning outcomes clearly distinguish between the learning outcomes for the research profile and the application profile.

Recommendations

For all programmes

E 1. (ASIIN 2.1) It is recommended developing a mobility strategy in order to increase student mobility.

E 2. (ASIIN 2.1; 2.4) It is recommended increasing policies for the funding of low-income students (particularly in terms of mobility conditions).

E 3. (ASIIN 3) It is recommended rewriting the examination regulation so that student can retake an exam without retaking the entire course.

E 4. (ASIIN 4.2) It is recommended increasing the cooperation with the industry to strengthen the practical background of the teachers.

E 5. (ASIIN 4.3) It is recommended lending equipment to students so they can practice at home.

E 6. (ASIIN 4.3) It is recommended modernizing the lab infrastructure.

Ba Programme

E 7. (ASIIN 2.1) It is recommended introducing more elective classes.

E 8. (ASIIN 4.3) It is recommended introducing power generation labs.

G Comment of the Technical Committee 02- Electrical Engineering (24.11.2023)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the case and follows the vote of the experts without change.

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	With requirements for one year	30.09.2029	–	–
Ma Electrical Engineering	With requirements for one year	30.09.2029	–	–

H Decision of the Accreditation Commission (08.12.2023)

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

The Commission discusses the accreditation case and amends requirement A1 so that it is in line with the basic decisions. In requirement A2, the intended learning outcomes are included in the harmonisation of title and curriculum.

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	With requirements for one year	30.09.2029	–	–
Ma Electrical Engineering	With requirements for one year	30.09.2029	–	–

Requirements

For all programmes

A 1. (ASIIN 6) DUT must close the feedback loop by informing the students about the results of their evaluation questionnaires in order to complete the quality assurance process.

For the Bachelor programme

A 2. (ASIIN 1.2; 1.3) Ensure that the name of the degree programme, the intended learning outcomes, and the content correspond with each other.

For the Master programme

A 3. (ASIIN 1.1) Ensure that the programme learning outcomes clearly distinguish between the learning outcomes for the research profile and the application profile.

Recommendations

For all programmes

E 1. (ASIIN 2.1) It is recommended developing a mobility strategy in order to increase student mobility.

E 2. (ASIIN 2.1; 2.4) It is recommended increasing policies for the funding of low-income students (particularly in terms of mobility conditions).

E 3. (ASIIN 3) It is recommended rewriting the examination regulation so that student can retake an exam without retaking the entire course.

E 4. (ASIIN 4.2) It is recommended increasing the cooperation with the industry to strengthen the practical background of the teachers.

E 5. (ASIIN 4.3) It is recommended lending equipment to students so they can practice at home.

E 6. (ASIIN 4.3) It is recommended modernizing the lab infrastructure.

For the Bachelor Programme

E 7. (ASIIN 2.1) It is recommended introducing more elective classes.

E 8. (ASIIN 4.3) It is recommended introducing power generation labs.

I Fulfilment of Requirements (06.12.2024)

Analysis of the experts and the Technical Committee (22.11.2024)

Requirements

For all programmes

A 1. (ASIIN 6) DUT must close the feedback loop by informing the students about the results of their evaluation questionnaires in order to complete the quality assurance process.

Initial Treatment	
Peers	Fulfilled Justification: DUT submits survey regulations which stipulate that students must be informed of the results of the surveys. The communication of results takes place at several levels, namely in the classroom between teachers and students, through academic supervisors, and in central meetings between the Head of the Faculty of Electrical Engineering and students. In addition, DUT provides templates that should be used to record discussions between teachers and students about the evaluation results.
TC 02	Fulfilled Vote: unanimous Justification: The TC follows the vote of the experts.
AC	fulfilled Vote: unanimous Justification: The commission follows the vote of the experts.

For the Bachelor programme

A 2. (ASIIN 1.2; 1.3) Ensure that the name of the degree programme, the intended learning outcomes, and the content correspond with each other.

Initial Treatment	
Peers	fulfilled Justification: The experts note that DUT has followed the experts' suggestions and replaced an advanced mathematics course with a course on programming techniques. In addition, three electives have been

	added in the field of Informatics ("Applied Informatics", "Application of Artificial Intelligence in Electrical Engineering" and "Communication Networks and SCADA Systems in Industry"). Finally, DUT has revised the programme's learning outcomes so that they are now in line with the programme's content and title. The experts consider that more computer science content could have been added, but that the changes are sufficient to conclude that the title of the programme, the intended learning outcomes and the content are consistent.
TC 02	Fulfilled Vote: unanimous (Mr Azer does not participate in the vote) Justification: The TC follows the vote of the experts.
AC	fulfilled Vote: unanimous Justification: The commission follows the vote of the experts.

For the Master programme

A 3. (ASIIN 1.1) Ensure that the programme learning outcomes clearly distinguish between the learning outcomes for the research profile and the application profile.

Initial Treatment	
Peers	fulfilled Justification: The experts review the programme learning outcomes and note that they have been revised in a way that clearly distinguishes the research profile from the application profile.
TC 02	Fulfilled Vote: unanimous (Mr Azer does not participate in the vote) Justification: The TC follows the vote of the experts.
AC	fulfilled Vote: unanimous Justification: The commission follows the vote of the experts.

Decision of the Accreditation Commission (06.12.2024)

Degree programme	ASIIN-label	Accreditation until max.
Ba Electrical Engineering	All requirements fulfilled	30.09.2029
Ma Electrical Engineering	All requirements fulfilled	30.09.2029

J Appendix: Programme Learning Outcomes and Curricula

According to the website (accessed 08.08.2023), the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Electrical Engineering:

“General objectives:

The general objective of the Electrical Engineering training program of The University of Danang - University of Science and Technology (DUT) is to train human resources with political and ethical qualities, professional knowledge and skills, research competence, ability of developing science and technology applications and transfer knowledge in the field of Electrical Engineering corresponding to the training level, soft skills, lifelong learning capability, creative ability and professional responsibility, ability to adapt to working environment, good health, sense of community service to meet the requirements of socio-economic development, national defense and security assurance and international integration.

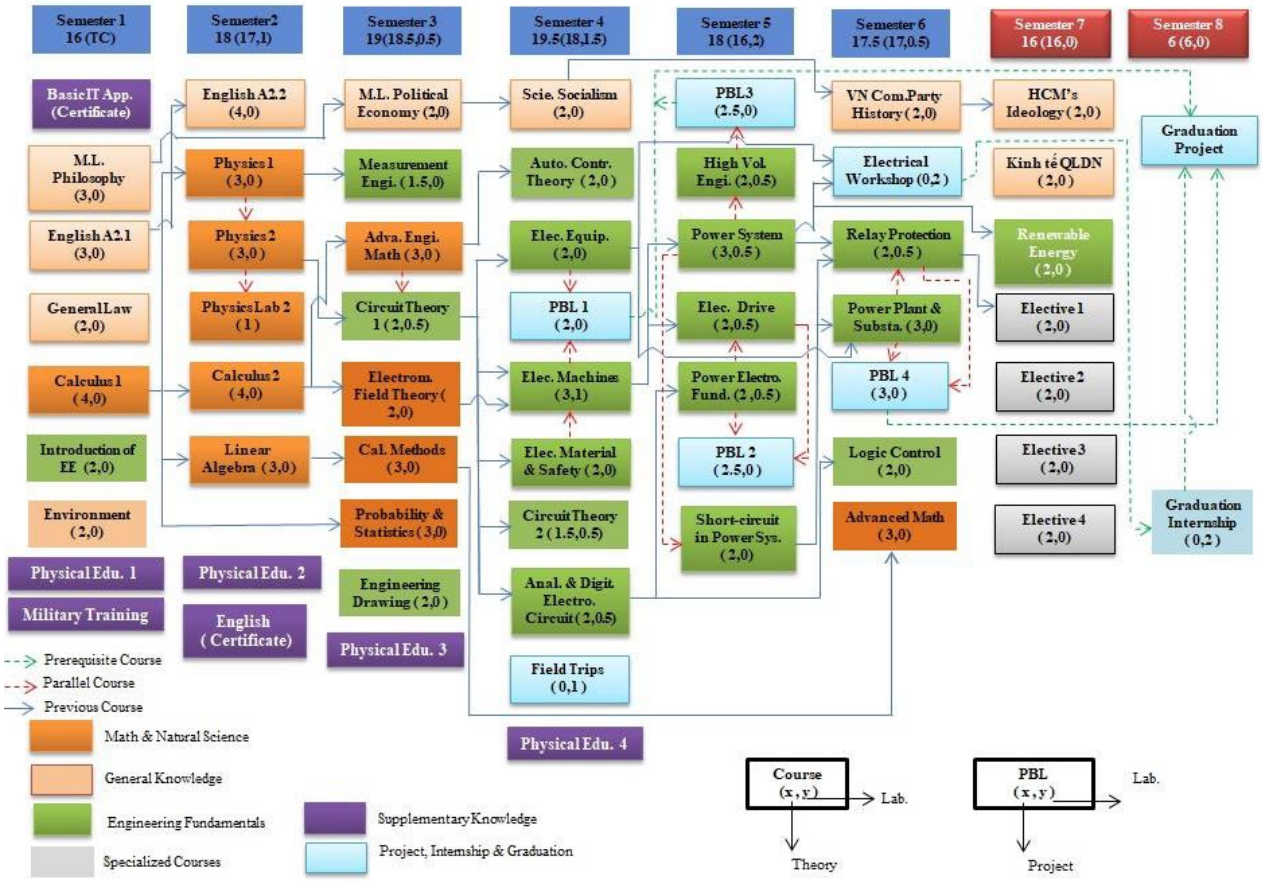
Program Expected Learning Outcomes:

Bachelors graduated from the Electrical Engineering Programme, University of Science and Technology, The University of Danang meet the requirements of 6-level framework of The Vietnam National Qualification as follows:

- An ability to apply knowledge of Mathematics, basic science, technology and engineering in practice, analysis, design, evaluation and research problems in the field of Electrical Engineering.
- An ability to demonstrate systematic thinking, critical thinking, creative thinking, entrepreneurial mindset in the field of Electrical Engineering.
- An ability to recognize professional responsibility based on ethical and legal principles, to acquire and apply new knowledge and to use appropriate learning strategies.
- An ability to organize and deploy effectively teamworks.
- An ability to communicate effectively and to use foreign languages in professional works.
- A foreign language proficiency of TOIEC 450 or an equivalent certificate and basic skills of information technology prescribed in Circular No. 03/2014/TT-BTTTT.
- An ability to conceptualize and design systems, components or processes in the field of Electrical Engineering to meet desired needs in real-life conditions.

- An ability to plan, manage and operate professional activities suitable to the context of the enterprise, society and environment."

The following **curriculum** is presented:



According to the website (accessed 08.08.2023), the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master degree programme Electrical Engineering:

“General Objective:

The objective of master program is to provide learners with deeply theoretical and practical knowledge in the field of Electrical engineering. After graduation, learners will become experts at the field of electrical engineering; they own many skills including research, analysis and synthesis, and problem-solving skills to enhance the effectiveness of work relating to electricity production, transmission and distribution; they are also able to undertake tasks requiring high-level qualifications such as teaching and research at universities and colleges, research institutes, etc; they are able to work as manager, leader, etc at companies relating to electrical engineering.

Research Orientation Profile

- Students graduated from a research-oriented postgradute programme of Electrical Engineering of The University of Danang - University of Science and Technology achieve:
- Deep, broad and advanced scientific knowledge in both theory and practice supporting for researching and solving complex technical problems in Electrical Engineering and interdisciplinary, meeting health standards, safety, environment and socio-economic development requirements;
- Critical and creative thinking, an ability to adapt and do self-directed in-depth research;
- An ability to proficiently use tools for research and development and apply advanced technologies in order to provide methods, initiatives, and draw expert conclusions;
- An ability to conceive, design, implement, operate and improve systems, components or processes in the field of Electrical Engineering;
- An ability to make reports and scientific articles;
- Teamwork skill and knowledge transfer skill in the field of Electrical Engineering;
- Organizational and administrative skills, an ability to effectively manage and improve professional activities;
- A level 4 of foreign language proficiency according to the 6-level Foreign Language Competency Framework of Vietnam or equivalent.

Application Orientation Profile

- Students graduated from a application-oriented postgradute programme of Electrical Engineering of The University of Danang - University of Science and Technology achieve:

- Deep, broad and advanced scientific knowledge in both theory and practice supporting for researching and solving complex technical problems in Electrical Engineering and interdisciplinary, meeting health standards, safety, environment and socio-economic development requirements;
- Critical and creative thinking, an ability to adapt and carry out self-directed research and development and specialized career;
- An ability to proficiently use tools and apply advanced technology in the Electrical Engineering;
- An ability to conceive, design, implement, operate and improve systems, components or processes in the field of Electrical Engineering;
- Teamwork skill and knowledge transfer skill in the field of Electrical Engineering;
- Organizational and administrative skills, an ability to effectively manage and improve professional activities;
- A level 4 of foreign language proficiency according to the 6-level Foreign Language Competency Framework of Vietnam or equivalent."

The following **curriculum** is presented:

1. Research-oriented programme

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work-shop	Intern ship	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequis ite	Previous	Parallel
	SEMESTER 1	**16**				**16**	X					
1	Scientific Research Methodology	1				1	X					
2	Economics and Business Management	2				**2**	X					
3	Distribution Grid Optimization	2				**2**	X					
4	Power Electronic Application in Electrical Engineering	3				**3**	X					
5	SCADA Application in Electrical Engineering	2				**2**	X					
6	Power Plant Operation	2				**2**	X					
7	Ppower System Operation	2				**2**	X					
8	Electricity Quality	2				**2**	X					
	SEMESTER 2					**17**						
	Elective Specialization Course 1	2				2			X			
	Elective Specialization Course 2	2				2			X			
	Elective Specialization Course 3	2				2			X			
	Elective Specialization Course 4	2				2			X			
	Elective Specialization	2				2			X			

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work-shop	Intern ship	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequis ite	Previous	Parallel
	Course 5											
	Elective Specialization Course 6	2				2			X			
	Elective Specialization Course 7	2				2			X			
	Elective Specialization Course 8	3				3			X			
Elective Courses												
1	Overvoltages and Insulation in Power System	2				2			X			
2	Power System Reliability	2				**2**			X			
3	Flexible AC power Transmission System	2				2			X			
4	Electricity Saving and Consumer Control	2				2			X			
5	Electricity Market	2				2			X			
6	Renewable Energy and New Technologies in Electrical Engineering	2				2			X			
7	Smart grid	2				2			X			
8	Distributed Source Control	2				2			X			
9	Applied Mathematics for Electrical Engineering	2				2			X			
10	Complex Power System Protection	2				2			X			

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work-shop	Intern ship	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequis ite	Previous	Parallel
11	Safety Analysis in Power System	2				2			X			
12	Power System Planning and Development	2				2			X			
13	Stability and Control in Power Systems	2				2			X			
14	Calculation and Simulation Software in Power System	1		1		2			X			
15	Long Distance Power Transmission System	2				2			X			
16	Power System Analysis	2				2			X			
17	Integration of Wind and Solar Power into Power System	2				2			X			
18	Electric Machine Control	2				2			X			
19	Microcontrollers	2				2			X			
20	Power Supply in Industrial Factory	2				2			X			
21	Application of Artificial Intelligence in Electrical Engineering	2				2			X			
22	Electric Machines in Automatic Equipment	2				2			X			
23	Sensor	2				2			X			
24	Working mode Optimization of Operation System	3				3			X			

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work-shop	Intern ship	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequis ite	Previous	Parallel
25	Energy Management System	3				3			X			
26	Wide Area Grid Monitoring	3				3			X		SCADA Applicatio n in Electrical Engineerin g	
27	Digital Transformation in Electrical Engineering	3				3			X			
28	Energy storage system	3				3			X			
	SEMESTER 3					**12**						
1	Research Topic: Power Energy Sources		3			3	X				Power Plant Operation	
2	Research Topic: Power Transmission Grid		3			3	X				Power System Operation	
3	Research Topic: Distribution Grid		3			3	X				Optimizati on of power supply system, Power System Reliability	
4	Research Topic: Load Demand Management		3			3	X				Electricity Quality	
	SEMESTER 4					**15**						

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work-shop	Intern ship	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequis ite	Previous	Parallel
1	Graduation Project (6 months)		15			15	x				Research Topic 1,2,3,4	
	TOTAL					**60**						

2. Application - oriented programme

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work shop	Inters -hip	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequi site	Previous	Parallel
	SEMESTER 1	**16**				**16**	X					
1	Scientific Research Methodology	1				1	X					
2	Economics and Business Management	2				**2**	X					
3	Distributed Grid Optimization	2				**2**	X					
4	Application of Power Electronics in Electrical Engineering	3				**3**	X					
5	SCADA Application in Electrical Engineering	2				**2**	X					
6	Power Plant Operation	2				**2**	X					
7	Power System Operation	2				**2**	X					
8	Electricity Quality	2				**2**	X					
	SEMESTER 2	**14**				**14**						
	Elective Specialization	2				2			X			

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work shop	Inters -hip	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequi site	Previous	Parallel
	Course 1											
	Elective Specialization Course 2	2				2			X			
	Elective Specialization Course 3	2				2			X			
	Elective Specialization Course 4	2				2			X			
	Elective Specialization Course 5	2				2			X			
	Elective Specialization Course 6	2				2			X			
	Elective Specialization Course 7	2				2			X			
	SEMESTER 3	**15**				**15**						
	Elective Specialization Course 8	2				2			X			
	Elective Specialization Course 9	2				2			X			
	Elective Specialization Course 10	2				2			X			
	Elective Specialization Course 11	2				2			X			
	Elective Specialization Course 12	2				2			X			
	Elective Specialization Course 13	2				2			X			
	Elective Specialization Course 14	3				3			X			
Elective Course												

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work shop	Inters -hip	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequi site	Previous	Parallel
1	Overvoltages and Insulation in Power Systems	2				2			X			
2	Power System Reliability	2				2			X			
3	Flexible AC Power Transmission System	2				2			X			
4	Electricity Saving and Consummer Control	2				2			X			
5	Electicity Market	2				2			X			
6	Renewable Energy and New Technologies in Electrical Engineering	2				2			X			
7	Smart Grid	2				2			X			
8	Distributed Source Control	2				2			X			
9	Applied Mathematics for Electrical Engineering	2				2			X			
10	Complex Power System Protection	2				2			X			
11	Safety Analysis in Power System	2				2			X			
12	Power System Planning and Development	2				2			X			
13	Stability and Control in Power System	2				2			X			

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work shop	Inters -hip	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequi site	Previous	Parallel
14	Calculation and Simulation Softwares in Power System	1		1		2			X			
15	Long Distance Power Transmission System	2				2			X			
16	Power System Analysis	2				2			X			
17	Integration of Wind and Solar Power into the Power System	2				2			X			
18	Electric Machine Control	2				2			X			
19	Microcontrollers	2				2			X			
20	Power Supply in Industrial Factory	2				2			X			
21	Application of Artificial Intelligence in Electrical Engineering	2				2			X			
22	Electric Machines in Automatic Equipment	2				2			X			
23	Sensor	2				2			X			
24	Working Mode Optimization of Power System	3				3			X			
25	Energy Management system	3				3			X			
26	Wide Area Grid Monitoring	3				3			X			

No.	Course	Credits					Course Type			Condition		
		Theory	Project	Lab/ Work shop	Inters -hip	Total	Compu -lsary	Oriented Elective	Free Elective	Prerequi site	Previous	Parallel
27	Digital Transformation in Electrical Engineering	3				3			X			
28	Energy storage system	3				3			X			
	SEMESTER 4					**15**						
1	Internship				6	6	X				Compuls ary Courses	
2	Graduation Project		9			9	X				Internshi p	
	TOTAL					**60**						