



ASIIN Seal

Accreditation Report

Bachelor's Degree Programme
Aerospace Engineering

Provided by
Ho Chi Minh City University of Technology (HCMUT)

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for ¹	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ²
Kỹ thuật Hàng không	Bachelor of Aerospace Engineering	ASIIN	-/-	01
Date of the contract: 01.03.2024 Submission of the final version of the self-assessment report: 28.05.2024 Date of the onsite visit: 06.-07.11.2024 at: Faculty of Transportation Engineering, HCMUT Campus District 10				
Expert panel: Prof. Dr.-Ing. Burkart Voß, Ernst-Abbe Hochschule Jena Dipl.-Ing. Cem Avsar, Technische Universität Berlin Huynh Nguyen, Universal Alloy Corporation Vietnam Le Dang Khoa, student at International University - Vietnam National University				
Representative of the ASIIN headquarter: David Witt				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				
Criteria used: European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of March 28, 2023				

¹ASIIN Seal for degree programmes

² TC: Technical Committee for the following subject areas: TC 01 - Mechanical Engineering/Process Engineering.

Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering/Process Engineering as of December 9, 2011	
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B Characteristics of the Degree Programme

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
Aerospace Engineering	B.Sc.		6	Full time	-/-	8 Semester	130 Vietnamese Credits (260 ECTS)	1996

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

“Established in 1996, the undergraduate Aerospace Engineering program aims to provide graduates with competences, ethics, and health to enter the professional practice of aviation, aerospace engineering and related area for the nation and the world. The educational objectives of our undergraduate degree program are in alignment with the missions of HCMUT, the Faculty of Transportation Engineering and Department of Aerospace Engineering. The program objectives, the student learning outcomes and the curriculum was updated in 2019 in accordance with the amendments of the Law on Higher Education and with the Vietnam National Qualifications Framework (VQF).

The Bachelor program of Aerospace Engineering has a standard training period of 4 years in 8 semesters, with a total 130 credits (~ 260 ECTS). Upon graduation, students achieve outcomes in terms of knowledge, skills, level of autonomy and responsibility through a training process including theory, practice, projects, and internships. The curriculum is designed and structured to ensure that students can achieve all expected student outcomes (SOs):

- SO.1 An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- SO.2 An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

³ EQF = The European Qualifications Framework for lifelong learning

- SO.3 An ability to communicate effectively with a range of audiences.
- SO.4 An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- SO.5 An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- SO.6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- SO.7 An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Focusing on a broad-based background knowledge, the undergraduate program does not specify any specialization in Aerospace Engineering. The curriculum includes six module categories: (1) Mathematics and natural Sciences, (2) General knowledge including Economics, Social Science, Philosophy, Professional knowledge and foreign language, (3) Fundamental Engineering Courses, (4) Specialized courses in Aerospace Engineering, (5) Free elective courses and (6) Graduation modules. Besides the compulsory courses, students can accumulate the elective courses to enrich their knowledge, competences and skills both in interdisciplinary and Aerospace Engineering for their career orientation and individual perspectives.”

C Expert 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
- Objective-module-matrix
- Module descriptions
- Webpage HCMUT
- Webpage Faculty of Transportation Engineering
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts base their assessment of the learning outcomes on the information provided in the module descriptions and in the Self-Assessment report of the Bachelor's degree programme under review. For the Bachelor's degree programme in Aerospace Engineering, HCMUT has described Programme Outcomes (PO) (also called educational objectives) and Student Outcomes (SO). The POs and SOs are published on the programme's website and are easily accessible for students as well as other stakeholders. Furthermore, there are regular revision processes in place that take into account feedback by external and internal stakeholders.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee Mechanical Engineering/Process Engineering and use the objective-module-matrix and the module descriptions as a basis for judging whether the intended learning outcomes correspond with the competences as outlined by the SSC.

The experts note that the relationship between POs and SOs has been established in a comprehensible and logical manner. The development of SOs of the study programme involves both internal and external stakeholders so that the curricula can be adapted and modified

according to the needs of the industry and the graduates on a regular basis. For example, HCMUT regularly conducts surveys, through which the different stakeholders get the chance to assess the programmes and their main objectives and adapt them if necessary. Internal stakeholders include all of HCMUT members (students, teaching staff, and non-academic employees), while the external stakeholders include the industry, alumni, the government, and society. A major revision including consultations of stakeholders takes place at least every five years.

For the Bachelor's degree in Aerospace Engineering, HCMUT defines Programme Outcomes (see Appendix for more details):

- “PO.1 Getting a job in the Aerospace Engineering field domestically and abroad; as well as in other high-tech fields closely related to Aerospace Engineering.
- PO.2 Having the ability to solve technical problems in the work place by applying knowledge and skills accumulated in the training program in Aerospace Engineering.
- PO.3 Having a positive career orientation with future career planning for advancement, self-training, and further study after graduation.
- PO.4 Having the interpersonal, communication, teamwork skills and understanding of professional ethics to work in a multi-disciplinary, multi-cultural environment.
- PO.5 Having economic and political understanding and knowledge in the field of social sciences and humanities to make effective contributions to the sustainable development of society and the community.”

Furthermore, HCMUT defines the following Student Outcomes for the Bachelor's degree programme Aerospace Engineering:

- “SO.1 An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- SO.2 An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- SO.3 An ability to communicate effectively with a range of audiences.
- SO.4 An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- SO.5 An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

- SO.6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- SO.7 An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.”

In the experts’ opinion, the intended qualification profiles of the programme are clear, plausible and allow students to take up an occupation, which corresponds to their qualification. They learn that the graduates of HCMUT are much sought after in the labor market. During the discussions on-site, the representatives of industry emphasize the high quality of the graduates of this programme under review and students as well as graduates are satisfied with and well aware of their good job perspectives. In particular, the industry representatives point out that graduates stand out from graduates from other universities especially because of their good English language skills.

In summary, the experts confirm that the Bachelor’s degree programme in Aerospace Engineering adequately reflects EQF level 6. The programme learning outcomes are consistent with the respective ASIIN Subject-Specific Criteria of the relevant Technical Committees. They aim at the acquisition of specific competences and are well-anchored and binding.

Criterion 1.2 Name of the Degree Programme

Evidence:

- Self-Assessment Report
- Diploma Supplements

Preliminary assessment and analysis of the experts:

The experts confirm that the original Vietnamese name of the degree programme under review corresponds with the intended aims and learning outcomes as well as the main course language.

However, the experts are of the opinion that the English translation used, “Aerospace Engineering”, does not fit perfectly. They see that the majority of the specific courses tend to be in the aeronautical field and that there are hardly any specific “space-related” courses. During the on-site discussions, the programme coordinators state that the programme was developed in 1996 based on well-established Aeronautical Engineering and Aerospace Engineering programmes, without specialising in either of them. The aim was to train students with knowledge and skills in both areas. The experts can understand the explanations, but are still of the opinion that too little content from the field of Aerospace Engineering is

taught to justify a corresponding designation (see also criterion 1.3). They are of the opinion that the name should either be adapted, e.g. to Aeronautical Engineering, or that more courses from the field of aerospace should be included.

In summary, the experts want the university to ensure that the English name of the degree programme, its intended learning outcomes and its content correspond with each other.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Strategy plan
- Academic Guidelines
- Objective-module-matrix
- Provisions for the recognition of externally acquired academic achievements
- Cooperation agreements (MoU)
- Study plans
- Programme curriculum documents
- Module descriptions
- Webpage HCMUT
- Webpage Faculty of Transportation Engineering
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Structure and content

The Bachelor's degree programme Aerospace Engineering is managed by the Faculty of Transportation Engineering in the Department of Aerospace Engineering (FTE-DAE). The curriculum of the study programme under consideration is reviewed by the experts in order to identify whether the described SOs and POs (see chapter 1.1) can be achieved by the available modules. Course descriptions as well as overviews and the objective-module-matrix matching the different SOs and the various module contents were provided for a thorough analysis.

The curriculum of the Bachelor's degree programme is designed for 4 years and offered as full-time study programme. To complete the programme, students must complete at least 130 Vietnamese credits (equivalent to 260 ECTS credits, see chapter 1.5 for more details

about the conversion from Vietnamese credit points to ECTS credits). The students can extend their study time if needed; the maximum time allowed for students to finish the programmes is six years.

At HCMUT, an academic year is divided into two regular semesters and a short summer term. The summer term lasts for 10 weeks and is typically reserved for internships. Still, additional courses are also offered during this period, according to the students' demand. A regular semester consists of 15 weeks for learning and teaching, 1 week for mid-term exams and 2-3 weeks for final exams. The mid-term exams are normally given in the ninth week of a semester.

The structure of the programme is described as follows in the Self-Assessment Report: "The curriculum is classified in six categories: (1) Mathematics and natural Sciences, (2) General knowledge including Economics, Social Science, Philosophy, Professional knowledge and foreign language, (3) Fundamental Engineering Courses, (4) Specialized courses in Aerospace Engineering, (5) Free elective courses and (6) Graduation. The first two module categories are common for all engineering program in HCMUT. They include 60 credits (120 ECTS) and account for 46% of total credits in the AE's curriculum. The modules (3) (4) and (6) are designed for Aerospace Engineering major, comprising 61 credits (122 ECTS) and accounting for 47% of total credits. In order to develop graduates' competences in the direction of liberal education and in line with their own career orientation, in the module (5), students can select free elective courses which is equivalent to 9 credits (18 ECTS), representing 7% of total credits." The following table shows the allocation of credits to the individual module categories in detail (a detailed study plan is provided in the Appendix):

No.	Module category	Academic load		
		Credits	ECTS	Credits percentage (%)
I	Mathematics and natural Sciences	30	60	23%
II	General knowledge	30	60	23%
	II.1 Economics-Philosophy-Social Sciences and Law	13	26	
	II.2 Professional knowledge (Introduction to engineering, Management, Entrepreneurship, Human and Environment)	9	18	
	II.3 Foreign language (English)	8	16	

III	Fundamental Engineering courses	23	46	18%
IV	Specialised courses in Aerospace Engineering	30	60	23%
V	Free elective courses	9	18	7%
VI	Graduation	8	16	6%
	VI.1 Internship	2	4	
	VI.2 Aerospace Engineering Design Project	2		
	VI.3 Capstone Project	4	8	
	Total	130	260	100%

After reviewing the accreditation documents and the on-site discussion with the various stakeholders, the experts are of the opinion that the curriculum overall is well-structured and offers a solid foundation in key areas of aeronautical engineering. The compulsory courses provide students with essential theoretical and practical knowledge. In particular, the “Introduction to Engineering” course in the first semester serves as an effective introduction to real-world engineering challenges, fostering motivation and engagement among students. Furthermore, the inclusion of an internship, a design project, and a capstone project ensures that students gain valuable hands-on experience at the end of their studies.

Despite these strengths, the experts identify a significant issue regarding the English translation of the programme’s title. While the programme is officially translated to “Aerospace Engineering,” the curriculum focuses predominantly on aeronautical engineering, with only limited coverage of “space-related” topics such as spacecraft systems. The name “Aerospace Engineering” implies comprehensive coverage of both aeronautics and astronautics. However, a detailed examination of the curriculum shows that the programme is almost exclusively focused on aeronautical engineering. Therefore, the experts argue that the university should either adapt the English title of the degree programme, e.g. to “Aeronautical Engineering”, or adjust the curriculum to include a sufficient number of “space-related” courses to ensure consistency between title, content, and learning outcomes. One possible solution could also be to introduce two study paths: one focused on Aeronautical Engineering and the other on Space Engineering, ensuring that students opting for the space track complete enough courses in this domain to be competitive with graduates from other

Space Engineering programmes. However, given the current elective structure, which includes only three slots of three credits each, this may not be feasible without a substantial revision of the curriculum.

In addition, the experts discuss the introduction of further specialization through pre-defined elective tracks, e.g. covering aerodynamics, structures, propulsion, or space systems, as the programme under review only distinguishes between compulsory and elective courses, without offering structured pathways for specialization. The introduction of specialised study paths consisting of compulsory (already existing) related elective courses would give students the opportunity to tailor their studies to their interests. According to the experts, collaborations with e.g. the Vietnamese National Space Center, the space industry or foreign institutions could also help to provide the necessary content for a specialization path in a more “space-related” field. During the on-site discussions, the students were generally satisfied with the programme, but also expressed a desire for more specialisation options. Thus, the students would also be in favour of different paths, especially one for Space Engineering, including topics such as space electronics for example. Although this topic is taught, the students explain that it is only covered in a single 3-credit course. This feedback is in line with the experts’ opinion to increase specialisation options within the curriculum and ideally introduce more courses in the field of Space Engineering.

What is more, the experts discuss the practical parts of the curriculum. Although, the experts appreciate the use of an internship, a design project, and a capstone project (see above), they argue that there could be even more practical parts. While the first semester includes an introductory engineering project and later stages of the programme (6, 7, and 8 semester) incorporate the mentioned design and capstone projects, there is a noticeable gap in hands-on, project-based learning in the intermediate semesters. One potential improvement could be integrating more project-based learning within existing modules or implementing a multi-semester project-based course. This would allow students to engage in continuous practical learning and better apply theoretical knowledge throughout their studies.

Overall, the experts conclude that the programme is well-designed and effectively prepares students for the job market, especially in Aeronautical Engineering. However, to maintain consistency between the programme’s English name and its content, the university should either adjust the English title or expand the “space component” of the curriculum. This would ensure that graduates meet the expectations associated with an Aerospace Engineering degree while maintaining the strengths of the existing programme. Furthermore, the experts recommend to increase the number of field specific electives in order to offer the opportunity for specialisation. In addition, the experts recommend to consider increasing the practical components of the curriculum.

Periodic Curriculum Review

The curriculum of the degree programme under review is designed to comply with the SOs and POs and it is, according to HCMUT regulations, subject to constant revision processes (see also chapter 1.1 and chapter 5). As such, the curriculum will be reviewed regularly and commented on by students and teachers as well as by external stakeholders such as alumni or industry partners. The faculty keeps in touch with former students through the faculty alumni network. Market needs are assessed through regular surveys, as well as through contacts with employers achieved through events such as the job fair.

Major changes are made every five years, while minor revisions are made every year to ensure that the curriculum is up to modern standards. For instance, in its Self-Assessment Report, HCMUT states “each year, the training programme is reviewed and updated approximately 5-10% in the list of elective courses. This update aims to reflect the rapid changes in engineering and technology in the field of AE.”

International mobility

HCMUT offers a variety of mobility opportunities for students, including semesters abroad, short-term programmes, internships, and participation in international conferences. Furthermore, in its Self-Assessment Report, HCMUT describes, that “in line with the university’s strategy, FTE-DAE is active in promoting international collaboration with universities providing Aerospace Engineering training programs. Currently, the Department of Aerospace Engineering is member of the two networks including South East Asia Network of Aerospace Engineering (SANAe) and International Society of Unmanned Intelligent Systems (ISIUS). The SANAe and ISIUS serve as platforms to discuss and exchange recent developments, new ideas, and experiences in the field of aerospace engineering between academia, researchers and industry. It is also envisaged that these networks facilitate close dialogues and collaborations for academic exchanges and human resource development, and thus setting up foundation for the student mobility among university members.”

To support these initiatives, the university has established an External Relation Office that facilitates global mobility. This office assists students with application procedures, visa arrangements, pre-departure orientations, and credit transfer processes. Scholarships for international mobility are also provided, both directly by the university and through external sponsorships from the Vietnamese government (e.g., HCMUT Scholarships, Research Sponsorship, exchange programme scholarships). These scholarships aim to reduce financial barriers by covering tuition, living expenses, and travel costs.

Credit recognition is facilitated through a learning agreement signed before the exchange, ensuring that courses taken abroad align with the home programme and are recognized

upon return. This process is regulated by the Ministry of Education and Training (MOET) and overseen by the university's External Relations Office. Consequently, the experts see that there are no significant issues with credit transfer or the organization of student mobility, thanks to the active support of the international office and academic advisors.

However, the experts note that the number of students who take advantage of the mobility programmes is relatively small, which is why they discuss the available opportunities and support with the students during the on-site discussions. In response, the students state that they themselves or other students who have been abroad have generally only had good experiences with the university's support. They are also of the opinion that good and sufficient opportunities are offered. However, the students agree that the university should advertise the wide range of opportunities better. They explain that there was only one information email. However, they would like the individual lecturers to advertise the mobility programmes more in their courses and that there could, for example, be corresponding information/advertising events to better promote the existing programmes. This can be well understood by the experts.

In summary, the students state to be satisfied with the existing opportunities for international academic mobility. Even though the corresponding mobility statistics are quite low, the expert group recognizes that the university has focused on expanding its network of partner institutions to further encourage student participation in exchange programmes. However, they want to recommend to better promote the existing opportunities in order to encourage more students to spend time abroad.

Criterion 1.4 Admission Requirements

Evidence:

- Self-Assessment Report
- Admission Regulations
- Study plans
- Webpage HCMUT
- Webpage Faculty of Transportation Engineering
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to the self-assessment report, admission for the Bachelor's degree programme under review is conducted once a year in September of each year. Information about the admission procedure is described in the admission advisory book and on the website of the

Academic Affairs Office and thus accessible for all stakeholders. In addition, HCMUT publishes its new and existing programmes in well-established newspapers. An admission committee is established by the Rector of HCMUT each year to manage all admission issues. High school graduates can join the programmes through one of the following five admission paths:

Order	Method	Quota (%)
1 (TTBO)	Direct admission according to the regulations of the MOET, candidates who won the National Excellent Student Prize, the National Science and Technology Prize	1-5
2 (UTXT)	Priority for admission according to the regulations of VNU-HCM for candidates who are Good students from 149 specialised/gifted high schools and high schools possessing the highest annual admission rate to HCMUT	15-20
3 (N-NGOAI)	Admission to Vietnamese and foreign candidates graduating from international high schools (Australia, USA, Canada, etc.)	1-5
4 (P-VAN)	Admission based on the result of the National High School Graduation Exam and candidate interview.	1-5
5 (K-HOP)	Admission based on candidate overall performance including the score of the VNU-HCM competency assessment test, the result of the National High School Graduation Exam, the high-school GPA, other competences (language certificate, prize, ...), social activities (culture, sports, art, ...)	75-90

Furthermore, HCMUT provides the following information on admission requirements for Vietnamese and foreign students graduating from international high schools:

Country	Conditions
Australia	ATAR $\geq$ 85 (95 scales); or OP $\leq$ 6 (1-25 scale); or IB $\geq$ 26 (42 scales); or GCE Advanced Level (A-level) certificated by University of Cambridge/ EdExcel: Math and science subjects $\geq$ B-A (A-E scale); the remainders $\geq$ C-A; or BTEC Level 3 Extended Diploma $\geq$ Merit-Distinction (Distinction-Merit-Pass scale)

USA	SAT: score of each part: ≥ 595 (1600 scale) and high school average score ≥ 2.5 [4.0 scale]; or ACT ≥ 24 (36 scale) and high school average score ≥ 2.5 [4.0 scale]; or GCE Advanced Level (A-level) certificated by University of Cambridge/ EdExcel: Math and science subjects $\geq$ B-A (A-E scale); the remainders $\geq$ C-A; or BTEC Level 3 Extended Diploma $\geq$ Merit-Distinction (Distinction-Merit-Pass scale)
Canada	IB ≥ 26 (42 scales); or GCE Advanced Level (A-level) certificated by University of Cambridge/EdExcel: Math and science subjects $\geq$ B-A (A-E scale); the remainders $\geq$ C-A; or BTEC Level 3 Extended Diploma $\geq$ Merit-Distinction (Distinction-Merit-Pass scale); or Total high school graduation exam scores $\geq 70\%$ (100% scale)

Every summer, the Vietnamese Ministry of Education and Training will organise the National Higher Education Entrance Examination (NHEEE). All high school students in Vietnam must take part in this exam. It covers several subjects, such as mathematics, foreign languages, physics, chemistry, literature, and history and lasts three to four days. Based on the score in the exam and on their preferences, prospective students will get admitted to the different universities.

In addition, the two National Universities in Ha Noi and Ho Chi Minh conduct their own admission exam, the so called National University Competency Assessment Test. The National Universities have introduced this test in order to give high school graduates another chance to get admitted to university, it only lasts about 3 - 4 hours and consists of several questions and problems to assess the applicants' knowledge and skills in different subjects.

For each academic year, the university's admission committee determines the ratio of students admitted to each faculty through the different ways. The admission is considered separately for each faculty, with the selection based on the results of the NHEEE from the top down to the entry benchmark so that the quota is not exceeded:

In its Self-Assessment report, HCMUT provides the following admission statistics for the programme under review:

Year	2018	2019	2020	2021	2022
<i>Number of candidates</i>	462	1401	414	662	226
<i>MOET minimum score requirement (*)</i>	15.5	15	15	15	15
<i>AE's Entry Benchmark (**)</i>	19.5	23	24.25	25	23
<i>Number of candidates admitted (AE)</i>	92	160	83	62	49
<i>Number of first-year enrolment (AE)</i>	52	63	56	47	36

There are different levels for the tuition fees, depending on the amount of credits the student registered to fulfil in each semester and the tuition fee rate.

Furthermore, the Academic Affairs Office awards scholarships to the students with excellent performance based on the student's academic performance. Students with very good results (top 10% GPA of their respective intakes at their school) can receive scholarships in the following semester. In addition, students at HCMUT can also receive scholarships from external sources such as companies, non-government organisations, faculty alumni, and individuals. In addition, HCMUT has a policy to award tuition fee waivers for students who are orphaned by both parents, students with disabilities in poor or near-poor households or students from remote areas.

Students during the interview testify that they are informed in detail about the requirements and the necessary steps to apply for admission into the degree programme under review.

The experts see evidence that HCMUT keeps track of its students' progress and achievements. In this way, an instrument is in place to monitor the performance records of students with various enrolment backgrounds. In their assessment, the experts find the admission rules to be binding, transparent, and based on HCMUT's written regulations. They confirm that the admission requirements support the students in achieving the intended learning outcomes. Regarding the credit transfer for students, adequate policies are in place.

Criterion 1.5 Workload and Credits

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Academic Guidelines
- Statistical data about drop-outs and study duration
- Explanations about conversion from Vietnamese credits to ECTS
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to the legal requirements, an undergraduate programme requires at least 120 Vietnamese credits. In the Bachelor's degree programme Aerospace Engineering under review, the total credit load is 130 Vietnamese credits, where 1 Vietnamese credit equals

about 50 hours of workload. The workload is spread relatively evenly over the semesters, as it varies between 15 and 18 Vietnamese credits per semester.

In the Vietnamese system, each credit is equivalent to 15 hours of theoretical lecture in class or 30-45 hours of tutorial, discussion and lab work. Hereby, one hour in class is equal to 50 minutes. According to the ECTS credit system, 1 ECTS equals 25-30 hours of students' workload. HCMUT has issued a regulation, defining "that 1 Vietnamese credit is approximately equivalent to 2 ECTS." Therefore, HCMUT assigns 260 ECTS to the Bachelor's degree programme under review.

The following table from the Self-Assessment report depicts the number of credits and the corresponding workload for each semester in the Bachelor's degree programme Aerospace Engineering:

Semester	1	2	3	4	5	6	7	8
<i>Number of credits</i>	17	16	15	18	15	17	17	15
<i>Total hours per semester (1 credit ~ 50 hours)</i>	850	800	750	900	750	850	850	750
<i>Total hours per week (in 18 weeks)</i>	47.2	44.4	41.6	50	41.6	47.2	47.2	41.6
<i>Total in-class hours per week (5 days)</i>	17.8	17.5	16.2	20.3	16.2	13.2	13.2	8.4
▪ <i>Average hours per day (5 days/ weeks)</i>	9.4	8.9	8.3	10	8.3	9.4	9.4	8.3
▪ <i>Average in-class hours per day</i>	3.6	3.5	3.3	4.1	3.3	2.7 (*)	2.7 (*)	1.7 (*)
<i>Note</i>	(*) In-class time in the Semesters 6, 7, 8 is lower than the previous semesters because the project-based learning mode is applicable for the Internship (Sem 6, 100 hours in 8-10 weeks), Aerospace Design Project (Sem 7, 100 hours) and the Capstone Project (Sem 8, 200 hours).							

As shown in the table above, in the programme under review, the cumulative workload over eight semesters amounts to approximately 6,500 hours. However, if you take the 240 ECTS points specified by HCMUT, where each ECTS point corresponds to 30 working hours, you end up with a total of 7,800 hours. Since the cumulative of working hours vary depending on the credit system, a conversion of 1 Vietnamese credit to 2 ECTS is incorrect and must be revised. Since the experts agree that the working hours stated in the individual module descriptions are appropriate and also correspond to the Vietnamese credit system, they believe that this is merely a conversion error and not an incorrect allocation of the required working hours per module.

In summary, this means that the experts can recognise from the workload information in the module descriptions that the overall workload is appropriate and corresponds to the Vietnamese credits. This is also confirmed in the surveys conducted by HCMUT each semester asking the students to evaluate the amount of time they spend outside the classroom for preparing the classes and studying for the exams. During the audit, the students emphasise that they consider the workload high but manageable and that it is possible to finish the degree programmes within the expected four years, which is also reflected in the student statistics. However, the conversion from Vietnamese credits to ECTS must be checked and recalculated so that the converted ECTS correspond to the students' actual workload.

Criterion 1.6 Didactic and Teaching Methodology
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Evidence:

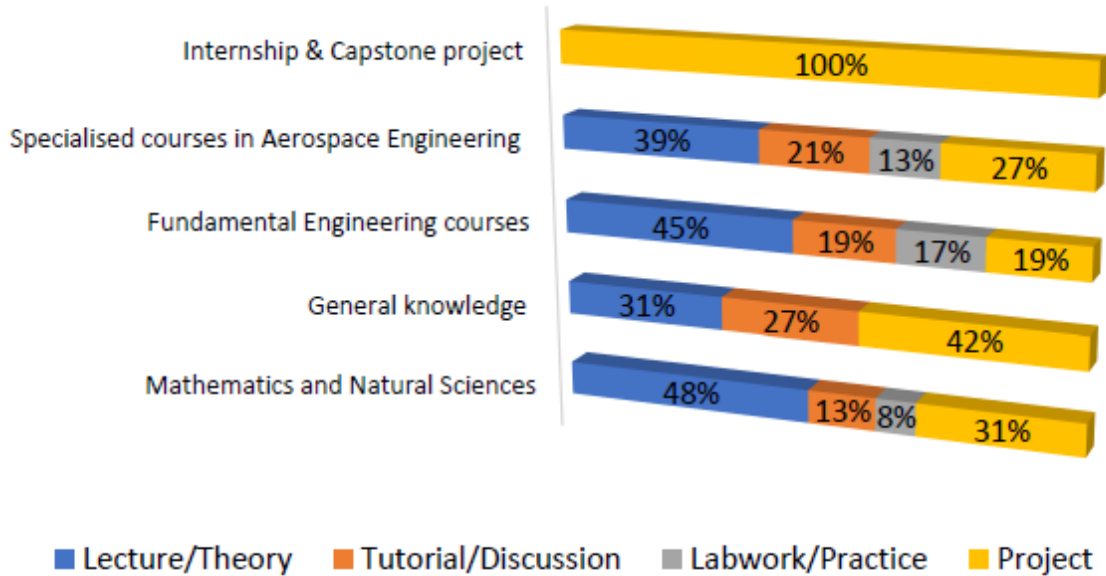
- Self-Assessment Report
- Study plans
- Evaluation/survey results
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Various teaching and learning methods have been implemented, including lectures, classroom and (guided) lab exercises, problem-based learning, individual and group assignments, seminars and projects, etc. Structured activities include tutorials, homework, assignments (reading or problem exercises) and practical activities. Group project assignments are given in some courses to develop students' skills in teamwork, communication, and leadership. The assignments and exercises should help students to develop their abilities with respect to critical thinking, written/oral communication, problem solving, and presentations.

The most common method of learning is class session. Lecturers generally prepare presentations to aid the teaching process. With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. In addition, practical activities should enable students to be acquainted with practical activities for research.

The distribution of the different learning modes in the module categories of the Aerospace Engineering programme is shown in the following figure, which is provided in the university's Self-Assessment report:



To help students achieving the intended learning outcomes and to facilitate adequate learning and teaching methods, HCMUT has developed an e-learning platform (My BK System), where students and teachers can interact.

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 programme under review comprises a variety of teaching and learning forms as well as practical parts. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

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

The experts consider criterion 1 not to be fully fulfilled.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation
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Evidence:

- Self-Assessment Report
- Module descriptions
- Examination Regulations
- Samples of exams, project works and capstone projects
- Evaluation/survey results
- Academic Guidelines
- Discussions during the audit

Preliminary assessment and analysis of the experts:

At HCMUT, assessment is conducted according to the regulations on training at the university level issued by the Ministry of Education and Training (MOET) and the teaching regulations of HCMUT. According to these regulations, each course has to determine learning outcomes, which support the achievement of the objectives of the respective programme. Accordingly, each course must assess whether all defined learning outcomes stated in the module descriptions have been achieved. For this purpose, HCMUT has adopted the concept of multi-component assessments to measure the achievement of the learning outcomes.

In each course, short class assignments/quizzes, a mid-term and a final examination are employed. There are different assessment methods in the programmes, such as quizzes, written tests, practical performances, assignments, small projects and presentations. In most courses, mid-term and final exam consist of written tests and additional quizzes or assignments are used. Laboratory work is assessed through reports and practical work exams. Based on the corresponding regulations, to be eligible to take the final exam students must attend at least 80 % of the course sessions. The students are informed about mid-term and final exams via the academic calendar at least one month in advance. The form and length of each exam is mentioned in the module descriptions that are available to the students via the internal e-learning platform known as My Bach Khoa system (MyBK). It is common to hold small quizzes every two or three weeks, but there are generally no unscheduled tests. The experts as well as the students welcome the continuous learning assessment as it not only allows a close monitoring of the students' learning progress, but also encourages students' motivation throughout the semester.

The final grade of each module is calculated based on the score of these individual kinds of assessment. The exact formula is given in the module handbook. At the first meeting of a course, the students are informed about what exactly is required to pass the module and about how the final grade is determined through the teaching and learning plan. HCMUT uses a grading system with the grades A+, A, B+, B, C+, C, D+, D, and F, where a D (equivalent to a Grade Point of 1.0) is necessary to pass a module. In its Self-Assessment Report, HCMUT provides the following table regarding the grading system:

Rank		1-10 points scale	1.0-4.0 points scale	Letter grade scale
Passed	Excellent	9.00 – 10.00	4	A+
	Very good	8.00 – 8.99	3.5	A
	Good	7.00 – 7.99	3	B+
	Fair	6.00 – 6.99	2.5	B
	Pass	5.00 – 5.99	2	C
Fail	Poor	4.00 – 4.99	1.5	D+
	Bad	3.00 – 3.99	1	D
		0.00 – 2.99	0	F

Based on the university regulation, the students must retake the whole course if they fail, whereas the number of repetitions is unlimited. However, students can request to postpone the final exam due to important reasons (such as accidents, health problems, etc.). In these cases, students will take the final exam in the next semester without repeating the whole course. The reason, why there are no re-sits of the final exam is that the final grade depends on the assessment of the learning activities that will be carried out continuously through the semester and not only on the final exam. Students who have passed a course and want to improve the score, may also take the course again.

Students who underperform will receive academic warnings. The warning system has three levels: “Academic warning level 1”, “Academic warning level 2”, and “Suspension”. The academic warning is issued if the student violates one of the regulations, such as not affording the minimum number of required credits, finishing the semester with the average grade less than 3.0 (scale 10) or less than 4.0 in the last two consecutive semesters. Students who already have received “Academic warning level 1” would receive “Academic warning level 2” if their performance does not improve in the following semester. In those cases, the students will be suspended. As the student’s academic advisor receives the notifications during the course as well, help and support can be given in time to improve the student’s academic performance.

The students confirm that these regulations are effective and properly managed, and experts agree that provisions for disability accommodations, illness, and other exceptional circumstances are clearly established.

In their final year of studies, Bachelor's students have to prepare a final project/thesis demonstrating knowledge, skills and competences gained in the course of the preceding semesters. From the information in the self-assessment report and in the audit discussions, the experts gain the impression that the projects/theses in the Bachelor's degree programme under review are thoroughly planned major academic works conducted in distinct stages from the first proposal to the final report. The regulations for the final project/thesis examination are communicated to students through the MyBK platform and the faculty's website.

During the on-site visit, the experts had access to a selection of exams and final projects. They confirm that these represent an adequate level of knowledge as required by EQF-Level 6. The forms of exams are oriented in-line with the envisaged learning outcomes of the respective courses, and the workload is allocated in an acceptable way.

The experts conclude that the criteria regarding the examinations system, concept, and organization are fulfilled and that the examinations are suitable to verify whether the intended learning outcomes are achieved or not.

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

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report
- Staff Handbook
- Overview of publications and exchange programmes
- Recruiting policy
- Study plans
- Module descriptions
- Evaluation/survey results
- Discussions during the audit

Preliminary assessment and analysis of the experts:

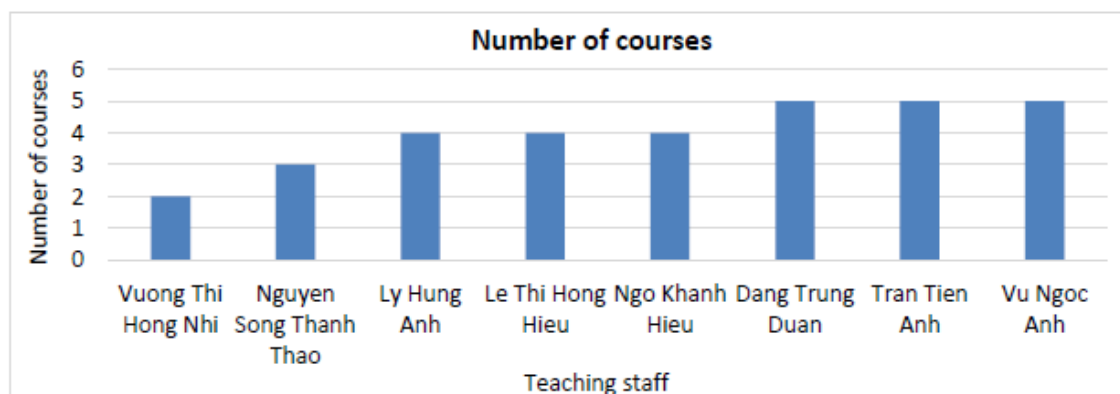
At HCMUT, the staff members have different academic positions. In its Self-Assessment Report, HCMUT describes, that “the academic staff includes full-time and part-time professors, lecturers, and visiting lecturers. [...] Most of the courses of the program of Aerospace Engineering are delivered by academic staff of the Department of Aerospace Engineering. The department currently has 07 full-time teaching staff, 01 clerical staff, and 01 laboratory supervisor. The list of academic staff who are able to deliver courses of the Aerospace Engineering program is shown in [the following table]”:

No.	Academic staff	The Highest Degree, Earned-Field, Year	Years of Experience in Institution
1	Ly Hung Anh	Doctor of Engineering, Mechanical and Control Engineering, 2012	2011
2	Tran Tien Anh	PhD, Structural & Wind Engineering, 2007	1999
3	Vu Ngoc Anh	PhD, Aerodynamics Analysis & Design Laboratory, 2012	2012
4	Dang Trung Duan (Laboratory supervisor)	MEng, Aerospace Engineering, 2020	2017

5	Le Thi Hong Hieu	PhD, Fluids Mechanics and Aerodynamics, 2005	2007
6	Ngo Khanh Hieu	PhD, Computer Science, 2008	2008
7	Vuong Thi Hong Nhi	PhD, Hydrological and Oceanic Sciences, Earth Sciences, 2022	2023
8	Nguyen Song Thanh Thao	Doctor of Engineering, Mechanics of structures and materials, 2013	2014

Furthermore, HCMUT explains, that “[a]ccording to university regulations, members of the full-time faculty are required to work 40 hours per week. Depending on the professional level, the workload distribution of the teaching staff can vary, but roughly each lecturer should spend 1/3 of their time to complete teaching at the required benchmark; 1/3 on research and technology transfer; and 1/3 for participation in regular duties of Department/Faculty. Lecturers who are holding administrative positions also need to spend time on administrative work [...]. For invited lecturers who are domestic or foreign lecturers, the school's regulations must be followed.”

The assignment of courses in the Aerospace Engineering programme to the teaching staff in charge is shown in the following figure:



HCMUT explains in its Self-Assessment report, that “[t]his figure shows the staff member responsible for developing the course syllabus. Those responsible for preparing course outlines are the main teaching staff of the subjects. However, the actual delivery person may be different. Faculty members are directly responsible for creating and maintaining course content, delivering courses to students, and evaluating student performance in their classrooms. In addition to the above-mentioned daily activities, teaching staff can comment on adding new subjects or removing subjects from the program.”

In the following table, HCMUT depicts the average teaching load of the department of Aerospace Engineering in 2022, where “FTE” stands for “Full-Time Equivalent”.

	Total FTE for the department in the academic year 2021-2022	Total number of lecturers in 2022	The average teaching workload of the Department FTE
Required Teaching Hours	11.25	7	1.61
Required Teaching Hours with Administrative Responsibility	15.89	7	2.27

During the on-site interviews, the experts want to know how the teachers assess their own workload. They state that they are occupied with many tasks and that their workload is quite high. This applies above all to balancing teaching, research and administrative activities. The lecturers explain that for them, that overload starts when their working hours extend 1.5 full-time equivalent. As shown in the table above, the teaching staff has an average workload of 1.61 FTE only regarding their required teaching hours and even 2.27 FTE when administrative work is included. This is why, the experts gain the opinion that there is a structural overload regarding teaching staff’s workload. The experts believe that a workload that is permanently too high can lead to a decline in the quality of teaching and/or research if there is no longer sufficient time for either, which could ultimately have an impact on the quality of the study programme. So, they are of the opinion that the university has to ensure that the programme under review can be carried out without any structural overload of the teaching staff. According to the experts, three to four more lecturers may even be needed, especially if more modules are to be offered in the field of “Space Engineering” in the medium term. This was also discussed in the discussion round with the university directorate, who then stated that they were aware of the overload in the faculty and were looking for new staff. However, this is proving difficult as the university has to compete with the private sector for good candidates. Nevertheless, the university's plan is to recruit a total of three new professors over the next two years. This is supported by the experts. However, the experts want HCMUT to provide a concept of how the degree programme can be managed without any structural overload in the future.

Staff development

According to the self-assessment report and the discussions during the on-site audit, HCMUT encourages the continuing professional development of its staff. For this purpose,

various opportunities are provided. Faculty members regularly participate in didactic training that encompasses curriculum design, teaching material, and innovative teaching and learning methods. Moreover, workshops related to subject-specific fields are held to refresh and to deepen various didactic competences in each semester. The lecturers can also regularly participate in external didactical trainings offered and funded by the government.

The teaching staff is encouraged to study abroad or to participate in international research projects and conferences in order to enhance their knowledge, increase their English proficiency and to build international networks. For this purpose, the university informs about possible scholarships to support academic mobility. In general, the exchange programmes are funded by international partner universities and organizations. Particularly, for junior lecturers with a master's degree, the programmes offer systematic training to prepare them for acquiring a PhD abroad, for instance through English courses, information on foreign education systems, administrative support, and supporting (international) research collaborations. Teachers involved in a staff exchange programme are generally assigned to a partner university abroad that has a MoU with HCMUT and the relevant faculty.

In summary, the experts highlight the highly engaged and motivated staff members but recognise a structural overload regarding the teaching staff's workload which has to be remedied in the near future. Furthermore, the experts appreciate the university's efforts in the further development of its employees and consider the support mechanisms for the continuing professional development of the teaching staff adequate and sufficient.

Criterion 3.2 Student Support and Student Services

Evidence:

- Self-Assessment Report
- Evaluation/survey results
- Discussions during the audit

Preliminary assessment and analysis of the experts:

During the on-site discussions with programme coordinators, lecturers, and particularly the students, the experts gain a thorough understanding of the available support services for students. HCMUT provides both subject-specific academic counselling and general non-academic guidance.

Students in the same intake year are organised into classes and every class has an academic advisor. The role of the academic advisor is to help the students with the process of orientation during the first semesters and to monitor their academic performance through GPA.

Moreover, every class also has a homeroom teacher. During the audit discussions, the experts learn that a homeroom teacher's role is similar to an academic advisor or mentor in other educational systems, but it involves a more personalized and holistic approach. Responsibilities typically include academic advising (helping students plan their coursework, providing guidance on their academic progress, and assisting them with any difficulties in their studies) personal support (addressing personal or social issues students may face, and providing a connection to resources for counselling or other support services), professional development (offering guidance on internships, research opportunities, and career paths, and helping students build skills that align with their professional goals), administrative liaison (acting as a bridge between students and the university administration, communicating institutional policies, announcements, and important deadlines), monitoring attendance and conduct (ensuring students maintain good attendance and follow university conduct codes, and addressing any concerns about behaviour or performance). This role often extends beyond just academic guidance, fostering a supportive relationship to help students succeed both personally and academically. The academic advisors organise at least two meetings in each term for the classes they are supervising. Homeroom teachers meet with their students at least three times per semester. The students confirm during the discussion with the experts that they all have an academic advisor and a homeroom teacher.

Apart from academic advisors and homeroom teachers, students can receive assistance from the Student Activity Office and the Career Office. The office's primary function is to provide information on training and job search strategies to help students develop career plans, understand the workplace, and prepare for a smooth transition after graduation. The offices are also a bridge between students, lecturers and businesses in searching for scholarships, factory visits, internships, and employment opportunities. They are also responsible for keeping in contact with alumni associations, employers, and professional organizations. In addition, HCMUT supports its graduates to find suitable jobs by annually conducting a job fair and by forwarding job vacancies to the students.

The annual job fair provides a platform for students to connect with potential employers, explore career opportunities, and gain insights into the job market. During the discussions, the students explain that the job fair also facilitates direct interactions between students and employers, allowing students to expand their professional networks, which can lead to internships, job offers, or mentorships. The industry representatives state that it allows companies to actively recruit candidates for internships, part-time positions, and full-time roles, sometimes with on-the-spot interviews and immediate hiring. In the past few years, approximately 200 companies have presented themselves during the job fair and awarded scholarships to students, demonstrating the attractiveness of the competence profile for both domestic and international careers in the four fields under review. In summary, the experts are convinced that good job perspectives for the graduates of all four programmes

arise from these activities. This impression is confirmed by the discussion with the industry representatives.

The experts observed that there are sufficient resources available to offer personalized support and guidance to all students. This support system enables students to achieve their learning goals and complete their studies successfully and on time. The students confirm that they are well-informed about the available services. Overall, the extensive tutorial and support system for students is one of the key strengths of the degree programmes under review and the university as a whole.

Criterion 3.3 Funds and equipment
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Evidence:

- Self-Assessment Report
- On-site visit of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to the self-assessment report, as a state-owned institution, funding for the operations and degree programmes at HCMUT comes from two main sources: the Ministry of Education and Training (state budget) and other sources (revenue from student scholarships, tuition fees, and other third-party contributions). The faculty's annual operating budget is approved by the Principal, who allocates financial responsibilities for institutional expenses, specifically for the faculty's and departments' operational costs. This budget encompasses a range of expenses, including service fees for cleaning and event organization, materials and office supplies, and transportation costs such as vehicle rentals. It also covers maintenance expenses for machinery and equipment, minor repair costs, and purchases of small equipment. Additionally, the budget accounts for other operational support costs, such as those related to youth organizations, unions, training programmes, and quality assurance activities.

Prior to the on-site visit, HCMUT provides an overview of its annual income for the past few year. This data shows that the total income received from both sources in recent years has been adequate to support all planned activities and degree programmes.

Furthermore, HCMUT describes in its Self-Assessment report, that the "Department of Aerospace Engineering has 01 laboratory/workshop managed by the department with facilities and equipment for 14 lessons of Aerospace Engineering Lab courses, and 03 lessons of Fluid Mechanics course [...]. The lab has earthling systems, earth leakage circuit breakers, and

fire extinguishers. Student satisfaction with laboratory equipment for teaching is also surveyed annually.”

During the on-site visit, the experts take a look at some central facilities, relevant research and teaching facilities and, in particular, a selection of different laboratories available for the study programme under review. While the tour of the facilities focusses on the city campus, where students attend all laboratory classes, HCMUT has another campus in Binh Duong Province where some theoretical lectures take place. A shuttle is available for students to travel back and forth between the two campuses. The Faculty of Transport Engineering utilizes various facilities including lecture halls which accommodate 80 to 120 students, small classrooms which accommodate 40 students, laboratories, faculty offices, a library with several reading rooms, spaces for administration and the Dean's office.

Most of the classrooms are equipped with projectors and are connected to the university's computer network that links all classrooms and offices, a computer centre, servers, and both computer and teaching laboratories. The computer classrooms at the faculty are all installed with relevant licensed software and Internet access.

However, the students as well as the industry representatives state that the equipment in the laboratories should be modernised. This is also in line with the impression gained by the experts during the tour. While the laboratory equipment is functional and sufficient, it is noticeable that some machines are rather outdated and should be modernised. Also the infrastructure should be improved. The programme coordinators state that the machines are maintained once a year in order to guarantee their functionality. However, they also agree with the experts, students and industry representatives that the infrastructure and equipment needs an update. Therefore, the experts recommend to improve and modernize the equipment and the infrastructure of the laboratories. For that, a concept should be developed first.

In summary, the experts appreciate the range of learning tools and resources available to the students and lecturers and consider the faculty's facilities and available equipment in the laboratories to be of appropriate standards – although in need of modernization. The available funds also comply with the requirements for adequately sustaining the degree programme under review.

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

The experts consider criterion 3 not to be fully fulfilled.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions
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Evidence:

- Module descriptions
- Webpage HCMUT
- Webpage Faculty of Transportation Engineering

Preliminary assessment and analysis of the experts:

The experts observe that the module descriptions of the degree programme under review contain the necessary information about the persons responsible for each module, the teaching language, the teaching methods, the workload, the credit points, the required and recommended prerequisites for joining the module, the module objectives and intended learning outcomes, the content, the exams and assessment formats, the study and examination requirements, and the literature.

However, the experts note that there are a few inconsistencies and potentially missing information. Thus, for example, prerequisites are not always specified. Although this does not necessarily have to be the case for every module, the experts recommend that the university should check again whether information on prerequisites are missing for some modules. In addition, the level of detail, writing style and quality of the learning outcomes differs with each module. The experts therefore recommended to also revise the formulation of the learning outcomes in the module descriptions to make them uniform and more accurate. Furthermore, the examination modalities are presented differently depending on the module. For example, the tasks to be submitted and the respective percentage weighting are presented differently. Here too, the experts recommend that the university should review the module descriptions and standardise the presentation.

Summing up, the experts are of the opinion that the university has provided good and complete module descriptions overall and that the points raised are only minor issues. Nevertheless, the experts recommend to review the module descriptions regarding learning outcomes, examination forms and prerequisites.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Exemplary Diplomas
- Exemplary Diploma Supplements

Preliminary assessment and analysis of the experts:

The experts confirm that the students of the degree programme under review are awarded a Diploma Certificate and a Diploma Supplement after graduation. The Diploma Supplement lists all courses that the graduate has completed, the achieved Vietnamese credit points, grades, and cumulative GPA. The Diploma Supplement is bilingual (Vietnamese and English) and contains most of the required information about the degree programme. However, the experts notice that the Diploma Supplement does not mention the conversion of Vietnamese credits into ECTS and does not indicate how many ECTS credits are awarded for the whole programme. Furthermore, no information on the programme objectives, the intended learning outcomes and the admission requirements are provided. Therefore, the experts point out that the Diploma Supplement needs to list the programme objectives and intended learning outcomes, the admission requirements, and how many ECTS points are awarded for the entire degree programme.

Criterion 4.3 Relevant Rules

Evidence:

- Self-Assessment Report
- All relevant regulations on the studies, examination, admission and quality assurance are published on the university's website

Preliminary assessment and analysis of the experts:

The experts confirm that the rights and duties of HCMUT and the students are clearly defined and binding. They appreciate that the English and Vietnamese websites of the programmes include sufficient information about the intended learning outcomes, study plans, module descriptions and academic guidelines of the degree programmes and are made available to all relevant stakeholders. In addition, the students receive all relevant course material at the beginning of each semester.

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

The experts consider criterion 4 not to be fully fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- Academic Guidelines
- Sample evaluation/survey questionnaires
- List of scientific councils
- Documents about the implementation of ISO 9001
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The study programme under review is managed by the Faculty of Transportation Engineering, which is part of the Ho Chi Minh City University of Technology (HCMUT). Ho Chi Minh City University of Technology is a member of Vietnam National University – Ho Chi Minh City (VNUHCM), which is a ministerial-level university. The programme has a Science and Academic Committee (SAC), whose members are suggested by the Dean of the relevant faculty and approved by the Rector of HCMUT and a Quality Assurance Team (QAT) whose members are also assigned by the Dean of the relevant faculty. The QAT analyses the data, writes reports and offers suggestions to SAC. The SAC reviews the suggestions from QAT and makes the final decisions to all academic concerns in the faculties.

The experts discuss the quality management system at HCMUT with the programme coordinators and the students. They learn that HCMUT has an extensive quality management system, which is aimed at constantly improving the quality of the degree programme and the experience of students and faculty members. The central unit responsible for quality management is the Testing and Quality Assurance Office. Every year, HCMUT develops a quality assurance plan on the basis of regular tasks and the university's general quality policy. The individual faculties are obliged to follow these plans and carry out self-assessment tasks such as the revision of the curricula. The process of curriculum development is divided into three major steps. First, at the end of every academic year lecturers of the individual faculty meet in order to assess and discuss the courses syllabi. The lecturers hereby consider among other things the students' learning results, inspiration from other institutions, and new trends in the technical fields. The second step consists of conducting surveys and analysing the feedback from students, alumni, employers, and other stakeholders. Finally,

the SAC, which receives the results of surveys and reports from other groups, suggests improvements to the individual programmes. According to HCMUT, all surveys are carried out on a regular basis. Alumni, for instance, are asked for their feedback at the time of their graduation as well as and a year after their graduation. General student feedback regarding their study experience is collected once per academic year. Teaching evaluations are conducted shortly after the middle of each semester for each module. Via the e-learning platform MyBK, students can give their feedback anonymously on aspects such as the teaching quality, the course content, the workload and their learning progress. Afterwards, the results of the surveys are sent to the teachers for further improvement of the courses and teaching. In the audit, the experts inquire whether the results of the surveys are also shared and discussed with the students. The programme coordinators explain that the survey results are published on MyBK and therefore accessible for the students. The students confirm this and explain that those in charge are always eager and open for feedback aside from the official evaluations. The students have the impression that their comments are taken into consideration with regard to the further improvement of the programme. This becomes apparent in the already mentioned constant curricular revision process that is performed under participation of students and industry partners. The experts are glad to hear that students are satisfied with the continuous development of the programme and included in the feedback loop.

HCMUT also regularly consults the industry for the assessment and development of the programmes. In extensive surveys, companies are asked among other things about changes in the labour market, expected qualifications of the graduates, and their satisfaction with interns and graduates from HCMUT. On this basis, the Board of Deans discusses whether the curriculum and the learning objectives of the degree programme need to be revised. In the audit discussions, the industry partners report to be satisfied with the students from HCMUT, especially in terms of their work ethic and their English language skills. Furthermore, the industry partners confirm that their suggestions are generally adopted by HCMUT. The experts appreciate that HCMUT has a close relationship with the industry partners and regularly collects feedback from them. Thus, the experts agree that the quality management circles at HCMUT are well established and work under participation of all stakeholders.

In summary, the experts are satisfied with the quality management system at HCMUT, especially with the continuous feedback loops and the involvement of important stakeholder groups such as students, alumni, teaching staff and representatives from the industry.

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

The experts consider criterion 5 to be fulfilled.

D Additional Documents

No additional documents needed.

E Comment of the Higher Education Institution

After the on-site visit, the university provided further evidence regarding the teaching staff involved and an explanation of the different definitions of the term Aerospace Engineering.

F Summary: Expert recommendations

Taking into account the additional information given by the university, the experts summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation
Ba Aerospace Engineering	With requirements for one year	30.09.2030

Requirements

- A 1. (ASIIN 1.2; 1.3) Ensure that the English name of the degree programme, its intended learning outcomes and its content correspond with each other.
- A 2. (ASIIN 1.4) Ensure that the ECTS-Points awarded for the programme correspond with the actual workload of the students.
- A 3. (ASIIN 3.1) Provide a concept on how the degree programme can be managed without any structural overload.
- A 4. (ASIIN 4.2) The Diploma Supplement needs to list the programme objectives and intended learning outcomes, the admission requirements and how many ECTS points are awarded for the whole degree programme.

Recommendations

- E 1. (ASIIN 1.3) It is recommended to increase the number of field specific electives in order to offer the opportunity for specialisation.
- E 2. (ASIIN 1.3) It is recommended to better promote the existing opportunities regarding academic mobility.
- E 3. (ASIIN 1.3) It is recommended to consider to increase the practical parts of the curriculum.
- E 4. (ASIIN 3.3) It is recommended to improve and modernize the equipment and the infrastructure of the laboratories.

- E 5. (ASIIN 4.1) It is recommended to review the module descriptions regarding learning outcomes, examination forms and prerequisites.

G Comment of the Technical Committee 01 - Mechanical Engineering/Process Engineering (10.03.2025)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the report. In principle, it follows the reviewers' assessments but considers consistent information on learning objectives, examination formats, and prerequisites in the module descriptions to be essential. Therefore, it proposes converting the recommendation on module descriptions into the following requirement:

Ensure that the module descriptions are consistent regarding quality of learning outcomes and information about examinations modalities as well as prerequisites.

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

Degree Programme	ASIIN Seal	Maximum duration of accreditation
Ba Aerospace Engineering	With requirements for one year	30.09.2030

Requirements

- A 1. (ASIIN 1.2; 1.3) Ensure that the English name of the degree programme, its intended learning outcomes and its content correspond with each other.
- A 2. (ASIIN 1.4) Ensure that the ECTS-Points awarded for the programme correspond with the actual workload of the students.
- A 3. (ASIIN 3.1) Provide a concept on how the degree programme can be managed without any structural overload.
- A 4. (ASIIN 4.1) Ensure that the module descriptions are consistent regarding quality of learning outcomes and information about examinations modalities as well as prerequisites.

- A 5. (ASIIN 4.2) The Diploma Supplement needs to list the programme objectives and intended learning outcomes, the admission requirements and how many ECTS points are awarded for the whole degree programme.

Recommendations

- E 1.(ASIIN 1.3) It is recommended to increase the number of field specific electives in order to offer the opportunity for specialisation.
- E 2.(ASIIN 1.3) It is recommended to better promote the existing opportunities regarding academic mobility.
- E 3.(ASIIN 1.3) It is recommended to consider to increase the practical parts of the curriculum.
- E 4.(ASIIN 3.3) It is recommended to improve and modernize the equipment and the infrastructure of the laboratories.

H Decision of the Accreditation Commission (25.03.2025)

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

The TC discusses the procedure and follows the assessment of the experts without any changes. They also agree with the experts that there are only minor issues with the module descriptions, but that essentially complete module descriptions have been submitted, so that this does not justify a requirement. The TC therefore agrees with the experts that a recommendation in this regard is sufficient.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation*
Ba Aerospace Engineering	With requirements for one year	30.09.2030

Requirements

- A 1. (ASIIN 1.2; 1.3) Ensure that the English name of the degree programme, its intended learning outcomes and its content correspond with each other.
- A 2. (ASIIN 1.4) Ensure that the ECTS-Points awarded for the programme correspond with the actual workload of the students.
- A 3. (ASIIN 3.1) Provide a concept on how the degree programme can be managed without any structural overload.
- A 4. (ASIIN 4.2) The Diploma Supplement needs to list the programme objectives and intended learning outcomes, the admission requirements and how many ECTS points are awarded for the whole degree programme.

Recommendations

- E 1. (ASIIN 1.3) It is recommended to increase the number of field specific electives in order to offer the opportunity for specialisation.

- E 2. (ASIIN 1.3) It is recommended to better promote the existing opportunities regarding academic mobility.
- E 3. (ASIIN 1.3) It is recommended to consider to increase the practical parts of the curriculum.
- E 4. (ASIIN 3.3) It is recommended to improve and modernize the equipment and the infrastructure of the laboratories.
- E 5. (ASIIN 4.1) It is recommended to review the module descriptions regarding learning outcomes, examination forms and prerequisites.

Appendix: Programme Learning Outcomes and Curricula

According to the programme regulations (called “Program Curriculum”), the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor’s degree programme Aerospace Engineering:

“Program specific goals:

- PO.1 Getting a job in the Aerospace Engineering field domestically and abroad; as well as in other high-tech fields closely related to Aerospace Engineering.
- PO.2 Having the ability to solve technical problems in the work place by applying knowledge and skills accumulated in the training program in Aerospace Engineering.
- PO.3 Having a positive career orientation with future career planning for advancement, self-training, and further study after graduation.
- PO.4 Having the interpersonal, communication, teamwork skills and understanding of professional ethics to work in a multi-disciplinary, multi-cultural environment.
- PO.5 Having economic and political understanding and knowledge in the field of social sciences and humanities to make effective contributions to the sustainable development of society and the community.”

Furthermore, HCMUT defines the following Student Outcomes:

Ký hiệu (S.O. Code)	Chủ đề Chuẩn đầu ra (Student outcomes)
S.O.1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
S.O.1.1	Understand and recognize mathematical modeling to solve problems in technical areas such as: fluid and solid interactions, flight mechanics and control, aircraft propulsion systems, structural analysis and materials behavior, design planes
S.O.1.2	Apply science principles to solve problems in technical areas such as: fluid and solid interactions, flight mechanics and control, aircraft propulsion systems, structural analysis and materials behavior, design planes
S.O.1.3	Clearly define the problems in measurable outcomes for aeronautical engineering related problems and interdisciplinary problems applying the knowledge of aeronautical engineering
S.O.1.4	Be able to apply software, code to solve mathematical modeling of technical problems
S.O.2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
S.O.2.1	Determine technical criteria and follow the logical and systematic design process to meet the actual requirements of the project
S.O.2.2	Strictly follow non-technical constraints such as economic, environmental, social, political, ethical, health and safety, and sustainability
S.O.2.3	Consider alternative designs and select the optimal solution
S.O.3	An ability to communicate effectively with a range of audiences.
S.O.3.1	Be able to present solution to a small - problem based on science principles by speaking and writing.
S.O.3.2	Write a technical report.
S.O.3.3	Present technical issues clearly and appropriately, with effective visual aids.
S.O.3.4	Draw sketches, diagrams, technical drawings of 2D and 3D models
S.O.3.5	Communicate in English at work

S.O.4	<i>An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.</i>
S.O.4.1	<i>Demonstrate professional ethics, honesty and work responsibly.</i>
S.O.4.2	<i>Recognize the plagiarism matters in academic writing and avoid plagiarism</i>
S.O.4.3	<i>Understand the impact of engineering decisions in a global, economic, environmental and social context</i>
S.O.4.4	<i>Present contemporary issues related to Aerospace Engineering</i>
S.O.5	<i>An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.</i>
S.O.5.1	<i>Understand internal rules, operating procedures and labor discipline.</i>
S.O.5.2	<i>Share knowledge with team and guide the implementation.</i>
S.O.5.3	<i>Respect deadline and achieve the project's objectives</i>
S.O.5.4	<i>Collaborate in writing report with reasonable contribution</i>
S.O.6	<i>An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.</i>
S.O.6.1	<i>Be able to plan experiments and collect data to determine characteristics for specialized areas of Aerospace Engineering</i>
S.O.6.2	<i>Be able to analyze data and interpret experimental results to verify theoretical knowledge</i>
S.O.6.3	<i>Be able to detect errors and troubleshoot them in experiments.</i>
S.O.7	<i>An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.</i>
S.O.7.1	<i>Set up and manage effective learning plan</i>
S.O.7.2	<i>Be able to carry out independent learning</i>
S.O.7.3	<i>Realize the importance of life-long learning and career development</i>
S.O.7.4	<i>Be able to do research and present technical problems by implementing appropriate learning strategy</i>

The following **curriculum** is presented:

	Course ID	Credits	ECTS	Course title
Semester 1		17		
1	LA1003	2	4	English 1
2	MI1003	0		Military Training
3	PE1003	0		Physical Education 1
4	MT1007	3	6	Linear Algebra
5	MT1003	4	8	Calculus 1
6	PH1003	4	8	General Physics 1
7	PH1007	1	2	General Physics Labs
8	TR1001	3	6	Introduction to Engineering
Semester 2		16		
1	LA1005	2	4	English 2
2	PE1005	0		Physical Education 2
3	MT1005	4	8	Calculus 2
4	PH1005	4	8	General Physics 2
5	CH1003	3	6	General Chemistry
6	CO1003	3	6	Introduction to Computer Programming
Semester 3		15		
1	TR2039	4	8	Engineering Mechanics
2	TR1005	3	6	Fluid Mechanics
3	LA1007	2	4	English 3
4	PE1007	0		Physical Education 3
5	MT2013	4	8	Probability and Statistics
6	SP1007	2	4	Introduction to Vietnamese Law
Semester 4		18		
1	TR2005	3	6	Mechanics of Deformable Solids
2	ME2089	4	8	Mechanical Engineering Drawing
3	LA1009	2	3	English 4
4	MT1009	3	6	Numerical Methods
5	SP1031	3	6	Marxist - Leninist Philosophy
6	TR2011	3	6	Aerodynamics 1 - Incompressible Aerodynamics
Semester 5		15		
1	ME2013	3	6	Thermodynamics and Heat Transfer
2	SP1033	2	4	Marxist - Leninist Political Economy
3	TR3001	3	6	Flight Mechanics
4	EE2011	3	6	Electrical and Electronics Engineering
5	TR3077	1	2	Aerospace Engineering Lab 1
<i>Optional course in Management/Economics (3 credits among these courses)</i>				
6	IM1025	3	6	Project Management for Engineers
7	IM3001	3	6	Business Administration for Engineers
8	IM1027	3	6	Engineering Economics

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Semester 6		17		
1	SP1035	2	4	Scientific Socialism
2	TR3011	3	6	Aerodynamics 2 - Compressible Aerodynamics
3	TR3135	3	6	Aircraft Structures Analysis
4	TR3137	3	6	Aircraft Propulsion Systems
5	TR3051	1	2	Aerospace Engineering Lab 2
6	TR3365	2	4	Internship
7		3	6	Free Elective (*)
Semester 7		17		
1	SP1039	2	4	History of Vietnamese Communist Party
2	TR4079	2	4	Aerospace Engineering Design Project
3	TR4081	3	6	Aircraft Design
4	TR3039	3	6	Aircraft Stability and Control
5	TR4015	1	2	Aerospace Engineering Lab 3
6		3	6	Free Elective (*)
<i>Optional courses in Aerospace Engineering_Group B (3 credits among these courses)</i>				
7	TR4047	3	6	Computational Fluid Dynamics
8	TR4051	3	6	Finite Element Method
9	TR3087	3	6	Aeroelasticity
10	TR4057	3	6	Rocket Engines
11	TR3029	3	6	Wind Turbines
12	TR3083	3	6	Fluid Machinery
13	TR4083	3	6	Turbine Engines
14	TR4095	3	6	Vertical Take-off and Landing Aircraft
15	TR4097	3	6	Fracture Mechanics and Fatigue
16	TR4073	3	6	Impact Mechanics
17	TR3003	3	6	Mechanics of Aircraft Materials
18	TR4043	3	6	Sensors and Signals
19	TR3055	3	6	Real-Time or Embedded Systems
20	TR3063	3	6	Control-Command Systems: Analysis and Design
21	TR4067	3	6	Aircraft System Identification
22	TR4069	3	6	Avionics
23	TR4071	3	6	Design Optimization
Semester 8		15		
1	SP1037	2	4	Ho Chi Minh Ideology
2	EN1003	3	6	Humans and the Environment
3	TR4367	4	8	Capstone Project
4		3	6	Free Elective (*)
<i>Optional courses in Aerospace Engineering_Group B (3 credits among these courses)</i>				
5	TR4047	3	6	Computational Fluid Dynamics
6	TR4051	3	6	Finite Element Method
7	TR3087	3	6	Aeroelasticity

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8	TR4057	3	6	Rocket Engines
9	TR3029	3	6	Wind Turbines
10	TR3083	3	6	Fluid Machinery
11	TR4083	3	6	Turbine Engines
12	TR4095	3	6	Vertical Take-off and Landing Aircraft
13	TR4097	3	6	Fracture Mechanics and Fatigue
14	TR4073	3	6	Impact Mechanics
15	TR3003	3	6	Mechanics of Aircraft Materials
16	TR4043	3	6	Sensors and Signals
17	TR3055	3	6	Real-Time or Embedded Systems
18	TR3063	3	6	Control-Command Systems: Analysis and Design
19	TR4067	3	6	Aircraft System Identification
20	TR4069	3	6	Avionics
21	TR4071	3	6	Design Optimization