ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes

Energy and Power Engineering
Built Environment and Energy Engineering

Provided by
Shanghai Ocean University

Version: 22.09.2023

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
能源与动力工程	Energy and Power Engineering	ASIIN	/	TC 01, 02
建筑环境与能源应用工程	Built Environment and Energy Engineering	ASIIN	/	TC 01, 02, 03
Date of the contract: 16.12.2019 **Submission of the final version of the self-assessment report:** 10.04.2023 **Date of the online Audit:** 22.-25.05.2023 **at: The audit was carried out digitally in agreement with the principal decision of the Accreditation Commission for Study Programmes.**				
Peer panel: Prof. Dr.-Ing. Elmar Griese, University of Siegen Prof. Dr. rer. nat. Wolfgang H. Müller, Technical University of Berlin Prof. Dr.-Ing. Hans-Peter Leimer, HAWK University of Applied Sciences and Art Stephan Reinisch, Industrial Representative, Die Energieingenieure GbR				
Representative of the ASIIN headquarter: Monika Song und Dr. Natalia Vega				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				

[1] ASIIN Seal for degree programmes.

[2] TC 01 - Mechanical Engineering/Process Engineering; TC 02 - Electrical Engineering/Information Technology; TC 03 - Civil Engineering, Geodesy and Architecture.

Criteria used: European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of December 10, 2015 Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering/Information Technology as of December 9, 2011	

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Energy and Power Engineering	Bachelor of Engineering (B.Eng.)	/	6	Full time	/	8 semesters	180 ECTS	Fall semester 01.09.1957
Built Environment and Energy Engineering	Bachelor of Engineering (B.Eng.)	/	6	Full time	/	8 semesters	180 ECTS	Fall semester 01.09.1994

Shanghai Ocean University (SHOU) is a state university located in the industrial city Shanghai, which is one of the largest cities in the world with a population of around 26,875,500 inhabitants. The university, formerly known as Jiangsu Provincial Fisheries College, was founded in 1912. It has two campuses, namely, Huchenghuang Road campus in Pudong New Area and Jungong Road campus. Currently, the university has 12 colleges: College of Fisheries and Life Sciences, College of Marine Science, College of Food Science and Technology, College of Economics and Management, College of Information Technology, College of Engineering Science and Technology, College of Marine Ecology and Environment, College of Foreign Languages, College of Marine Culture and Law, School of Marxism, Department of Physical Education and Sport and the AIEN Institute. The institution has 12,000 full-time undergraduates and over 3,800 full-time graduate students, as well as more than 1,300 faculty members and staff, including over 800 teaching staff and researchers, among whom nearly 500 have senior professional titles and more than 600 are doctoral and master supervisors.

The College of Food Science and Technology aims to generate knowledge in the areas of aquatic product processing, food freezing and refrigeration, combining the disciplines of food science and engineering, refrigeration and cryogenic engineering. The college has 4 departments: Aquatic Products Processing and Technology, Food Science and Engineering, Refrigeration and Air Conditioning, and Chemistry, followed by many research and teaching

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

subunits of Aquatic Products Processing and Utilization, Biological Products of Marine and Limnology, Food Processing, Packaging, Refrigerating Engineering, Air Conditioning Engineering, Basic Chemistry, Applied Chemistry and etc.

For the Bachelor's degree programme Energy and Power Engineering the institution has presented the following profile in the self-assessment report:

"The energy and power engineering major cultivates highly qualified specialists with basic knowledge of relevant aspects, as well as those engaged in refrigeration system design, refrigeration unit design, refrigerated chain system design, air conditioning engineering design, refrigeration engineering installation and management, refrigeration equipment manufacturing, and related experimental research and development of refrigeration units and marketing.

Students in this programme should acquire a solid basic knowledge of mathematics, natural sciences, humanities and social sciences during their four years of study. They should systematically master the professional basic theories, professional skills and engineering practical abilities in the field of this specialty, and have the basic ability of developing, designing, operating and analyzing the equipment for energy conversion and utilization. They should also understand the development trends in the field of energy power and have the ability to innovate and design equipment and systems related to this field; have strong computer application skills, be able to skillfully read English literature in this field and have strong English communication skills; and have teamwork and enterprise production management skills. Students are able to take up various employment positions related to their major and knowledge through their studies, and have good ability to further their studies and personal development prospects."

For the Bachelor's degree programme Built Environment and Energy Engineering the institution has presented the following profile in the self-assessment report:

"Built environment and energy engineering programme focuses on theories, methods, techniques and practices in refrigeration, air conditioning, heating and ventilation engineering. It also focuses on cultivating talents with good scientific and cultural literacy, a high sense of social responsibility and innovation, and systematical basic knowledge, skills and competences of built environment and energy engineering.

Students will be employable in all aspects of the HVAC industry and related design research, engineering construction, equipment manufacturing and operation and other departments related to heating, ventilation, air conditioning, purification, cold and heat sources, management, marketing and teaching. Students are trained to be practical talent for research

and application with an international perspective, lifelong learning ability and versatile development.”

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:

- Module Handbook of Energy and Power Engineering Programme
- Module Handbook of Built Environment and Energy Engineering Programme
- Diploma Supplement Samples of Energy and Power Engineering Programme
- Diploma Supplement Samples of Built Environment and Energy Engineering Programme
- Objective-Module Matrixes for both degree programmes
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Based on the ASIIN Subject-Specific Criteria (SSC) as well as the provided self-assessment report (SAR) by Shanghai Ocean University (SHOU), the experts examine in detail whether the intended learning outcomes of the programme as defined by SHOU correspond with the competences as outlined by the SSC.

Both the description of learning outcomes in the self-assessment report (SAR) and the curriculum design in form of a learning module matrix for each programme are comprehensive and reasonable. In addition, a short English description of the learning outcomes is also presented in the Diploma Supplements for both degree programmes.

During the audit, the representatives of SHOU have briefly introduced the objectives and learning outcomes for both programmes. From the experts' point of view, subject-specific competences and transferable skills conveyed in the programme according to the matrices

and the module descriptions are indicative for a Bachelor's degree programme at level 6 of the European Qualification Framework (EQF).

The objectives and learning outcomes are clearly defined and published in the Diploma Supplement as well as on the university's website. As far as the experts are able to examine, however, the Module Handbooks and learning outcomes are only available on the English website, whose link is provided by SHOU, but not on the official website in Chinese. This is necessary for potential applicants as well as for other stakeholders.

The experts discuss the learning outcomes of each degree programme with a great concern to the following questions:

- What are the main differences between the two bachelor degree programmes?
- whether the programme objectives and learning outcomes are regularly reviewed and updated;
- whether the intended qualification profiles allow the students to follow the tends of technology development and take up an occupation corresponding to their education in the job market;
- How supportive is the management board of the university in terms of the development of these degree programmes?

The programme coordinators explain that the major named "Energy and Power Engineering" focuses on the refrigeration equipment and cooling systems, while the major named "Built Environment and Energy Engineering" specializes in enabling an in-door environment with the right temperature, humidity and cleanliness for people as well as animals to guarantee a good air quality. The in-door spaces refer to not only buildings but also mobile objects such as bus and subway.

According to SHOU, the curricula are reviewed every four years with regard to the latest development in the industry and the requirement on the job market. Last update of curricula happened in 2022. More practical courses such as AI (artificial intelligence) and IoT (Internet of Things) are added into the curricula according to survey feedback of the stakeholders. The experts are very happy knowing that the objectives and learning outcomes are continuously evaluated and developed by all relevant stakeholders.

The experts learn that graduates from both programmes have excellent job prospects, which was further affirmed by industry professionals. Some students opt to gain practical work experience for a few years before pursuing master's programmes. Over the past five years, the employment rate for graduates has exceeded 90%, with approximately 46% of students choosing to pursue a Master's degree.

In order to enable more practical courses with hands-on experience for both programmes, the university has invested more than one million RMB to build up modern laboratories in a separate building and the maintenance costs approx. 300 Thousand RMB.

In summary, the experts are satisfied with the qualification objectives and learning outcomes of each degree programme as they match EQF as well as ASIIN SSC criteria.

Criterion 1.2 Name of the degree programme

Evidence:

- Module Handbook of Energy and Power Engineering Programme
- Module Handbook of Built Environment and Energy Engineering Programme
- Diploma Supplement Samples of Energy and Power Engineering Programme
- Diploma Supplements Samples of Built Environment and Energy Engineering Programme
- Module Matrixes for both degree programmes
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

During the discussions, SHOU explains that the title of both bachelor degree programmes are stipulated by the Ministry of Education of the People's Republic of China. This specifically means that universities cannot pick any name they want, but have been given the most suitable one from a predefined list of titles. Originally, the programme was called “Heating and Power Engineering” in 1996, but at some point the name was changed to accommodate new regulations by the Ministry. The English translations are determined by the educational committee, which consists of the experts of various Chinese universities across China. Therefore, it is not possible to modify the English translations either. However, SHOU has put some Chinese explanations in the brackets behind the titles in order to be more specific and precise.

While the titles are named in line with the mentioned governmental regulations, Chinese universities are free to design the curricula of their programmes in accordance with their capabilities and the demands of the job market. The experts point out that there is a clear mismatch between the current titles and the set-ups of the curricula for both programmes. The respective curricula hold a much narrower focus than the titles imply, concentrating

mainly on the technical aspects of thermal engineering, such as refrigeration equipment, air-conditioning or heating systems. In reality, there are additional disciplines encompassed within the subjects "energy engineering" and "power engineering." For instance, the most popular courses in Europa are Energy Conversion and Storage, Power Generation and Distribution, Renewable Energy Systems, etc.

This mismatch between titles and curricula could potentially mislead potential applicants. The programme coordinators mention that they always explain the concrete programme settings to the prospective students at the meeting of admissions counselling.

To conform to the given titles, SHOU is suggested to redesign the curricula by increasing the corresponding course settings. Otherwise, the experts suggest SHOU choosing a name that adequately reflects the contents of both degree programmes under review. Moreover, a detailed and clear explanation should also be available on the official websites in Chinese and in English.

Criterion 1.3 Curriculum

Evidence:

- Module Handbook of Energy and Power Engineering Programme
- Module Handbook of Built Environment and Energy Engineering Programme
- Module Matrixes for both degree programmes
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Both degree programmes have a duration of four years and both curricula are divided into eight groups of modules. They are natural science, engineering fundamentals, engineering application, electives, general courses, foreign language, practice training, and graduation design (thesis).

In the self-assessment report as well as the module handbook, SHOU explains in detail the individual competences and skills that are associated with each of these module groups and which individual modules are contained in which group. The experts thus gain a distinct

overview of the curriculum content of both degree programmes (see Annex to this accreditation report).

During the first four semesters, the students lay the foundations for the more advanced courses by mainly acquiring basic knowledge in mathematics, physics, chemistry, engineering fundamentals, and English. The engineering fundamentals include Fluid Dynamics, Thermodynamics, Electrical and Electronic Technology as well as heat transfer, etc. General courses in the humanities and social sciences are spread throughout the entire curricula. The fifth to seventh semesters are dedicated to engineering application courses. Furthermore, the students can specialise through the choice of electives, which are mainly situated in the areas of air conditioning system, refrigeration technology, and heating as well as ventilation engineering, etc. In the final semester, students write their theses to finish the programme. The experts learn that there are no joint-courses for the two degree programmes, even if the contents of some courses are identical, because the number of the students is large enough for a separate session. The experts value the strong connection between the university and the industry, especially with regard to the regular excursions; trainings and the mandatory internship (see section 2.1).

The experts gain the impression that the overall objectives and learning outcomes of the degree programmes are systematically substantiated and updated within the individual modules and that the students gain the necessary skills, knowledge and competences for a successful career in local, national or even international companies and organizations. Nevertheless, when considering the curriculum arrangements, the expert team identify the presence of numerous separate modules with small ECTS credits. They have put forth a reasonable suggestion to group these subjects together, aiming to alleviate the workload on students and reduce their burden (see Section 2.1).

In terms of the curriculum contents, the experts take into account the feedback provided by alumni and industrial representatives. Based on this feedback, they have affirmed the importance of incorporating courses such as Building Information Modelling (BIM) and programming of mobile applications (APP) into the curriculum of both programmes under review. This adaptation is necessary to align with technological advancements and meet the evolving market demands.

Regarding the English course design and its implementation in both degree programmes, SHOU reports a significantly high pass rate for CET level 4 and 6 (College English Test). Additionally, Chinese lecturers conduct some courses like Heat Pipe and Exergy Analysis in a bilingual format. This approach reflects the efforts made to integrate English language proficiency and international perspectives. However, during the discussion with the students,

the experts find out that the students' English-speaking skills need improvement. Therefore, the expert group emphasize the importance of increasing the ECTS in mandatory English courses. If the students choose to work in international companies or to continue their studies in Master or PhD programmes abroad, they will benefit from acquiring English skills in their education, especially the ability of oral English. The experts suggest expanding the offering of English courses taught by native speakers, as well as introducing technical modules taught exclusively in English. This approach aims to enhance the English speaking abilities of both students and teachers. Moreover, it facilitates bilateral international exchanges. If an entire semester is conducted in English, foreign students can also apply for exchange programmes to study in China. This initiative benefits both national and international students, contributing to the university's international reputation.

Furthermore, Japanese and Korean companies in the refrigeration and cooling equipment industry have a significant global presence. Taking into account the feedback from alumni, the experts suggest offering elective courses in Japanese and Korean languages. This would provide students with better career opportunities in the job market, particularly in relation to these industries. By acquiring language skills in Japanese and Korean, students can enhance their competitiveness and expand their professional horizons.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- 2014-2018 Details of enrolment in Energy Specialty
- University website
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts understand from the documentation and their own working experience with Chinese universities, that the Chinese admission system, known as Gaokao, is a national college entrance examination that plays a crucial role in determining a student's eligibility

for higher education in China. It is a highly competitive and rigorous exam, covering subjects such as Chinese language, mathematics, foreign languages, and sciences. The results of Gaokao are applied by universities to assess and select students for admission.

According to the website of Ministry of Education of the People's Republic of China there are 1270 universities and colleges providing bachelor degrees in China. Students apply with their results to those Universities eligible to them and the Universities follow their own admission procedure. If students are declined although they fulfil the basic entry requirements, Universities have to explain why they were not admitted.

Chinese universities are often categorized into different tiers based on their academic reputation and overall quality of education. Tier 1 universities are considered top-tier institutions with the highest standards of excellence and are typically well-known both domestically and internationally. Tier 2 universities are also reputable and offer quality education but may not have the same level of recognition as Tier 1 institutions. Tier 3 universities are generally less prestigious. Admission to Tier 1 universities is highly competitive and often requires exceptional performance in Gaokao.

Shanghai Ocean University (SHOU) is typically classified as a Tier 2 university in China. While it is well-regarded and offers quality education, it is not considered a top-tier institution. The university's academic reputation and overall standing may vary depending on specific disciplines and programmes.

The experts find the terms of admission to be binding and transparent as they are available on SHOU's website in both Chinese and English. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

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

[...]

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Module Handbook of Energy and Power Engineering Programme

- Module Handbook of Built Environment and Energy Engineering Programme
- Diploma Supplements samples of Energy and Power Engineering Programme
- Diploma Supplements samples of Built Environment and Energy Engineering Programme
- Module Matrixes for both degree programmes
- Student Score List
- Discussions during the audit

Preliminary assessment and analysis of the experts:
The study programmes under review are divided into modules, which comprise a sum of teaching and learning. The experts find the structure of the modules to be adequate and manageable. Both programmes also include a certain variety of elective courses among which the students can choose in order to develop individual specializations. In order to help them make that decision of elective courses, students may talk to a teaching counsellor or tutor.

As already mentioned, the experts positively acknowledge the professional training units included in the curriculum of both programmes with regard to the professional perspectives of students.

Curriculum structure

The experts raise inquiries regarding the division of curricula into smaller modules, such as 1.5 ECTS for HVAC (heat, ventilation, air-conditioning) System Design. In response, the programme coordinators explained that it aligns with the national guidance for the 2018-2022 period, which aims to offer a wider range of subject choices. This approach allows students to explore their areas of interest and delve deeper into specific topics based on their personal preferences. Furthermore, the programme coordinators also fulfill the role of study tutors, providing guidance to students in selecting their elective courses. It is worth to be mentioned that certain subjects do not require written exams. Instead, students have the option to complete these courses through assignments or oral presentations.

The experts share their experiences and express concerns that the division of curricula into smaller modules may lead to students losing their sense of direction and requiring clearer guidance from tutors. This approach could also result in more time-consuming assessments and an increased focus on exam performance rather than actual knowledge acquisition. As a solution, the experts suggest clustering the smaller modules by combining relevant

knowledge and suitable contents. This would assist students in understanding the relevance of different topics and alleviate the pressure associated with examinations.

Internship

The practice training is mainly planned from 4th to the 7th semesters. Cognition practice is arranged in 4th semester to establish perceptual knowledge of professional courses. The main content of the cognition practice is to visit the relevant equipment system. Metal-working practice is arranged in the 5th semester, in which students are required to understand the most basic process of mechanical processing. Production practice is arranged in the 6th semester to train practical ability. This practical training approach aims to bridge the gap between academia and industry.

At SHOU, there are two types of practical trainings designed: short-term practice training and long-term internships. During the short-term practice training, students engage in practical sessions at on-campus or off-campus laboratories. They receive guidance from experienced professionals and experts in the field. These short-term training sessions typically last for a day, allowing students to gain hands-on experience and apply their theoretical knowledge.

In contrast, long-term practice training involves students undertaking internships at companies or institutions for a minimum duration of two weeks. This extended period allows students to immerse themselves in a professional work environment, and apply their academic knowledge to real-world scenarios. The total duration of practical training, combining both short-term and long-term experiences, adds up to seven weeks.

The experts hold the belief that internships play a crucial role in enhancing students' education. Furthermore, they believe that a longer duration of internships in the industry would greatly benefit students in developing professional skills. This viewpoint is supported by industrial representatives who also express a desire for longer internship periods.

To address this, the experts recommend two potential approaches. Firstly, they suggest prolonging the mandatory internship period, which allows students to gain more practical experience and acquire a deeper understanding of their chosen field. The internship should last at least three months and, in the best case, six months. Additionally, they propose offering seminars taught by alumni or industrial representatives. This would provide students with valuable insights from real-world perspectives.

By implementing these recommendations, students can expand their professional networks and better prepare themselves for their future careers. Increasing contact with the

industry ensures a well-rounded education that aligns with market demands and enhances students' employability.

Mobility

SHOU holds cooperation with many international universities in Japan, South Korea, and the United States and provides scholarships and allowances for students who wish to study abroad. In addition, both programmes offer 2-4 week-long overseas study tour projects during the summer holidays. However, it is noted that none of the student representatives have participated in exchange studies or expresses plans to apply for this opportunity. In light of this, the experts highlight the importance of making more promotion about study abroad opportunities transparently and readily available on the website. They also suggest to expand the cooperation with international universities and institutions to more countries. By prioritizing the development of English language skills and facilitating access to international opportunities, SHOU can effectively provide students with valuable experiences abroad and enhance their global competencies.

Criterion 2.2 Workload and credits

Evidence:

- Self-Assessment Report
- Module Handbook of Energy and Power Engineering Programme
- Module Handbook of Built Environment and Energy Engineering Programme
- Module Matrixes for both degree programmes
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to European standards, the ECTS (European Credit Transfer and Accumulation System) plays a crucial role in the international recognition of degree programmes and provides essential information for students. However, the experts have learned that the traditional Chinese credit system differs from ECTS. In the Chinese system, credits are primarily based on contact hours, with 16 theoretical contact hours or 32 practical training contact hours considered equivalent to one Chinese credit.

To convert Chinese credits to ECTS credits, a multiplication factor of 1.5 is applied. The experts recognize that the module descriptions clearly specify the expected workload for students, including both contact hours and dedicated time for self-study. This information

helps students understand the anticipated workload associated with each module and enables better planning and time management.

By acknowledging the importance of aligning with ECTS and providing clear module descriptions that outline the workload expectations, SHOU ensures transparency and facilitates its international recognition. This enables students to make informed decisions and promotes a smoother credit transfer process for international mobility and collaboration.

The experts raise a valid concern regarding the number of ECTS credits earned in both programmes and the workload associated with them. They have observed that while the programmes have a duration of four years, students only accumulate 180 ECTS credits, averaging around 22 ECTS per semester. In Europe, it is customary for one semester to consist of 30 ECTS credits. Therefore, a four-year bachelor's programme would typically be 240 ECTS credits (30 ECTS x 8 semesters).

Furthermore, the experts note that the workload per year, calculated based on the current credit allocation (180/4 x 30 = 1350 hours), falls below the minimum requirement of 1500 hours per academic year in Europe. In Europe, a workload of 1500-1800 hours per academic year is considered necessary, with a ratio of 25-30 hours per credit (1500 h: 1 CP = 25 h, 1800 h: 1 CP = 30 h).

In addition, they observe that the GENERAL COURSES with 30 ECTS do not relate to the subject-specific training and therefore cannot be credited in an international certification. Exception are following courses: Foundations of Computer Application, Competences and Basic Skills and Information Technology.

These observations indicate that there may be a discrepancy between the credit allocation and the corresponding workload in the current programme structure. The experts suggest reviewing and adjusting the credit allocation to ensure alignment with European standards and ensure that students are provided with an adequate workload that meets the minimum requirements. This would contribute to enhancing the quality and recognition of the programmes internationally.

In the discussion, the student representatives are well informed of the amount of credits for each course and are generally satisfied with the distribution of the workload. The experts furthermore learn that Student representatives say that they only spend 1-2 hours for self-studies per day. There are a plenty of spare time investing in their hobbies such as singing in a choir.

In conclusion, the experts reach a consensus that the workload in the current programmes is generally insufficient and the credit allocation for courses should be reviewed. To meet

the standards set by the European regulations, they recommend implementing measures to increase the number of ECTS credits and redefining the workload of existing modules.

By increasing the ECTS credits, the programme can better align with European standards and ensure that students are exposed to a more comprehensive academic workload. By redefining the workload of existing modules can help ensure a more balanced and appropriate distribution of study hours, promoting a more effective and engaging learning experience for students.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- List of Funding for Scientific Research Projects 2016-2020
- Students Innovative Project Awards and Competition Awards
- Students Innovation Projects List
- Teaching and Research Awards
- University website
- Discussions during the audit

Preliminary assessment and analysis of the experts:

From the information presented and the discussions held, it is evident that pedagogical skills and effective teaching methodologies hold significant value at SHOU and within the reviewed programmes. The evaluation of pedagogical skills and methods is conducted regularly, and the teaching staff is provided with workshops and training opportunities to enhance their abilities.

In terms of class sizes, basic courses like “Linear Algebra” are typically taught in larger classes, accommodating approximately 60 to 100 students. On the other hand, professional basic courses are conducted in smaller classes, with an average of 30 to 70 students. In the case of experimental courses, the class size is even smaller, with around 5 to 7 students per

group. Company and factory visits are organized for groups of 20 to 30 students, offering them practical exposure to industry facilitation.

The experts believe that it is better to provide students with a more engaging and focused educational environment by maintaining smaller class sizes for specialized courses and incorporating practical elements.

Some modules not only include theoretical courses, but also experimental courses related to the theoretical teachings. In addition to in-class teachings, practical training is an important part of undergraduate education at SHOU. In addition, the college has established various off-campus practice bases with some partnering enterprises where students may also spend time to do practical work. These bases can provide training opportunities for about 100 students each year. At the same time, students can also choose professors' research projects for practice training on campus. Each student must participate in professional comprehensive experiments, course projects, innovation and entrepreneurship training, as well as conduct research for their Bachelor's thesis.

The experts are also informed that online teaching is widely used in the applying programmes. The university has built an information system for teaching management and an online teaching platform. Moreover, three online courses have been developed, which provide sufficient resources for students to learn independently and improve their self-learning capability.

Overall, the experts express their satisfaction with the online virtual tour of the experimental facilities at SHOU. They are particularly impressed by the modern laboratories, which they see as a resolution to the effective teaching methodology employed at the university. The availability of well-equipped and up-to-date laboratories is seen as essential for delivering high-quality educational content and facilitating effective student learning.

Criterion 2.4 Support and assistance

Evidence:

- Self-Assessment Report
- University website
- Discussions during the audit

Preliminary assessment and analysis of the experts:

In order to support students in completing their studies on time with good achievements, the university provides academic and personal support and assistance through various

means. Each college has a dedicated teaching office, which is under the guidance of the vice dean of the college and is responsible for the teaching management of the college.

SHOU equips every 150 undergraduates with a full-time undergraduate counsellor who carries out student management, such as guidance on campus induction and mental health. They also guide them to think about their career aspirations, to choose their courses accordingly and they provide information on potential future employers.

For their academic development, each class is assigned a class tutor who supports them in their learning process and provides students with suggestions and counselling for their management of the programme. The practical parts of the study programme are supported by an off-campus tutor who encourages students to conduct practical training in companies and to communicate with professional engineers, in order to improve their innovation and entrepreneurial capabilities.

Furthermore, the experts learn that SHOU provides students with an online portal where they can give feedback regarding their experiences and raise any questions or issues they may have. The university has dedicated campus staff who are responsible for addressing and resolving the concerns put forward by students through this platform. The experts recognize that this approach fosters a culture of open communication and continuous improvement within the university community.

The experts inquire about the level of support, which students receive in their choice of courses and career plans. The student representatives find that the teaching staff at SHOU provide sufficient information and are always available to the students. Additionally, the academic tutors play a crucial role in assisting students with their course selections and career decisions.

Overall, the experts conclude that SHOU has established a comprehensive support system for students, which helps them to achieve the learning outcomes.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Sample of Exams and Final Thesis
- Approaches for Violations of National Education Examination Regulations
- Regulations on Test Papers Printing of Shanghai Ocean University
- Examination Room Rules for Student of Shanghai Ocean University
- Proctor's Duties of Shanghai Ocean University
- Specification for Examination Paper Grading of Shanghai Ocean University
- Provision on the Work on Undergraduate Thesis (Project) of Shanghai Ocean University
- Discussions during the audit

P**reliminary assessment and analysis of the experts:**

The entirety of the course content within the reviewed study programmes undergoes examination. The specific type of examination is outlined in the module descriptions. The selection of examination types is based on their competency focus and can include written exams, oral exams, presentations, project work, experiments, or a thesis.

In each semester, students are required to take a maximum of seven exams. Exams for general courses are conducted during the three final weeks of the semester, while exams for major courses may also take place throughout the semester. To ensure that there are no conflicts in exam schedules, the university centrally arranges the schedules for mid-term tests and semester-end exams. The lecturers will provide assignment and test plans to the students in the first class, and all relevant information can be accessed online.

The overall grade is determined by two components: the regular grade and the final exam score. The regular grades are primarily based on students' study attitude, attendance, in-class performance, quizzes, and mid-term exams. Typically, the regular grades contribute to 30-50% of the overall grade, while the final exam score makes up the remaining 50-70%. A minimum score of 60 in the overall course grades is considered a passing grade. Students will only receive credits if they pass the module. Failed exams can always be repeated once; if the second attempt also fails, the module should be repeated completely. However, elective courses can only be retaken, if a student does not pass them initially.

Theoretically, a module can be repeated infinitely, yet additional repetition fees have to be paid for, since the student fees are based on the respective number of courses taken. The students approve the examination system and are content with the workload. Course grades are recorded in the student's file according to the overall assessment results. In the event that a student fails to obtain 50% of the credits in the third year of study, they will receive a notification and be downgraded to the previous level of the study programme.

During the final semester, students are required to undertake a 16-week-long Bachelor's thesis. They are expected to independently complete thesis (projects) tasks and write their thesis under the guidance of the faculty. The Bachelor's projects can also involve collaboration with the industry, in which case the student is supervised by both an industry representative and a university instructor to ensure adherence to the project guidelines. The evaluation of the Bachelor's thesis includes a comprehensive assessment of the on-site defence and thesis review. The thesis defence is a public session, open for anyone to attend.

SHOU has submitted several exams and Bachelor's theses for peer review. Although none of the experts are proficient in the Chinese language, they were still able to assess the quality of the Bachelor's thesis based on the document's scope, bibliography, format, and partially provided English abstract. The experts determine that the criteria related to the examination system, concept, and organization have been met, and that the exams are suitable for evaluating the attainment of the intended learning outcomes.

4. Resources

Criterion 4.1 Staff

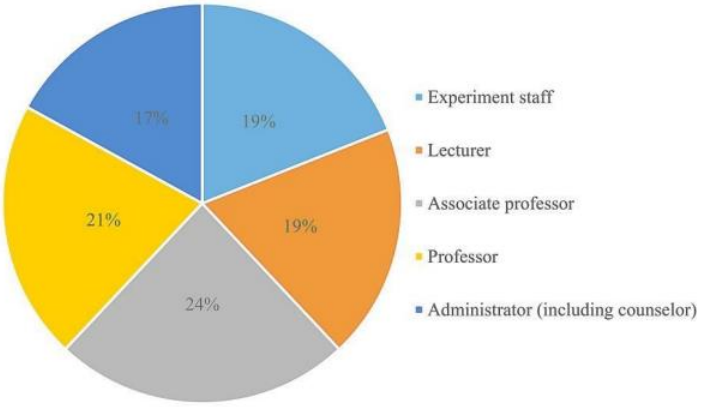
Evidence:

- Self-Assessment Report
- Staff Handbook of Energy and Power Engineering Programme
- Staff Handbook of building Environment and Energy Engineering Programme
- Discussions during the audit

Preliminary assessment and analysis of the experts:

At SHOU, staff members hold various academic positions, including professors, associate professors, and lecturers. These positions are determined based on factors such as research activities, publications, academic education, student supervision, and other supportive contributions. Furthermore, the specific responsibilities and tasks assigned to staff members in terms of teaching, research, and supervision vary depending on their academic position.

The college currently boasts a faculty consisting of 135 members, including 31 professors, 36 associate professors, and 12 doctoral supervisors. It has formed a scientific research team comprising individuals with exceptional educational backgrounds and teaching capabilities. Additionally, a "teacher-engineer" team has been established, which maintains a well-balanced structure in terms of titles, age, education, and other relevant factors. This team brings a wealth of practical experience and dedication to their work. The pie chart below provides a visual representation of the composition of the college's staff.



Currently, there are a total of 27 full-time teachers in the Energy and Power Engineering and Built Environment and Energy Application Engineering programmes. Among these teachers, 5 hold the position of professor, 12 are associate professors, 8 are lecturers, one is a senior engineer, and one is an engineer. Approximately 18.5% of the staff members

hold senior professional and technical titles. All faculty members possess a master's degree or higher, with 22 of them holding a doctoral degree, accounting for 85.2% of the total. Out of those, 23 (85.2%) obtained their degrees from other universities. Additionally, 6 teachers have industry work experience, while 5 individuals possess study and work experience related to their respective majors from abroad.

Upon reviewing the curriculum vitae of the staff members prepared by SHOU as part of their self-assessment report, the experts reach the conclusion that the teaching staff is exceptionally qualified and possesses the necessary expertise to cover all areas required for both degree programmes.

SHOU has set a minimum workload requirement of 108 hours per year for each faculty member in terms of undergraduate theoretical and experimental teaching. In addition to their teaching responsibilities, faculty members are expected to provide student tutoring and review homework, and they are encouraged to guide students in innovation and entrepreneurship endeavours. According to feedback from student representatives, teachers are also available outside of class to address various academic questions and student concerns.

To foster students' international communication skills, the applied programmes have faculty members capable of teaching in English. Furthermore, certain courses (Heat pipe, cold and heat source technology, Air conditioning and Exergy analyse) are offered in English for students to learn and communicate effectively in professional English.

In summary, the experts confirm that the composition and qualifications of the teaching staff are well-suited for the successful implementation and sustainability of the degree programmes. However, the experts suggest that hiring more laboratory staff would be beneficial to maximize the utility of experimental trainings. This can ensure that students receive adequate guidance and support during their practical sessions and further optimize the utilization of the experimental facilities.

Criterion 4.2 Staff development

Evidence:

- Appendix C – In Chinese Research Projects 2016-2020
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The self-assessment report indicates that SHOU prioritizes staff development to improve the quality, competence, and performance of their teaching staff.

To support the professional growth of new staff members, SHOU conducts one-month pre-job training sessions annually and assigns them to comprehensive training programmes in Shanghai for three to four months. The university has also implemented the "Mentor Trial System," which pairs mentors with newly appointed staff members who hold non-senior professional and technical positions and are under the age of 35. This mentorship aims to facilitate their progress and development.

To strengthen the establishment of a "teacher-engineer" model and foster a high-level faculty with an international perspective, the college provides opportunities for all full-time faculty members to undergo on-the-job training in companies or study abroad for one year. This integration of "teachers and engineers" is considered crucial.

Furthermore, it is specified that lecturers must have at least one year of experience in either a company or a governmental institute within the past five years before being eligible for promotion to the senior level. The college encourages staff members, particularly those who are young and middle-aged, to visit and study abroad. Each year, 2-3 staff members from the college receive funding from the Ministry of Education, Shanghai Municipal Education Commission, or the university itself for training and studying abroad for a duration of six to twelve months.

During the discussion with representatives of the teaching staff, the experts inquire about the university's support for attending academic conferences. The response indicated that the university does support such visits if there is adequate funding available to provide economic assistance. For instance, one professor had the opportunity to attend an international conference in Montreal, Canada, and deliver a speech in 2019. However, due to

the outbreaks of pandemic, offline meetings were not recommended in the past three years.

In summary, the experts confirm that SHOU provides ample support mechanisms and opportunities for the teaching staff who wish to enhance their professional and didactical skills. The university's initiatives, such as pre-job training, comprehensive training programmes, mentorship systems, on-the-job training, and study abroad opportunities, contribute to the continuous development and growth of the teaching staff.

Criterion 4.3 Funds and equipment

Evidence:

- Self-Assessment Report
- Equipment Procurement in Recent Years-Energy and Power Engineering Programme
- Equipment Procurement in Recent Years-Built Environment and Energy Engineering Programme
- Laboratory Information
- Office Information of College
- Live video tour of laboratories and equipment
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to the self-assessment report, SHOU allocates funding to staff members for the improvement of their professional and teaching skills. Each staff member receives RMB 100,000 yuan per year for this purpose. Additionally, staff members who participate in practical training in relevant enterprises, scientific research institutions, or governmental institutions are eligible for an additional funding of RMB 50,000 yuan per year. Furthermore, new staff members who hold a doctoral degree receive an extra RMB 50,000 yuan per year for their professional development.

Over the past four years, a substantial investment of nearly RMB 40 million yuan has been made towards laboratory construction. Additionally, RMB 2 million yuan has been allocated

for curriculum development and university student innovation projects. Moreover, the research funding and budgets of the college have witnessed consistent growth over the past four years. In 2018, the budget reached RMB 6 million yuan, while the research funding exceeded RMB 20 million yuan. To promote teaching research and innovation, the college has established a dedicated team, and team members receive performance-based salaries. The funding details for significant equipment in recent years are provided in Appendix G.

It is worth to mention that SHOU has made significant investments, amounting to several RMB million yuan, in constructing a dedicated laboratory building equipped with state-of-the-art experimental instruments for the two majors - Energy and Power Engineering and Built Environment and Energy Engineering.

As the audit was conducted online, it is not possible for the experts to physically visit the laboratories and teaching areas. However, SHOU provides extensive documentation, including lists of laboratories and equipment, to compensate for this limitation. Additionally, during the audit, members of the teaching staff conduct live tours showcasing some of the important laboratory spaces, such as the Refrigeration and Air Conditioning Principle Lab, Refrigeration and Air Conditioning Automation Lab, and Fluid Mechanics Lab. There are specialized lab employees, who are responsible for conducting regular inspections and upgrading the equipment as needed.

After the online tour, the experts ask the number of engineers in the labs. The answer is eight professors, three engineers and one technical staff. Considering the workload of maintenance, the experts suggest to hire more lab staff to ensure that every student has access to the laboratory.

Overall, the experts express their satisfaction with the online virtual tour of the experimental facilities at SHOU. They are particularly impressed by the modern laboratories, which they see as a resolution to the effective teaching methodology employed at the university. The availability of well-equipped and up-to-date laboratories is seen as essential for delivering high-quality educational content and facilitating effective student learning. The experts are thoroughly convinced that the teaching and office facilities, especially the labs at SHOU are more than sufficient for both students and staff members. The current funding is adequate to maintain the current standards and, if necessary, procure additional instruments.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module Handbook of Energy and Power Engineering Programme
- Module Handbook of Built Environment and Energy Engineering Programme
- University website
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts thoroughly review the module descriptions for both programmes and determine that they provide comprehensive information regarding the content, learning outcomes, examinations, workload distribution, and grading.

The students, who actively participate in the discussions, confirm that the course information is consistently accessible online. They also emphasize that the teaching staff provides detailed information about examinations and course content at the beginning of each course. This ensures that students have clear expectations and guidelines for their studies.

The experts note that the bibliography of the courses contained in the module handbooks is mainly in Chinese language. According to the programme coordinators and teachers, the original textbooks published in English are too expensive and they cannot afford them. The experts emphasize the importance of using English publications (in original language), relevant for each area, in the courses, and suggest to assign more budget for this, in order to enable students to access to English books and papers, for example, in the library through databases, online books, etc.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Degree and Diploma Certificate Template of Energy and Power Engineering Programme
- Degree and Diploma Certificate Template of Built Environment and Energy Engineering Programme
- Diploma Supplements Samples of Energy and Power Engineering Programme

- Diploma Supplements Samples of Built Environment and Energy Engineering Programme
- Student Transcript Sample of Energy and Power Engineering Programme
- Student Transcript Sample of Built Environment and Energy Engineering Programme
- Student Academic Record Sample of Energy and Power Engineering Programme
- Student Academic Record Sample of Built Environment and Energy Engineering Programme
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Upon graduation, each student is awarded a Diploma certifying the successful completion of the programme. In addition to the Diploma, students also receive a Diploma Supplement. The Diploma Supplement includes essential information about the studying programme, such as the curriculum, individual grades achieved, the overall average grade, and an overview of the higher education system in China. This documentation ensures transparency and enhances the recognition of the student's qualifications both nationally and internationally.

Criterion 5.3 Relevant rules

Evidence:

- Regulations pertaining to courses, admissions, degrees, examinations, quality assurance available in English

Preliminary assessment and analysis of the experts:

Based on the documents provided and the discussions held during the audit, the experts learn that SHOU follows a policy of transparency and openness when it comes to rules and regulations. Additionally, comprehensive syllabi outlining the course contents are provided to students at the beginning of each course. The experts have also engaged in discussions with the students, who confirm that they feel well informed about the regulations and are comfortable with the access to information regarding their degree programmes.

The experts express their impression that there may be some shortcomings in the availability of measures and channels for necessary information flow at SHOU. One specific example highlighted is the absence of a dedicated website for the two bachelor programmes, with only a general website available for the food college.

Furthermore, the English version of the website does not consistently align with the Chinese version in terms of content. These observations indicate that there is room for improvement in ensuring consistent and comprehensive information dissemination, particularly in terms of programme-specific details. Addressing these concerns would enhance the accessibility and clarity of information for both local and international students.

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

[…]

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Teaching Quality Evaluation Form
- Rules for Quality Assurance
- Questionnaire for Employment Institutes and Graduates
- Discussions during the audit

P**reliminary assessment and analysis of the experts:**

SHOU has implemented a comprehensive quality management system to ensure continuous development and improvement of its programmes. As part of this system, all modules undergo an annual review process based on feedback from various stakeholders. If necessary, modules are updated based on the input received from stakeholders, including industry partners and alumni.

Course evaluations play a central role in the feedback system. Each semester, SHOU conducts mid-term and end-of-term teaching inspections, inspections of bachelor theses, and reviews of teaching materials such as lecture plans and exam papers. These inspections aim to identify and address any issues that may arise in teaching and management. For instance, the university and faculties carry out random checks on examination papers each semester as part of the review process.

In addition to the feedback system, SHOU conducts an in-depth analysis of students' examination results and evaluates staff performance based on student feedback each semester. This allows the faculty to monitor the distribution of examination results and gather valuable insights into the effectiveness of their teaching methods. To support professional development, experienced teachers are assigned as mentors to assist newer staff members.

The institution's commitment to continuous improvement is reflected in its high graduation rates. An impressive 98.28% of students enrolled in both degree programmes complete their studies within the four-year timeframe, and 100% of students graduate within six years.

To ensure the continuous improvement of teaching quality, SHOU actively engages in various evaluation processes conducted by authoritative bodies. The university participates in the evaluation of undergraduate teaching organized by the Ministry of Education, as well as the premium undergraduate major evaluation organized by the Shanghai Education Commission. These evaluations form part of a comprehensive teaching quality assessment mechanism that involves the collaboration of governing departments, institutions, schools, teachers, and students. These assessments encompass both internal and external evaluations, providing a holistic perspective on the effectiveness of the university's teaching methods and practices.

The food college at SHOU attaches great importance on gathering feedback from the job market. To facilitate this, the college organizes school employment information conferences where employers are invited to provide direct feedback. This face-to-face interaction allows for valuable insights into the needs and expectations of the industry.

Additionally, the college conducts annual surveys using questionnaires to gather feedback from both graduates and employers (see Appendix U). These surveys serve as a means to collect suggestions and recommendations on undergraduate training, which in turn inform the revision of teaching plans and curriculum.

Furthermore, the college recognizes the importance of leveraging alumni resources. Feedback from alumni is collected during their visits to the university for celebrations and other

occasions. This establishes a graduate tracking mechanism, enabling the college to monitor and follow the career development of its alumni.

According to the University, each semester students are required to submit a form to evaluate the quality of the teacher's teaching, otherwise they will not be able to choose courses for the next semester. The results of the evaluation are analysed and are used for the improvement of the teaching methods of the teaching staff and for the evaluation of the quality of the teaching staff. During the audit, students confirm that they anonymously evaluate teaching using the Teaching Management System (URP). Regarding the feedback, the experts learn that the results are not discussed with the students in the courses. The students explain that the results are published and they can see them there. The lecturers confirm that they do not give feedback directly to the students in the courses, but that the faculty manages this. Therefore, the expert team is of the opinion that a systematic feedback loop needs to be introduced within the course evaluation.

Thus, the experts acknowledge that SHOU's feedback-driven approach reflects its dedication to continuously monitor and enhance the quality of its programmes. Through regular evaluations and engagement with stakeholders, SHOU demonstrates its commitment to improving teaching and management practices for a better student learning experience.

D Additional Documents

No additional documents needed.

E Comment of the Higher Education Institution

The institution refrains from providing a statement.

F Summary: Expert recommendations (12.07.2023)

Taking into account the additional information and the comments given by SOU, 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 Energy and Power Engineering	With requirements for one year	30.09.2028	–	–
Ba Built Environment and Energy Engineering	With requirements for one year	30.09.2028	–	–

Requirements

For both programmes

A 1. (ASIIN 1.2) Ensure that the names of the degree programmes as well as their English translation reflect the intended objectives and learning outcomes as well as the curriculum content.

A 2. (ASIIN 1.3) Introduce courses about Building Information Modelling (BIM) and programming of mobile applications (APP) into the curriculum.

A 3. (ASIIN 1.5) Verify and align the students' total workload with the awarded ECTS points.

A 4. (ASIIN 5) Introduce a systematic feedback loop within the course evaluation.

Recommendations

For both programmes

E 1. (ASIIN 1.3) It is recommended to cluster and combine the smaller modules in well-matched units.

E 2. (ASIIN 1.3) It is recommended to prolong the mandatory internship period.

E 3. (ASIIN 1.3) It is recommended to increase the level, methodology and ECTS of the English language courses offered in both programmes, in order to strengthen the English language competences of students

E 4. (ASIIN 1.3) It is recommended to expand the cooperation with international universities and institutions to more countries.

E 5. (ASIIN 1.3, 4) It is recommended to include more English publications (in original language), relevant for each area, in the bibliography and consider it in the courses and to improve the students' access to English books and papers, for example, in the library through databases, online books, etc.

E 6. (ASIIN 3.1) It is recommended to hire more laboratory staff, in order to maximize the utility of experimental trainings.

E 7. (ASIIN 4.1) It is recommended to make more accessible in Chinese and English language all the relevant information for both bachelor programmes on the university website.

G Comment of the Technical Committees

Technical Committee 01 – Mechanical Engineering/Process Engineering (08.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure. From its point of view, building information modelling is not as relevant in mechanical or electrical engineering as it is in civil engineering. Additionally, from the committee's point of view, the programming of apps is too specialised to be necessary for the implementation of the study objectives. Therefore, the corresponding requirement should be reduced to BIM and not be given for the bachelor's degree programme energy and power engineering. Finally, the committee suggests an editorial change in recommendation 7.

The Technical Committee 01 – Mechanical Engineering/Process Engineering recommends the award of the seals as follows:

Degree Programme	**ASIIN Seal**	**Maximum duration of accreditation**	**Subject-specific label**	**Maximum duration of accreditation**
Ba Energy and Power Engineering	With requirements for one year	30.09.2029	–	–
Ba Built Environment and Energy Engineering	With requirements for one year	30.09.2029	–	–

Technical Committee 02 – Electrical Engineering/Information Technology (04.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the accreditation procedure in detail. They focus in particular on the requirements A2 and A4. Although they can understand the usefulness of integrating courses on Building Information Modelling (BIM) and mobile application programming (APP), they do not consider this aspect to be so urgent that they would necessarily insist on/require it. Therefore, they propose to change the requirement into a recommendation. Regarding requirement A4, they report that the need for a systematic feedback loop is not described in the experts' report. In fact, the HEI seems to have a feedback system in place, but it is not explained in detail in the report. The TC therefore proposes to change this requirement into a recommendation as well.

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 Energy and Power Engineering	With requirements for one year	30.09.2029	–	–
Ba Built Environment and Energy Engineering	With requirements for one year	30.09.2029	–	–

Technical Committee 03 – Civil Engineering, Geodesy and Architecture (04.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the accrediting procedure and follows the assessment of the peers without any changes.

The Technical Committee 03 – Civil Engineering, Geodesy and Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Built Environment and Energy Engineering	With requirements for one year	-	30.09.2029

H Decision of the Accreditation Commission (22.09.2023)

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

The Accreditation Commission discusses the procedure and follows the assessment of Technical Committee 01 regarding the initial requirement A2 (now A3). In addition, the Accreditation Commission decides to delete the part of requirement A2 concerning the introduction of programming of mobile applications (APP) into the curriculum, as this content does not necessarily have to be part of the curriculum of the degree programmes under review. Particularly, the Accreditation Commission discusses concerning the recommendation E2 the duration of the internship included in the degree programmes under review, as the Chinese industry representatives have explicitly complained about this. From the point of view of the Accreditation Commission, the internship should last at least 3 months and in the best case still 6 months. Furthermore, the Accreditation Commission makes some editorial changes in A2 (before A3), E2 and E7.

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 Energy and Power Engineering	With requirements for one year	30.09.2029	–	–
Ba Built Environment and Energy Engineering	With requirements for one year	30.09.2029	–	–

Requirements

For all degree programmes

A 1. (ASIIN 1.2) Ensure that the names of the degree programmes as well as their English translation reflect the intended objectives and learning outcomes as well as the curriculum content.

A 2. (ASIIN 1.5) Verify and increase the students' total workload with the awarded ECTS points.

A 3. (ASIIN 5) Introduce a systematic feedback loop within the course evaluation.

For Bachelor Built Environment and Energy Engineering

A 4. (ASIIN 1.3) Introduce courses about Building Information Modelling (BIM) into the curriculum.

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to cluster and combine the smaller modules in well-matched units.

E 2. (ASIIN 1.3) It is recommended to extend the mandatory internship period to a minimum of three months.

E 3. (ASIIN 1.3) It is recommended to increase the level, methodology and ECTS of the English language courses offered in both programmes, in order to strengthen the English language competences of students.

E 4. (ASIIN 1.3) It is recommended to expand the cooperation with international universities and institutions to more countries.

E 5. (ASIIN 1.3, 4) It is recommended to include more English publications (in original language), relevant for each area, in the bibliography and consider it in the courses and to improve the students' access to English books and papers, for example, in the library through databases, online books, etc.

E 6. (ASIIN 3.1) It is recommended to hire more laboratory staff, in order to maximize the utility of experimental trainings.

E 7. (ASIIN 4.1) It is recommended to make all relevant information for both Bachelor programmes accessible in Chinese and English language on the university website.

Appendix: Programme Learning Outcomes and Curricula

There are no published objectives and learning outcomes for the degree programmes.

The following **curriculum** for the **Bachelor's Programme Energy and Power Engineering** is presented:

Curriculum of Energy and Power Engineering Program (2022 Version)															
Note: CP-Credit Point, S-Semester, L-Lecture,P-Practice, W-Week		Type	Chinese CP	ETC CP	Workload		S1	S2	S3	S4	S5	S6	S7	S8
Competence fields	Modules				Contact Hours	Self-study Hours	CP	CP	CP	CP	CP	CP	CP	CP
Natural Sciences	Advanced Mathematics A(1)	L	5	5	80	70	5							
	Advanced Mathematics A(2)	L	5	5	80	70		5						
	Linear Algebra B	L	2	2	32	28		2						
	Probability Theory and Mathematical Statistics	L	3	3	48	42			3					
	College Physics A	L&P	5	5	80	70		5						
	College Physics Experiment	P	1	2	32	28		2						
	General Chemistry	L&P	3	3	48	42				3				
	General Chemistry Experiments	P	1	2	32	28				2				
			25	**27**	**432**	**378**								
Engineering Fundamentals	Modern Engineering Graphics A	L&P	3	4	64	56	4							
	Fundamentals of Artificial Intelligence Programming	L&P	2.5	3	48	42		3						
	Calculation Methods and Applications	L&P	1.5	2	32	28				2				
	Introduction to Energy and Power Engineering	L	1	1	16	14		1						
	Engineering Thermodynamics	L&P	3.5	4.5	72	63			4.5					
	Fundamentals of electrical and electronic technology	L&P	3	3.5	56	49			3.5					
	Engineering Mechanics	L&P	3.5	4.5	72	63			4.5					
	Fundamentals of Mechanical Design	L&P	3	4	64	56				4				
	Principle of Automatic Control	L	2	2	32	28				2				
	Fluid Dynamics	L	2	2	32	28				2				
	Fluid Dynamics Experiment	L&P	0.5	1	16	14				1				
	Heat Transfer	L&P	3.5	4	64	56				4				
			29	***35.5***	**568**	**497**								
	Principles of Refrigerating & Equipment	L&P	3.5	4	64	56					4			
	The Techonlogy of Food Storaged in Low Temperature	L	1.5	2	32	28					2			

Engineering Applications	Measuring Technique of Energy and Power Engineering	L&P	2	2.5	40	35					2.5				
	Cold Store Building	L	1.5	2	32	28					2				
	Air Conditioning	L&P	2	2.5	40	35						2.5			
	Refrigeration Compressor	L&P	2	2.5	40	35						2.5			
	Automatic Control of refrigeration and air conditioning system	L&P	2.5	3	48	42						3			
	Design for Refrigeration Equipment	L	3	3.5	56	49							3.5		
			18	**22**											
Electives	Electives for General Course	L	10	10	160	140									
	Exergy Analysis	L	1	1	16	14									
	Heat Pipe	L	1	1	16	14									
	Computational fluid mechanics and applications	L	1.5	2	32	28									
	Food Logistics	L	1	1	16	14									
	Food processing in cold temperature	L	1	1	16	14									
	Engineering drawing and CADof refrigeration and air-conditioning	L&P	1.5	2	32	28									
	Thermal Storage Technology	L	2	2	32	28									
	Principle of small cryocooler	L	1.5	1.5	24	21									
	Fluid Network for Transportation and Distribution	L&P	2	2	32	28									
	Heating Engineering	L	1	1	16	14									
	Radiant Cooling and Radiant Heating	L	1.5	1.5	24	21									
	Boiler and boilerequipment	L	1	1	16	14									
	Ventilation Engineering	L	1.5	1.5	24	21									
	Solar Photothermal Conversion Technology	L	1	1	16	14	Note: 6 CP is the minimum CP for professional electives								
	IoT Engineering Technology	L	2	2	32	28									
	Principles and Design of Heat Exchangers	L	2	2	32	28									
	Freeze-Drying Technique	L	1	1	16	14									
	Technology of Cold Chain	L	2	2	32	28									
	Technology of Refrigeration Manufacturing	L	2	2	32	28									
	Principle and Technology of Air Cleaning	L	1.5	1.5	24	21									
	Technology and Management of Construction	L	1.5	1.5	24	21									
	The Refrigeration installment and Debugging	L	1	1	16	14									
	Refrigerated transport	L	1	1	16	14									

	Utilization of Solar Energy	L	2	2	32	28									
	Energy Conservation Technologies for Refrigerating and Air Conditioning	L	1	1	16	14									
	Simulation of Refrigeration and Air-conditioning System	L	1.5	1.5	24	21									
	Energy Management	L	1.5	1.5	24	21									
	Lectures on Energy and Power Engineering	L	1.5	2	32	28									
			40	**41.5**											
Foreign Language	Basic English Listening and Speaking (I)	L	2	2	32	28	2								
	Basic English Reading and Writing (I)	L	2	2	32	28	2								
	Basic English Listening and Speaking (II)	L	2	2	32	28		2							
	Basic English Reading and Writing (II)	L	2	2	32	28		2							
	Professional English for Energy and Power Engineering	L	2	2	32	28							2		
	English Viewing, Listening and Speaking (elective)	L	2	2	32	28									
	Academic English: Reading and Writing (elective)	L	2	2	32	28									
	Interpretation and Translation (elective)	L	1	1	16	14									
	Cultural Communication (elective)	L	1	1	16	14									
	Applied Skills (elective)	L	2	2	32	28									
			10	**10**											
General Courses	Conspectus of Basic Principles of Marxism	L	3	3	48	42	3								
	Education of Morality and Fundamentals of	L	2	2	32	28	2								
	Compendium of Chinese Neoteric & Modern History	L	2	2	32	28		2							
	Introduction to Mao Zedong Thoughts and the Theoretical System of Socialism with Chinese Characteristics	L&P	4	4	64	56			4						
	Introduction to the XiJinpingThought of Socialism with Chinese Characteristics in the New Era	L	2	2	32	28							2		
	Situation and Policy	L	2	2	32	28						2			
	Fundations of Computer Application	L&P	1	1	16	14	1								
	Military Theory and Training (2W Training)	L	2	2	32	28	1	1							

	Physical Education and Health	L&P	4	4	64	56	1	1	1	1				
	Competences and Basic Skills (Career Development and Employment Guidance, Social Practice, Mental Health Education, Innovation and Entrepreneurial Education, Reading Activity)	L&P	6	6	96	84	1	1						4
	Information Technology	L	2	2	32	28	2							
			30	**30**										
Practice Training	Teacher Guidance	P	2	2	2 W		2							
	Computer software practice on Energy and Power Engineering	P	3	3	3 W					3				
	Cognitive Practice	P	1	1	1W					1				
	Basic course design for mechanical design	P	2	2	2W					2				
	Metalworking Practice	P	2	2.5	2W						2.5			
	Professional comprehensive practical trainingon Energy and Power Engineering	P	3	3.5	3 W						3.5			
	Production Practice	P	2	3.5	2 W							3.5		
	Course Design for Air Conditioning	P	2	3.5	2W							3.5		
	Course Design for Refrigeration Equipment	P	2	3.5	2W								3.5	
			19	**24.5**										
Bachelor Thesis	Bachelor Thesis	P	16	18	18W									18
Total	**ECTS PER SEMESTER**		**160**	**180**			**26**	**27**	**22.5**	**27**	**20**	**19**	**17**	**22**

The following **curriculum** for the **Bachelor's Programme Built Environment and Energy Engineering** is presented:

Curriculum of Built Environment and Energy Engineering Program(2022 version)															
Note: CP-Credit Point, S-Semester, L-Lecture,P-Practice, W-Week		Type	Chinese CP	ETC CP	Workload		S1	S2	S3	S4	S5	S6	S7	S8
Competence fields	Modules				Contact Hours	Self-study Hours	CP	CP	CP	CP	CP	CP	CP	CP
Natural Sciences	Advanced Mathematics A(1)	L	5	5	80	70	5							
	Advanced Mathematics A(2)	L	5	5	80	70		5						
	Linear Algebra	L	2	2	32	28		2						
	Probability Theory and Mathematical Statistics	L	3	3	48	42			3					
	Fundamentals of Artificial Intelligence Programming	L&P	2.5	2.5	40	35		2.5						
	College Physics A	L&P	6	6	96	84		6						
	General Chemistry	L&P	4	4	64	56				4				
			27.5	27.5										
Engineering Fundamentals	Modern Engineering Graphics A	L&P	3	3	48	42	3							
	Fundamentals of Electrical and Electronic Technology	L&P	3	4	64	56			4					
	Engineering Mechanics	L&P	3.5	4.5	72	63			4.5					
	Calculation Methods and Applications	L&P	1.5	2	32	28				2				
	Fundamentals of Mechanical Design	L&P	3	3	48	42				3				
	Automatic Control Principle	L&P	2	2.5	40	35				2.5				
	Introduction to Built Environment and Energy Engineering	L	1	1.5	24	21	1.5							
	Engineering Thermodynamics	L&P	3.5	4.5	72	63			4.5					
	Fluid Mechanics	L	2	2.5	40	35				2.5				
	Fluid Mechanics Experiment	L&P	0.5	0.5	8	7				0.5				
	Heat Transfer	L&P	3.5	4.5	72	63				4.5				
	Built Environment	L	2	3	48	42					3			
	Fluid Network for Transportation and Distribution	L&P	2	3	48	42					3			
	Fundamentals & Equipment of Heat & Mass Transfer	L&P	2	3	48	42					3			

			32.5	41.5										
Engineering Applications	Introduction to Architecture	L	1	1	16	14				1				
	Measuring Technique of Building Environment	L&P	2	3	48	42					3			
	Heating Ventilation and Air Conditioning	L&P	3	4	64	56					4			
	Automatic Control of Building Facilities System	L&P	2	3	48	42						3		
	Cold and Heat Source Technology for Air conditioning	L&P	3	4	64	56						4		
	Heat Source of Building Environment	L&P	1.5	2	32	28						2		
	Engineering Drawing and CAD of Refrigeration and Air-conditioning	L&P	1.5	2	32	28						2		
	Ventilation Engineering	L	2	3	48	42							3	
	Seminar on Built Environment and Energy Application Technology	L	1	2	32	28							2	
			17	24										
Electives	Electives for General Course	L	6	6	96	84							6	
	Exergy Analysis	L	1	1	16	14								
	Heat Pipes	L	1	1	16	14								
	Energy Storage Technology	L	1	1	16	14					1		3	
	Radiant Heating and Radiant Cooling	L	1	1	16	14					)		)	
	Heating Engineering	L	2	2	32	28					5	1	2	
	Artificial Intelligence and Control	L	2	2	32	28					-	)	-	
	HVAC System Design and Analysis	L	1.5	1.5	24	21					8	2	3	
	Automobile Air-conditioning Technology	L	1	1	16	14						-		
	Technology and Management of Construction	L	1.5	1.5	24	21					m	4	m	
	Construction Equipment installation Engineering and Economics	L	1.5	1.5	24	21					o		o	
	Air Cleaning Technology	L	1.5	1.5	24	21					d	m	d	
	Solar Thermal Utilization	L	1	1	16	14					u	o	u	
	Green Building	L	1	1	24	6					l	d	l	
	Building Energy Conservation Technology	L	1	1	16	14					e	u	e	
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												)		

	Energy Conservation Technologies for Refrigerating and Air Conditioning	L	1	1	16	14								
	Air pollutant control engineering	L&P	2	2	32	28								
			21	21	Note:5 CP is the minimum CP for professional electives									
Foreign Language	Basic English Listening and Speaking (I)	L	2	2	32	28	2							
	Basic English Reading and Writing (I)	L	2	2	32	28	2							
	Basic English Listening and Speaking (II)	L	2	2	32	28		2						
	Basic English Reading and Writing (II)	L	2	2	32	28		2						
	Special English	L	2	2	32	28							2	
	English Viewing, Listening and Speaking (elective)	L	2	2	32	28								
	Academic English: Reading and Writing (elective)	L	2	2	32	28								
	Interpretation and Translation (elective)	L	1	1	16	14								
	Cultural Communication (elective)	L	1	1	16	14								
	Applied Skills (elective)	L	2	2	32	28								
			10	10										
General Courses	Conspectus of Basic Principles of Marxism	L	3	3	48	42						3		
	Education of Morality and Fundamentals of Law	L	2	2	32	28						2		
	Compendium of Chinese Neoteric & Modern History	L	3	3	48	42			3					
	Introduction to Mao Zedong Thoughts and the Theoretical System of Socialism with Chinese Characteristics	L&P	4	4	64	56	4							
	Situation and Policy	L	2	2	32	28			2					
	Introduction to the XijnpingThought of Socialism with Chinese Characteristics in the New Era	L	2	2	32	28							2	
	Military Theory and Training (2W Training)	L	2	2	32	28	1	1						
	Physical Education and Health	L&P	4	4	64	56	1	1	1		1			

	Competences and Basic Skills (Career Development and Employment Guidance, Social Practice, Mental Health Education, Innovation and Entrepreneurial Education, Reading Activity)	L&P	6	6	96	84	1					1		4
	Information Technology	L	2	2	32	28	2							
			30	30										
Practice Training	Teacher Guidance	P	2	2	2W			2						
	Course Design on Machine Design	P	2	2	2W					2				
	Cognitive Practice	P	1	1	1W					1				
	Metalworking Practice	P	2	2	2W						2			
	HVAC Integrated Curriculum Design	P	2	3	2W						3			
	Cold and Heat Sources Engineering Curriculum Design	P	2	2	2W							2		
	Production Practice	P	2	2	2W							2		
	Ventilation Engineering Curriculum Design	P	2	2	2W								2	
	Simulation Experiment of Air- conditioning System	P	1	2	1W								2	
			16	18										
Bachelor Thesis	Graduation Design(Thesis)	P	16	18	16W									18
SUM=180	**ECTS PER SEMESTER**		160	180			**22.5**	**23.5**	**22**	**23**	**23**	**22**	**22**	**22**