



CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

EVALUATION REPORT

STUDY FIELD of AERONAUTICAL ENGINEERING

at Kauno technikos kolegija

Expert panel:

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4. Lt Col Andrius Stuknys, *representative of social partners*;
5. Mr. Ramil Ahmadov, *students' representative*.

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Study Field Data

Title of the study programme	<i>Aircraft Maintenance Engineering</i>	<i>Avionics Systems Engineering</i>
State code	6531EX007	6531EX065
Type of studies	College Studies	College Studies
Cycle of studies	First	First
Mode of study and duration (in years)	Full time (3 years) Part time (4 years)	Full time (3 years) Part time (4 years)
Credit volume	180	180
Qualification degree and (or) professional qualification	Professional Bachelor's Degree in Engineering	Professional Bachelor's Degree in Engineering
Language of instruction	Lithuanian	Lithuanian
Minimum education required	Secondary Education	Secondary Education
Registration date of the study programme	15th April 2016	3rd March 2021

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I. INTRODUCTION

1.1. BACKGROUND OF THE EVALUATION PROCESS

The evaluation of study fields is based on the Methodology of External Evaluation of Study Fields approved by the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC) 31 December 2019 Order [No. V-149](#).

The evaluation is intended to help higher education institutions to constantly improve their study process and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and self-evaluation report (SER) prepared by Higher Education Institution (HEI); 2) site visit of the expert panel to the HEI; 3) production of the external evaluation report (EER) by the expert panel and its publication; 4) follow-up activities.*

On the basis of this external evaluation report of the study field SKVC takes a decision to accredit the study field either for 7 years or for 3 years. If the field evaluation is negative then the study field is not accredited.

The study field and cycle are **accredited for 7 years** if all evaluation areas are evaluated as exceptional (5 points), very good (4 points) or good (3 points).

The study field and cycle are **accredited for 3 years** if one of the evaluation areas is evaluated as satisfactory (2 points).

The study field and cycle are **not accredited** if at least one of evaluation areas is evaluated as unsatisfactory (1 point).

1.2. EXPERT PANEL

The expert panel was assigned according to the Experts Selection Procedure as approved by the Director of Centre for Quality Assessment in Higher Education on 31 December 2019 [Order No. V-149](#). The site visit to the HEI was conducted by the panel on *8th November, 2022*.

Prof. Dr. David Kennedy (Panel Chairperson), Head of Department of Mechanical Engineering, Technical University Dublin, Ireland;

Prof. Dr. Giovanni B. Palmerini, Professor of Navigation and Space Systems, School of Aeronautical Engineering, The Sapienza University of Rome, Italy;

Lect. Dr. Bassam Rakhshani, Lecturer of Mechanical and Aircraft Engineering, School of Engineering and Computing, University of the West of Scotland (UWS), United Kingdom;

Lt Col Andrius Stuknys (social partner), Commander of Air Force Armament and Equipment Repair Depot, Air Force of the Lithuanian Armed Forces, Lithuania;

Mr. Ramil Ahmadov (students' representative), part-time student of the second cycle study programme "Engineering Business Management" at the University of Warwick (UK), and Quality Manager, Quality Assurance Department, National Aviation Academy, Azerbaijan.

1.3. GENERAL INFORMATION

The documentation submitted by the HEI follows the outline recommended by SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site visit:

No.	Name of the document
1.	Civil Aviation Administration (CAA) approval document (28/06/2018)
2.	Quality Manual
3.	Annual quality reports of the last 3 years
4.	Study programme "Aircraft Maintenance Engineering" improvement plan for 2020-2023
5.	Examples of logbooks filled during student internships
6.	Example of a schedule for student with special needs

1.4. BACKGROUND OF AERONAUTICAL ENGINEERING FIELD STUDIES AT "KAUNO TECHNIKOS KOLEGIJA"

"Kauno technikos kolegija" (hereafter - KTK, also the College) is a higher education institution in Lithuania that provides specialised education/training in the field of Engineering. KTK became a higher education institution in 2002 on the common proposal of the Lithuanian Ministry of Education and Science, and Kaunas University of Technology. The Resolution No. 1376 of the Government of the Republic of Lithuania of 30 August 2002 reorganised Kaunas Higher Technical School into Kaunas Technical College. The College is a public legal entity. It offers nine professional bachelor programmes and is focused on providing a balancing skills comprising theoretical knowledge and practical skills.

The College has 9 study programmes: Automotive Engineering; Materials Processing Engineering; Motor Transport Electronics; Electronic Engineering; Aircraft Maintenance Engineering; Construction Engineering; Road Engineering; Electrical Energy; Avionics Systems Engineering. The latter offers the study programmes of Aircraft Maintenance Engineering and Avionics Systems Engineering, that are under review.

The structure of the College and study programme management consist of: KTK council; Academic council; and director. The director oversees all aspects of the study programmes through study deputies, programme heads and committees, etc.

KTK has an established department of commercialisation of applied research and services, where commissioned/commercial research for organisations, public sector, and businesses in Lithuania are conducted. KTK actively collaborates with 43 higher education institutions, and there is a joint agreement with Kaunas University of Technology (hereafter - KTU) for KTK students to pursue postgraduate (MSc) study at KTU. All of these demonstrate a forward looking institution to be a research active/player institution.

KTK has strong industry links for internship, programme improvement and project collaborations. AB "FL Technics", UAB "Termikas", UAB "KAMS", Zokniai Airport, UAB Helisota, JSC Termikas, UAB DAT LT, etc. are examples of employers who collaborate closely with KTK in a number of areas, including academic, training, and technical support for teaching.

Aircraft Maintenance Engineering study programme was registered on 15 April, 2016 and started to be implemented on 1 September, 2016. Avionics Systems Engineering study programme was registered on 3 June, 2021 and will be started to be implemented on 1 September, 2022. This is the first international external evaluation of aeronautical engineering field studies at KTK.

Additionally, the Civil Aviation Administration evaluation of the Aircraft Maintenance Engineering in 2018 is that this programme meets the fundamental knowledge requirements of subcategory B1.1 of Part 66 (Certificate of Compliance of the Aircraft Maintenance Engineering programme with CAA requirements, Annex 12, and Civil Aviation Administration document, Annex 13).

II. GENERAL ASSESSMENT

Aeronautical Engineering study field and first cycle at Kauno technikos kolegija is given **positive** evaluation.

Study field and cycle assessment in points by evaluation areas

No.	Evaluation Area	Evaluation of an Area in points*
1.	Intended and achieved learning outcomes and curriculum	2
2.	Links between science (art) and studies	3
3.	Student admission and support	4
4.	Teaching and learning, student performance and graduate employment	4
5.	Teaching staff	3
6.	Learning facilities and resources	3
7.	Study quality management and public information	3
	Total:	22

*1 (unsatisfactory) - the area does not meet the minimum requirements, there are fundamental shortcomings that prevent the implementation of the field studies.

2 (satisfactory) - the area meets the minimum requirements, and there are fundamental shortcomings that need to be eliminated.

3 (good) - the area is being developed systematically, without any fundamental shortcomings.

4 (very good) - the area is evaluated very well in the national context and internationally, without any shortcomings;

5 (excellent) - the area is evaluated exceptionally well in the national context and internationally.

III. STUDY FIELD ANALYSIS

3.1. INTENDED AND ACHIEVED LEARNING OUTCOMES AND CURRICULUM

Study aims, outcomes and content shall be assessed in accordance with the following indicators:

3.1.1. Evaluation of the conformity of the aims and outcomes of the field and cycle study programmes to the needs of the society and/or the labour market

The focus of Aircraft Maintenance Engineering and Avionics Systems Engineering study programmes are in the Aerospace Industries on Maintenance and Avionics systems combined with general modules on engineering, science, IT and business modules that help develop the technological, social, IT and personal skills of the graduate to meet the needs of Industry. On graduation from the programmes, graduates must still undertake further studies to become fully qualified operators in these aerospace disciplines that can take a number of years, post-graduation, to achieve. On graduation, the students are prepared to work in other engineering career paths that arise in the labour market. In general, the key aims and objectives include the ability to solve problems on Avionics and Maintenance in the Aircraft Industry via learning methods such as practice and theory.

According to the SER, statistical evidence showed that there is a broad and high demand for graduates of the programmes in a wide range of areas in the Aeronautical sector and in careers in engineering in general. Focused activities for graduates include:

- Carrying out aircraft maintenance procedures
- Maintenance of aircraft structure and systems
- Operation of the aircraft structure and its elements
- Implementation of procedures for the maintenance of aircraft electronic systems.

On examination of the programmes and in discussions with the various stakeholders during the visit to KTK, it is obvious that the programmes have high interactions with Industry leading to Internships, work placements, project work and future careers in the marketplace. Although the programmes consist of focused modules on Aircraft Maintenance and Avionics, students are not qualified to work in these roles as fully trained operatives in the disciplines without further learning and certification.

The aims of the programmes as outlined in the SER document are as follows:

- The aim of the Aircraft Maintenance Engineering study programme is to train specialists in the field of Aeronautical Engineering able to solve problems of aircraft mechanical system operation by applying modern methods and tools that correspond to theoretical knowledge and technological progress in a constantly changing environment, and seeking professional development related to the change of professional activity.
- The aim of the Avionics Systems Engineering study programme is to train specialists in the field of Aeronautical Engineering able to solve problems of aircraft avionics systems engineering operation by applying modern methods and tools that correspond to theoretical knowledge and technological progress in a constantly changing environment, and seeking improvement related to the change of professional activity.

The learning outcomes of both programmes as listed in the SER state that students acquire theoretical knowledge, engineering analysis abilities, skills necessary for carrying out design works and applied research, practical knowledge and skills for solving engineering tasks, personal and social abilities characteristic of engineering activities as well as understand the importance of individual lifelong learning and prepare for it.

Overall, the aims and outcomes of the programmes train and prepare students to work in the market place in numerous engineering roles and industries related to the Aerospace Industry. There follows a wide range of further studies (up to 5 years), work experience, certification and examinations for graduates to work as certified professionals in the industry, namely Aircraft Maintenance Engineers or Avionics Systems Engineers.

Although the technical expertise of lecturing staff was at a satisfactory standard and work experience on the programme was at a high level in terms of opportunity and hours, the graduates still have a high learning curve to go through before reaching the required standards for the Aviation Industry.

3.1.2. Evaluation of the conformity of the field and cycle study programme aims and outcomes with the mission, objectives of activities and strategy of the HEI

The KTK mission states in summary: “Engineering competences for the well-being of a smart society”.

Based on the documentation provided, meetings with Senior Management and Teaching staff of the programmes, KTK is focused on professional training in the study programmes of Aeronautical Engineering study field and in engineering in general.

KTK strategy provides for consistent changes in quality improvement and assurance with the goal of being a leader in technical studies in the Baltic region. This strategic goal can be achieved by adapting the learning outcomes of the study programmes to changes in the labour market and the development of the necessary competencies of students.

It was evident during the visit that large structural funds had been invested in new buildings, equipment, staff development and programme development, with future expenditure planned, embedding both Aircraft Maintenance and Avionic systems in the College for the future. The College also has a track record in delivering 3-year professional programmes in these disciplines. The studies comply with legal requirements and the structure, content, teaching, learning and assessment methods enable students to achieve the aims and learning outcomes of studies. The College is recognised as a provider for the professional programmes on a legal basis, meeting the first cycle of study.

This is achieved through the following:

- Meeting legal acts for education within Lithuania
- Working within the qualification framework of Lithuania and Europe (ECTS system)
- Compliance with Aircraft Commission regulations
- Working within rules and regulations of Civil Aviation Authority
- Compliance with Higher Education Authority
- Investment in Infrastructure, equipment, resources and staff
- High Engagement with Industry/Social partners, Alumni and Industrial experts
- Contribution of credits to various modules and areas of learning such as compulsory, electives, study fields, Internships, Thesis, and specialisation modules.
- Flexible modes of delivery and study duration
- QA systems to help improve the learning and keep current with Industry needs

KTK has focused attention on student learning as part of their remit in providing learning in knowledge, analysis, design work, applied research, personal development skills, IT and practical skills to solve engineering tasks in general. It is evident from observations/recommendations from previous evaluations that the HEI is committed to

improving and updating the learning process and resources to improve the programmes of study on an ongoing basis.

3.1.3. Evaluation of the compliance of the field and cycle study programme with legal requirements

Both Aircraft Maintenance Engineering and Avionics Systems Engineering study programmes meet the legal requirements in terms of credits (ECTS) for specific areas of learning, industrial training, thesis work and hours of study per credit. Although the areas of research or applied research could be improved within the programmes for both staff and students, the overall structure and delivery of the programme meets the legal requirements specified. ECTS credits for each module and area are well defined and presented, however students do have options and choices in some module selections. This means that not all students complete the same modules on the programmes but gives them a choice, based on their strengths and interests. Table 1.1 on page 11 of the SER details the credits for each discipline and are in line with the legal requirements.

Table 1. programmes' Aircraft Maintenance Engineering (AME) and Avionics Systems Engineering (ASE) compliance to general requirements for *first cycle study programmes of College of HE level*

Criteria	General legal requirements	AME/ASE
Scope of the programme in ECTS	180, 210 or 240 ECTS	180/180
ECTS for the study field	No less than 120 ECTS	Yes/Yes
ECTS for studies specified by College or optional studies	No more than 120 ECTS	109/109
ECTS for internship	No less than 30 ECTS	30/30
ECTS for final thesis (project)	No less than 9 ECTS	9/9
Practical training and other practice placements	No less than one third of the programme	240/240
Contact hours	No less than 20 % of learning	2328/2328

3.1.4. Evaluation of compatibility of aims, learning outcomes, teaching/learning and assessment methods of the field and cycle study programmes

According to the SER (page 8, section 1.1.1.1), the aim of the study programmes is to train specialists in the field of aircraft maintenance and avionics engineering. Such an aim in general, seems to be well articulated in the construct of the programmes (in particular Aircraft Maintenance Engineering). And the selection of the modules (subjects) for theoretical and practical studies is well informed by the need of the programmes aim and objectives. Throughout annexes 4, 5, and 6, the learning outcomes are mapped, and presented in their relevance to the subjects, programme objectives and competencies. Very detailed and extensive effort is made to demonstrate the study cycle compliance with level 6 of the descriptions of the European Qualifications Framework (EQF).

In annexes 1 and 5, the teaching methods are clearly outlined for the given modules (subjects) that ranged from formal lectures, laboratory and practical sessions, and tutorials. The teaching is supported by implementing specialised laboratories and equipment (annex 8) that appear to be aiding the achievement of intended learning outcomes by students. The assessment methods on the other hand offer a good range of competency and knowledge-based evaluation. It is evident that students are assessed throughout the study terms by interim assessments to ensure learning outcomes are achieved accordingly. Assessment methods to achieve the learning outcomes include Internships, Interim assessment and final examinations, focused on assessing Knowledge, Understanding, Analysis, Design, Research, Engineering activities and Personal development skills.

All such methodologies are well in line with the standard HE teaching and learning practices. Subjects of the study programmes are grouped into 4 categories; general, study field, deeper specialisation, and optional subjects. In table 1.1 (SER, page 11) the compliance of these study subjects with the description of the general requirements for the first cycle and integrated degree programmes is demonstrated by means of assigned credits according to legal requirements. The outlined structure of the study field by means of study subjects, learning outcomes, teaching/learning/assessments methods is well perceived by students, academic members and expert panel, that make the study field relevant to the aim of the programmes and what is intended for the students when they graduate.

3.1.5. Evaluation of the totality of the field and cycle study programme subjects/modules, which ensures consistent development of competences of students

The study field subjects are clustered in 4 groups, namely:

- General subjects of higher education college studies
- Subjects of the study field
- Subjects for deeper specialisation
- Optional subjects

in which the subjects belong to each group are relevant to a certain set of learning outcomes and skills/competency development. The order of delivering each group is well aligned with the order where learning outcomes to be achieved at certain terms. Annex 1 provides a comprehensive map of the study subjects distribution over the terms and years of study with detailed information on the method of delivery, credit and number of hours for delivery. Looking at the aim and objectives of the study field and study programmes, it is clear that the contents of the subjects are in good alignment with the theoretical, practical and EASA (European Aviation Safety Agency) fundamental knowledge requirements (SER, section 1.1.1.1). Although the practical content in terms of computer-based laboratory, and hands-on activities on site of KTK requires further development and/or improvement, the study field offers a good amount of off-site practical and internship opportunities with industrial partners - well above Higher Education norm (800 hours in total for aircraft maintenance engineering, SER Annex 1).

While the Aircraft Maintenance Engineering study programme constitutes a well-structured study cycle, with subjects distributed in appropriate and relevant study subject groups, the Avionics Systems Engineering study programme however, requires further improvement. The study subjects need better arrangement to best fit with their groups, e. g. subjects like “Images, Image Processing and Rendering”, “Fundamental of Autonomous Flight”, and “Wireless Communication and Antennas”, would best fit the study field subject group. Also, the practical laboratory contents seem to lack up-to-date and specific forms of aircraft avionics-related exercises and activities. Hence, the panel thinks that students will experience a practical knowledge deficit in this study programme.

Overallly, there is a clear path on the kind of competencies and skills that students are expected to develop as a result of the learning outcomes offered by the study field in general, and by the subjects in particular. These competencies and skills are identified and listed in annex 3. Other observations noted was that an electronics module was listed as an optional module on the Avionics programme, experimental work in projects was quite low (Research and problem solving) and students design their own study programme which may lead to the emission of core modules in some cases. Students indicated that more information on Licencing and EASA certification is required and that fault diagnostic activities could be enhanced in the programmes. KTK implements various methods of assessment for theoretical knowledge and practical skills to assess the achievements and competences of students studying in the field of Aeronautical Engineering studies: interview, portfolio assessment, testing, performance of practical tasks and assessment in the workplace, case study, observation, self-analysis using reflection, etc. The assessments and recognition of competences acquired through non-formal and informal learning are organised and coordinated by the Head of Department for Commercialisation of Applied Research and Services. Assessment Board for Assessment and Recognition of Competences Acquired by Non-Formal and Informal Learning in the Aircraft Maintenance Engineering study programme approved.

Based on the data provided on SER Table 3.1 (3.1.1.2, page 23) it can be assumed that there is a gradual decrease in the number of the students applying to Maintenance Engineering, which perhaps indicates that the degree is becoming less popular. It is recommended therefore, to align the subjects and the contents of both degrees with EASA Part 66 B1 (Maintenance Engineering) and B2 (Avionic System Engineering) modules. Bearing in mind that, the degrees provided by the KTK are professional bachelor's degrees, and the volume of practical activities (training) required should be adequately high. KTK may consider applying for the specific recognition and acceptance from CAA and/or EASA: EASA Part 66.A.30 (a)2 Basic experience requirements states that: *An applicant for category B2 and subcategories B1.1 and B1.3 aircraft maintenance licence shall have acquired 3 years of practical maintenance experience on operating aircraft and completion of training considered relevant by the competent authority as a skilled worker, in a technical trade.*

As the practical part of the education is mainly conducted on operating aircrafts, this could be a good opportunity for KTK to reduce the experience requirements from 5 years to 3 years, once the theoretical part is in compliance with Part 66 and the practical part is well organised.

More English language modules mainly focused on specific units of the study related to Part 66, or opportunity to teach the speciality subjects in English language.

Finally, one key way of highlighting if the aims and outcomes of the programmes are met is via students' work on each year of the programmes such as; examination material, reports, assessments, project work and industry reports. The availability of this data was quite minimal on the day of the visit and therefore hard to determine the level of learning achieved by the students of the programme.

3.1.6. Evaluation of opportunities for students to personalise the structure of field study programmes according to their personal learning objectives and intended learning outcomes

The provision of personalised structure of study as described in SER, section 1.2.4, include options of alternative or elective modules as shown in annex 1, so students will have the opportunity to select modules of personal interest and and/or capability. Students are given the option to study abroad through ERASMUS+ programme, study in a language of their choice, and also the opportunity to select a topic of their choice for final year project/thesis.

Students can choose to study remotely and on an individual schedule if there is work or personal circumstances affecting the normal mode of study. KTK is in an agreement with KTU to allow KTK students' progress onto master study at KTU by completing a bridging course (Joint Activity Agreement No. SV5-308/117-10, 19 March 2018).

There were 5 students involved with the ERASMUS programme in 2020-21, there is no strong evidence to demonstrate the benefit of ERASMUS to the field of study. It is not clear whether KTK students are fully aware of the scope and benefit of the ERASMUS, although there has been systematic encouragement to take part in ERASMUS, as there is a dedicated coordinator at KTK of International Relations that oversees activities, participation and provision of ERASMUS programme. It seems information on the programme is vastly available during career day, website, and emails. Also, the level of information and awareness given to the students on how to progress onto master programmes - especially with KTU - is not fully elaborated upon in the SER. It is impartial therefore to create a revised provision for the personalised study to include aspects of postgraduate study advice and guidance, and also encourage mobility, plan and participation in extracurricular activities.

3.1.7. Evaluation of compliance of final theses with the field and cycle requirements

The list of final year thesis presented in Annex 2, entails topics that are highly relevant and articulated to the study field - especially for Aircraft Maintenance Engineering study programme. Given the expertise of the academic staff in the area of the project topics, it is anticipated that a great benefit in terms of technical knowledge and expertise may be achieved and/or developed during the final year thesis study. The final year theses are governed and carried out in accordance with the Description of the Procedure for the Preparation, Defence and Evaluation of Graduation Theses at KTK (approved by the Resolution No. V18-14 of the KTK Academic Council of 18 February 2014 (SER, section 1.2.5). Guidance to students is given by the “Description of the Procedure for Preparation, Defence and Evaluation of the Final Thesis” that is available at the start of the thesis. It includes how to structure and organise the thesis, with description of the marking and submission – a very useful document that would make the process of thesis write-up quite clear and well understood. The panel understands that some of the theses are conducted with the social/industrial partner and that such partners have an active role in complementing the thesis topics, solutions, provide access to students to carry on with visits for thesis purposes, and provide assistance with the problems of the thesis.

The samples of the thesis presented to the panel were largely oriented to aircraft systems and structures problems. However, the titles mostly are based on analysing aspects of the aircraft systems/structures problems and solutions, there was little/weak evidence of a thorough analytical work in terms of data, significant technical results, and/or significant numerical analysis (calculations, estimation, etc.). It is advised that titles be diversified onto different objectives, e. g. investigate, improve, explore, design, study, review, etc.

A review of the sample theses marks by the panel, indicated that the marks were relatively high. For the level of output presented in those theses the panel would recommend a more moderate level of marking.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. The study field structure and subjects are well reconciled with the study cycle requirements and standard for the HEI.
2. The learning outcomes are well aligned with the aim and objectives of the study field.

3. Modules (subjects) of the study field are at the level commensurate with the study cycle and are proportionally distributed over the terms and year of study.
4. Final year theses are oriented at highly technical/industry based topics and problems.
5. Collaborations and engagement to the Industry and Social Partners are high.

(2) Weaknesses:

1. The Avionics Systems Engineering study programme requires a better distribution and allocation of modules to appropriate study groups.
2. Modules in Electronics should be core for the Avionics Systems programme
3. Insufficient hands-on and practical lab activities on site of KTK.
4. Lack of systematic guidance/promotion of postgraduate study and extracurricular activities.
5. Applied Research activities could be enhanced.
6. Experimental work should be enhanced in the programmes.

3.2. LINKS BETWEEN SCIENCE (ART) AND STUDIES

Links between science (art) and study activities shall be assessed in accordance with the following indicators:

3.2.1. Evaluation of the sufficiency of the science (applied science, art) activities implemented by the HEI for the field of research (art) related to the field of study

The nature and the amount of the applied science activities implemented by KTK in the study field programmes appear overall correct and sufficient. Specifically, they do match the topics dictated by legal documents on the description of the study cycles, and they clearly provide a sound basis to achieve the legal outcomes indicated there.

This positive judgement is however limited in its extent to a good level, not really showing any very good or remarkable aspect. In fact, while the framework is certainly fitting the requirements for a professional bachelor level, there is a very limited evidence of any efforts in creating a true, innovative engineering mind in the students. Nor there is any evidence of the effort to teach them the characteristic engineering approach to understand and try to overcome technological obstacles and pursue more effective, efficient and optimal solutions. The teaching (both the formal one “ex cathedra” and the practical one in the labs) and all the different

activities proposed in the framework of the study programme do aim to educate excellent technicians, duly prepared to provide their professional skills in the current technological scenario. Overall, the implementation of sciences' content (applied sciences' one in the specific case) is done - quite well, according to the analysis and to the opinions collected - mostly referring to practical application of today's technologies. However, there isn't a focus on teaching how to contribute to the advances in the scenario itself - stressing limitations of current status, and possibilities offered by upcoming technologies - which should be part of the engineering curriculum, and communicated to students all along their higher level education. Again, it is perfectly acceptable in the frame of a professional bachelor, but no further appreciation can be given. As a result, the preparation of the students awarded with the degree is good and even very good with respect to the current industry requirements, but it is difficult to judge how these outgoing students will be able - on the basis of the received education - to adapt themselves to new technologies they will face during their professional life, even in the medium term.

3.2.2. Evaluation of the link between the content of studies and the latest developments in science, art and technology

The link between the contents taught in the study programme and the current state-of-the-art in the relevant technologies is adequate. Specifically, it is gained through two different pillars:

- the first one is based on the expertise of the instructors: all of them are well knowledgeable about the relevant disciplines and perfectly aware of the global approach of the study programme. Indeed, even if the teaching staff, as reported also in following section 3.5, cannot be considered at the forefront of the applied research, the instructors, building on a quite relevant experience, do their best in order to master the latest developments in their field. In short, they aren't at all directly involved in the advances in the field, but they do have the background to understand these advances and to introduce them in their teaching activity.
- the second pillar is represented by the internships with local industrial entities, where students - at least at the current time and in the present economic condition in the area - face current state-of-the-art procedures in the aviation industry.

Therefore, it can be easily claimed that the link between studies and latest developments is existing and can be definitely considered satisfactory at the present time. The uncertainty about

future conditions concerning the second pillar, which is not depending on the HEI and strongly affected by overall economic situation, is limiting the judgement to a positive, and not an exceptional, one.

3.2.3. Evaluation of conditions for students to get involved in scientific (applied science, art) activities consistent with their study cycle

The involvement of the students in the scientific and technical activities to be carried out at the college, aside from curriculum standard ones, is extremely limited. This issue, duly reported in the institution's self-evaluation, includes all "in house" activities, out of the standard syllabus, to be performed under the direct guidance of instructors or in cooperation with them, as work in the labs, literature research at the library or research assignments.

This significant problem is not due to the institution or to the availability of instructors that, also on the basis of on-site visit, can be judged as largely sufficient and appealing (and, for the instructors, motivated) to encourage participation. It should be instead related to the strong commitment of the large majority of the students towards practical activities to be performed in the internships. Specifically, as confirmed by on-site hearings, internships appear to be really attractive for most, if not all, of the students, and the fruitful connection with local firms of the aviation field is a major factor in the perspective student's choice for KTK. Therefore, students become very focussed on the internships and do not provide enough attention nor time to other, "in house" activities proposed by the institution.

On the other hand, it is clear that these internships do provide, on their side, the technical involvement requested for a professional bachelor programme, at the proper level in terms of complexity. Based on recent experiences and feedback gained during this evaluation exercise, these internships are sufficiently aligned with the needs of the study programme. At the same time, as they are built on the request of local industrial partners, extremely active in the field, they are intrinsically up-to-date and well-matched as far as it concerns the content, at least with the current professional occupation scenario in Lithuania. Indeed, internship can be considered as a strength of the programme and the right gear between theory and applications of current interest, which is the aim, often difficult to achieve, for professional bachelor courses.

It has however to be highlighted that leaving outside, almost totally, the students' involvement in advanced activities could end up in a serious issue once the external partners should not

maintain their state-of-the-art standing. In different words, the institution could certainly pursue the advancement of science and technology better than industrial partners, who are definitely exposed to the downturns of the economic situation. If the HEI does not promote enough its own, “in house”, activities in the field or - as it looks to be the case here - do promote them but is not able to gain a satisfying students’ involvement, there is the risk for the study programme to lose its higher-education level in teaching and preparing students as soon as surrounding economic environment in the area would not be anymore bright and growing. In short, the evaluation is definitely positive in the near term, but has to include some caution about the future behaviour and the adaptation capabilities proper of an education system strongly based on (and not only backed from) local economic operators external to HEI.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Up-to-date specialistic knowledge typical to a professional bachelor programme is duly provided, mainly through internships.
2. Students are extremely interested and eager to be part of this peculiar educational path, providing them with the knowledge level fitting today’s labour market request.
3. The HEI staff clarified during on site visit to be aware of this labour-oriented approach, with its advantages and its limitations, and proved to be motivated in attracting students to additional scientific/technological activities, out of the typical syllabus.

(2) Weaknesses:

1. The participation of students to extra-curricular activities and to projects aimed to increase the knowledge above standard is quite limited everytime they are organised “in-house” by the HEI.
2. There could be only a limited control of the college about the details of the education experience outside the college.
3. The education gained through internships is necessarily limited to current needs, and does not ensure the acquisition of the scientific and technical skills needed to adapt to future advances in technology.

3.3. STUDENT ADMISSION AND SUPPORT

Student admission and support shall be evaluated according to the following indicators:

3.3.1. Evaluation of the suitability and publicity of student selection and admission criteria and process

The web site of the College provides full and very detailed information regarding application to study at KTK, including the aeronautical engineering degrees. As it is mentioned on SER Part 3.1.1, all admission requirements are in compliance with rules and regulations of the Republic of Lithuania and the KTK, where the step-by-step guidance is provided. All necessary information such as, information on available degrees, admission requirements for each degree, description of the suggested degrees, recognition of the certificates and transcripts, including the conditions pertinent to foreign students, are provided accordingly.

KTK website also provides description and structure of the aeronautical engineering field study programmes, information on fees and funding, structure of the courses and modules, entry requirements and application process. All are in one place and well-organised in a user-friendly format.

However, the learning outcomes of the given degrees are provided and presented in a separate link/page, that is of relatively poor formatting that could be improved on.

3.3.2. Evaluation of the procedure of recognition of foreign qualifications, partial studies and prior non-formal and informal learning and its application

KTK Procedures for the Assessment and Recognition of Competences Acquired through Non-Formal and Informal Learning (approved by the Academic Council on 1 October 2013, Minutes No. V18-43, current version Minutes No. V18-116 of 29 October 2019) are in place and are followed accordingly (SER, section 3.1.2.1). Candidates can apply for assessment and recognition of competences acquired during courses, seminars, internships, projects, non-formal education programmes, professional activity, unpaid or voluntary work, self-directed learning, etc. The admission page of the College's website provides detailed information on the conditions for acceptance and recognition of foreign qualifications, including the informal and non-formal learning recognitions.

3.3.3. Evaluation of conditions for ensuring academic mobility of students

KTK website provides detailed information on student mobility programmes, namely the ERASMUS+, where several aeronautical degrees are covered. According to the information given in SER 3.2.1.3 (pg. 26), the number of the outgoing students is good enough and KTK is providing all the required and necessary support. This was also confirmed during the meeting with the students. Based on the information given by the students during the meeting, it is noted that they are aware and well informed about the mobility programme, and some of the final year (3rd year) students have already participated in it, and some are registered (1st year students) to participate in the ERASMUS programme for the forthcoming academic session.

3.3.4. Assessment of the suitability, adequacy and effectiveness of the academic, financial, social, psychological and personal support provided to the students of the field

As it is mentioned in the SER, staff are very supportive, and that was also confirmed by the students during the meeting with the panel. Students do acknowledge that they are supported by KTK in all areas, including but not limited to;

- Academic – structure of the courses, thesis, course works, practical application of theoretical knowledge, and etc.
- Financial – scholarships and competitions with the awards.
- Social – places to spend the free time, sport activities, etc.

Also, during the meeting with the management team, it was highlighted that part of the funds from the social partners and EU is allocated to different scholarships.

It seems that appropriate support for students with special needs and disabilities are available at KTK. This was evidenced during the facility walkaround. In addition, students are allowed to study in accordance with the specific study schedule based on their special needs.

It could be repeated here that KTK has an agreement with KTU that allows those students who intend to continue on Master degree, attend “fast track” bridging course to gain the required credit for the MSc programme.

3.3.5 Evaluation of the sufficiency of study information and student counselling

Students can obtain all the required information related to the study (degree) from the KTK website, and also during the “Survival Camp” that is organised by the student union for first year students (SER 3.2.3.1, pg. 29). During the meeting with the panel, student representatives

have co-confirmed that such information and survival camp activities are available to them at KTK. However, students were concerned about the lack of information regarding the successful career prospects, namely the licensing process and requirements to receive AM(E)L (Aircraft Maintenance Engineer Licence). Since the contents of the degrees do meet the Part 66 requirements (SER 1.1.1.1, page 8), and the career path is identified as “able to work in aircraft or helicopter repair and maintenance companies”. It is reasonable therefore to provide detailed information on that case (AMEL licensing process) in a relevant section of the website. In addition, providing such information during the “Survival Camp” also will allow students to plan their career route in advance.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Students are thoroughly supported and guided through their industry internship
2. Information about study programmes, admission, mobility and industry links are vastly available/accessible (online)

(2) Weaknesses:

1. Insufficient information to students regarding their prospective future career paths (licensing process)

3.4. TEACHING AND LEARNING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT

Studying, student performance and graduate employment shall be evaluated according to the following indicators:

3.4.1. Evaluation of the teaching and learning process that enables to take into account the needs of the students and enable them to achieve the intended learning outcomes

The study field is offered in two full and part time modes giving students the opportunity to make their study adaptation around personal circumstances. In both modes the delivery of the programmes commensurate with the HEI standards, where theory lectures, practical labs and other forms of didactic means are provisioned to enable students achieve the learning outcomes. In annex 1 and 5, there are detailed layouts demonstrating the delivery methods, number of hours and ways of students’ engagement with the modules. The delivery methods

with the given number of hours include lectures, seminars, practical/laboratory works, internships, consultations, independent and group projects and graduation thesis (KTK Study Regulation, approved by the Resolution of the Academic Council on 28 February 2017, Minutes No. V18-19, current version on 21 January 2020, Minutes no. V18-05). The panel is fully satisfied that all these methods are of normal and standard HE practices that KTK has adopted routinely as their standard teaching and learning approach. Students appeared to be appreciative of the teaching and learning process as they voiced their satisfaction from the learning progress. Moreover, social partners/employers have stated that they are fully satisfied with the level of (theoretical) knowledge of KTK students when they arrive for internship and/or employment.

Students' engagement with the study programmes is well defined and pursued in the study field structure. As stated in SER, section 4.1.1.1, the methods of engagement include but are not limited to; 1) groupworks 2) individual projects 3) educational visits 4) problem-solving tasks 5) interactive lectures 6) case studies 7) problem-based learning. All of which would ensure learning outcomes are achieved for the intended study subjects. The learning outcomes map in annex 3 for example illustrates the link between competencies and learning outcomes of the study programme. In the map, T1 refers to competence defined as "intercultural competence and the ability to work in a team in accordance with common human values" that is matched with learning outcome F1 (annex 3, 6) - be able to solve engineering problems independently and in a team. This is the result of the forms of engagement relevant to; groupworks; individual projects; problem-solving tasks.

However, it seems the integration of IT-based learning still requires further improvement. IT-based learning will improve the achievement of engineering design learning outcomes (C1, C2, annex 6). Students are only engaged with CAD, but other platforms such as; MatLab, simulation software, electronic circuit design (for avionics) would be highly beneficial if fully implemented. Also, improvement of in-house lab/workshop practical activities (in particular avionics labs) will ensure the integrity of the learned theories and achieve learning outcomes in the area of engineering activities; E1, E2, E3.

The panel is satisfied that KTK students after graduation can progress onto master study at KTU when they pass a bridging course (top-up course) - a very thoughtful effort and provision that enables students to progress and achieve further in their education and ultimately improve their career portfolio.

3.4.2. Evaluation of conditions ensuring access to study for socially vulnerable groups and students with special needs

There were no students with special needs in the aeronautical engineering field, and the college could not organise such a panel of special need students and/or counsellors. Hence, the evaluation is fully based on the stated overall College provisions in the SER. KTK is a participant of State Studies Foundation for students with disabilities "Increasing access to studies" (<https://vsf.lrv.lt/lt/projektas>). Students with special needs can receive various forms of support provided by KTK Academic Council. The forms of support stated in SER section 4.2.1 are; support for students with limited working capability (<45%); social scholarship, loans; study fund, discount on dormitory; availability of ease of access and mobility within KTK campuses; etc. The panel believes that such provisions and support are vital to those in need, and should be regularly reviewed to reflect any new and unforeseen challenges that students may face, e. g. the pandemic.

3.4.3. Evaluation of the systematic nature of the monitoring of student study progress and feedback to students to promote self-assessment and subsequent planning of study progress

According to the SER, section 4.2.1, the student monitoring is regulated by KTK's study quality monitoring council (Regulations of KTK Study Quality Monitoring Council, approved by the Resolution of the Academic Council on 7 April 2015, Minutes No. V18-17). Also, the study organisation office at KTK oversees registration of students, monitoring of achievements and study objectives, and other students study matters. During the meeting with KTK academic staff, the panel was made aware of the rules and procedures for monitoring students, recording their results for progress, dropout, excellence and study quality assessment. The SER does indicate and refers to measures implemented by KTK committees and councils to systematically (annually) analyse exam results, improve quality of study, review survey results, and oversee feedback organisation and implementation. Feedback to students are provided regularly on aspects of their study and also through mentoring programmes. Individual progress is evaluated and reflected upon. Moreover, there is additional support provided by academic advisors, mentors, and heads of programmes to students to help with study planning, resolve study problems, provide timely feedback and ultimately ensure academic achievement. The panel has had a discussion with student representation where the above aspects were confirmed and levels of satisfaction amongst students were evident.

As an example, data for thesis results are presented in table 4.1 illustrating the monitoring process for the study quality and reflection on study progress. Thesis results are vetted by external examiners. However, other assessment results (exams, CWs, etc.) are not vetted by external examiners. External vetting provides impartial and independent review on the study progress and quality - a measure that can contribute to and enhance the monitoring process in general. Nevertheless, the panel believes that KTK is in compliance with its internal regulations in respect of student monitoring, planning and feedback.

3.4.4. Evaluation of employability of graduates and graduate career tracking in the study field

Based on the SER and meetings with the Senior Management, Students groups, Alumni and Social partners, there is a high demand for graduates in the Aerospace industry in Lithuania and to date, graduates have ample opportunities to work and develop their career choices in this sector. Figures indicate a demand for 3,000 to 5,000 graduates in the sector over the next 10 years. Graduates have other options available to them such as careers in general engineering roles, design work, and in some cases further studies to higher Degrees. Statistics on graduate employment and range of careers were discussed and appear to be relevant to the requirements of the industry and employer needs.

KTK provide the 3 year Professional Degrees in these disciplines which is unique in Lithuania and the range of employers that were interviewed during the visitation indicated a high demand for these graduates. Employability of graduates is enhanced by Internships, thesis activities and learning modes, leading to a practical, skills-based graduate. Although graduates are not qualified to certify or undertake a lot of specialist work in the Aircraft Industry, they are capable of working under supervision on these systems.

Examination of the range of physical equipment and kit for training also reinforces the employability of graduates, especially in the Aircraft Maintenance Engineering programme. Relevant training from the employers' group is evident, however, it can still take up to 5 years after graduation for a graduate to get a licence to work as a professional in the Disciplines of Maintenance and Avionics.

3.4.5. Evaluation of the implementation of policies to ensure academic integrity, tolerance and non-discrimination

Similar to any 3rd level Institution, details were provided on the Quality Assurance systems and policies and how they are implemented within the College. Students have a voice on Academic Boards whereby they can raise issues of concern on a range of matters that may arise from academic standards, quality of programmes, technical equipment and external activities such as work placements. On meetings with lecturing staff and students, it was evident that all matters from an academic integrity can be addressed via the QA and management structures in place. Students' engagement with the Erasmus Scheme, Internships, academic learning programme and engagement with Industry all point to a successful formula and practice for developing the learning of both local and international students. Similar opportunities are offered to the development of staff within the College. Students on entry to the programmes are also given recognition for Prior Experiential Learning. Student surveys (Student Opinion on Study Quality) for instance allowed students to evaluate lecturing staff and the organisation of their studies in Aircraft Maintenance Engineering. This provides evidence of good practice in dealing with students in particular, identifying any weaknesses in the studies and supporting staff for further studies.

3.4.6. Evaluation of the effectiveness of the application of procedures for the submission and examination of appeals and complaints regarding the study process within the field studies

The Quality Manual provided by KTK (Order No. V1-55 of the Director of the University of Applied Engineering Sciences of March 31, 2020) highlights the responsibilities and range of activities that come under the remit for dealing with modifications, training and overall wellbeing of the programmes, staff and students and indicate how complaints and feedback are dealt with. As highlighted in Figure 7.1 on page 47 (SER), students, teachers and the study programme committee can meet to deal with programme and academic related issues. Various methods of assessment of theoretical knowledge and practical skills are used to assess the achievements and competences of students studying in the field of Aeronautical Engineering studies such as interview, portfolio assessment, testing, performance of practical tasks and assessment in the workplace, case study, observation, self-analysis using reflection, etc. If students are unhappy with their grades and scores in these areas, provision for them to appeal is permitted and addressed by the Management Team.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Documentation covering QA and appeal process is well presented and detailed.
2. Students are involved in the committees to bring problems to the study programme committees.
3. Students' ability to design and specify their learning within the boundaries of the core and elective modules is well received.
4. Students and employers were quite satisfied with the quality of the programmes and their delivery and how complaints were handled and addressed.
5. Good career opportunities for graduates.
6. Direct involvement of specified staff to QA activities is showing good support for these areas.

(2) Weaknesses:

1. Lack/absence of External Examiners on study programmes.
2. Availability of students' work (examination materials, lab reports, etc.) for assessment by the visiting panel could be improved.
3. Standard of Research and experimental work could be enhanced.
4. Realising the importance of evidence in the student's work and presenting it to the visiting panel should be enhanced as this helps address the issues of programme standards, marking schemes, feedback and ability of students to meet the programme outcomes.

3.5. TEACHING STAFF

Study field teaching staff shall be evaluated in accordance with the following indicators:

3.5.1. Evaluation of the adequacy of the number, qualification and competence (scientific, didactic, professional) of teaching staff within a field study programme(s) at the HEI in order to achieve the learning outcomes

The Number of staff is adequate to deliver the proposed courses and leads to a good teacher to student ratio (1 to 7) in the case of the Aircraft Maintenance programme, as claimed in the Self Evaluation Report. The skills of the teaching staff, especially as far as it concerns the disciplines proper to the study programme, are mainly on the professional side, and are - in this aspect -

quite relevant. On the other side, their academic/research activity, considering the number of publications and their attendance at conferences, is not impressive. It can be considered sufficient given the professional bachelor nature of the programme, focussed more on mastering current technologies than on contributing to advances in research. Some additional effort in this area is definitely suggested and should be undertaken.

It should be also remarked that some employers highlighted that KTK graduates do have the right mindset to work in aeronautics, better than graduates from other HEIs, and this positive approach can be traced back to KTK teaching. This is a valuable appreciation, showing that the teaching staff properly implements the programme's mission to prepare high quality professionals for the aeronautics field. It would be wise to add some attention to a more general engineering education, in order to better prepare these professionals, making them also capable of adapting to a quickly changing occupational scenario.

3.5.2. Evaluation of conditions for ensuring teaching staffs' academic mobility

KTK teaching staff's mobility during the evaluation period was rather limited, and specifically concerned only visits to a few institutions abroad, in Latvia and Bulgaria. It should be noted that this is not an effect of the COVID pandemic, as numbers are almost the same all along the years. This very limited mobility is a significant concern, especially considering the intrinsic, international nature of the aeronautics/aviation disciplines. Even worse, the minimal incoming mobility shows the negligible appeal of the KTK.

It can be easily assumed that mobility is not at all considered as an important aspect of the academic activities of staff at KTK. The exchange of experience, concerning both the professional disciplines and the teaching skills needs to be encouraged and supported. As an example, *it would be useful to have updates about procedures actually in effect in aeronautics, especially with respect to safety and logistics.* These improvements can be obtained by increased mobility of KTK staff, even on a short time basis, and also by inviting professionals and instructors of similar programme - not only at the national level - to have short visits to KTK and formally and informally communicate their teaching experience. HEI management should properly promote and support both outgoing and incoming mobility.

3.5.3. Evaluation of the conditions to improve the competences of the teaching staff

Teaching staff are working with due consideration of the intended profile of the course, aimed to “produce” experts in maintenance of mechanical and avionics’ equipment, and are convincingly transferring such an approach to the lectures. Teachers are open to effective, participative lectures, combining different sources of knowledge, and not limited to traditional approaches. There is evidence of use of informatic tools now of common use, as in the computer aided design area. All of these aspects provide the feeling of a motivated staff, convincingly working together to fulfil the study programme’s aims.

However, some other aspects still need attention. The major issue concerns research activities, which relevance needs to be stressed by the HEI: active research should be always maintained, as it is definitely the way to ensure up-to-date teaching. While the effort in college-based suggested and supported research programmes is remarkable, it would be important to encourage instructors to consider participation in larger programme, at national or international level (EU’s Horizon and likewise). The results of the research need to be published, to gain feedback about quality and to suggest and support additional work and improvements. Furthermore, teaching staff should be aware that the level of research is mainly judged on the basis of the publication’s venue: indeed, a renewed effort in submitting papers to good-level, recognized international journals and to participate in international conferences would be extremely beneficial to the quality of the study programme. A consistent level of research is a requirement for every HEI, even when the study programme are limited to the professional bachelor level. HEI management, being knowledgeable about this issue, should carefully monitor the situation and actively promote improvements in this area.

In addition, future recruitment should properly take into account the academic qualification of the candidates, to improve the numbers of instructors having a Master or a PhD in the disciplines requested by the programme. A remark is also due about the need to strengthen teaching in English, which seems unsatisfactory.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Teaching staff have a real, hands-on experience in the disciplines proper to the study programme.

2. Teaching staff appears strongly motivated, dedicated to the continuous growth of the institution and to the education of students.

(2) Weaknesses:

1. Even considering the professional bachelor nature of the programme, and therefore the limited expectations in terms of the research to be performed by the staff participating in the study programme, the number of research projects and their outcome in terms of number, value and publication venue of the resulting scientific papers and reports is quite limited.
2. The mobility is reduced to a few outgoing and even less incoming faculty exchange.

3.6. LEARNING FACILITIES AND RESOURCES

Study field learning facilities and resources should be evaluated according to the following criteria:

3.6.1. Evaluation of the suitability and adequacy of the physical, informational and financial resources of the field studies to ensure an effective learning process

During the preliminary analysis of KTK's learning facilities and the site visit, the KTK's contribution to the development of aeronautical engineering field studies was assessed. 205 244 EUR were invested in developing the Aircraft Maintenance Engineering and Avionics Systems Engineering study programmes up to 2022 and purchasing resources. The programmes focus more on practical activities; their content is based on the actual engineering needs of aviation mechanics and avionics in close cooperation with the industry in Kaunas. Studies are realised in a concentrated and intensive manner, and basic aviation practical skills are formed in laboratories and bases of social partners. During the visit it was noted that the premises where the studies are held meet the hygiene and safety requirements, and modern multimedia equipment is installed in the classrooms. Students have their separate leisure areas and opportunities for group work. Investment in buildings and resources was evident to meet the aims of the programmes, however, equipment for training of the Avionics Systems Engineering in particular was minimal within the College.

The KTK separately designated premises reserved exclusively for study programmes in aeronautics engineering. The tools and resources of the KTK are sufficient to enable the learning outcomes of the study programme to be achieved. The number of students in groups

shall not exceed the number of places on the premises. Introductory practical sessions are carried out in specialised laboratories. KTK is currently renovated with new methodological and technical means to ensure quality implementation of the study programme. After a preliminary assessment and an analysis of the material base provided, the experts consider that the KTK has a sufficient material base for aviation studies through its partners.

The Commission visited the recently completed Aircraft Systems Laboratory Complex, which the EU Structural Funds funded. This complex is still under development; the basic tools, layouts, aircraft fragments, and components were purchased.

Given the number of students in the aeronautics engineering programme, the facilities and equipment used for studies in this field are suitable for achieving the initially expected learning outcomes. However, there is still a lack of specialised equipment (aircraft mechanical and avionics) and aggregates to provide students with more detailed knowledge of theoretical and practical basic aircraft systems. The experts concluded that the main planned training base in the College is already in place, only lacking specialised mechanical and avionic systems and equipment. To cover these gaps, the KTK concluded agreements with the leading aviation companies in the Kaunas district.

KTK has upgraded the Moodle platform, providing students and lecturers convenient access to the required software degree programme. Moodle ensures good communication with students, providing information and updating it. KTK organises distance learning using purchased Microsoft Teams and Zoom apps and licences. The primary teaching audiences are equipped with the necessary modern learning equipment: the audiences are equipped with projectors, WI-FI wireless connection, and fibre-optic internet. Students can use the materials prepared in the e-version, which are hosted in the College's Moodle system, and the necessary literature for the preparation of avionics specialists is available in electronic containers. To ensure the quality of studies, students can use lecture notes, laboratory and practical work descriptions, methodological advice, study books, student self-employment methodological instructions, and sets of learning materials prepared by lecturers. Methodological publications of study subjects are constantly updated or newly developed.

During the visit, it was verified that KTK took care of students with special needs: purchase of a particular lifting device that ensures the access of persons to the desired audiences; to install a specialised WC, it is planned to install an elevator.

Study plans for the aircraft maintenance engineering and Avionics Systems Engineering degree programme include introductory training, aircraft technology, and final internships. During the course, students of both study programmes are introduced to activities, safety, tasks, tools, general avionics devices, engineering standards, diagrams, and standards. Induction training is provided in the KTK (Aircraft Systems Laboratory Complex) and industrial aircraft maintenance and repair bases. Aircraft technology and final internships are in aircraft maintenance and repair companies with which cooperation contracts have been signed. These companies are active in the maintenance and repair of civil aviation, general aviation aircraft, and helicopters. During these internships, students perform aircraft maintenance and repair work on mechanical and avionic systems.

The KTK library was visited, which also has a reading room where students can use the necessary literature and work in groups. The reading room accommodates 60 students; 23 of these jobs are equipped with computers. KTK Library readers are informed about the availability of open-access sources and databases. All information about publications in the library can be found in the virtual library: <http://www.ktk.lt/biblioteka/svarbi-informacija/>. Students can use both KTK Library publications and the resources of the Lithuanian Academic Library eLABa through the Lithuanian Virtual Library. At the KTK Library, students can use sources of information suitable for study programmes in the field of aeronautics engineering, purchase books for self-preparation as aircraft technicians, and obtain licences. It is important to note that since 2018 the readers of the KTK Library have had access to VILNIUS TECH and KTU electronic publications.

3.6.2. Evaluation of the planning and upgrading of resources needed to carry out the field studies

KTK strategy focuses on quality improvement and consistent changes needed for quality assurance. Over the medium term, the approach of the KTK focuses both on the progress of internal processes and on the development of the market. KTK is flexible for the changing needs of students and teachers through the development of infrastructure and resources for achieving study programme objectives and learning outcomes. Periodic meetings of lecturers of the aviation programme take into account scientific achievements and technological development, as well as students' comments expressed in surveys and interviews between target groups. Insights into the study programme's improvement plans are also considered. The KTK plans to complement the existing equipment with structural and functional elements of aircraft and civil and military aviation aircraft and helicopter avionics systems. The KTK has strong ambitions to

develop undergraduate and professional postgraduate programmes in line with existing market requirements and meet the highest quality standards at the national and international levels, thus ensuring students have access to actual placements by developing practical skills. According to experts, the material base currently available at the KTK is entirely suitable for the study programmes of electrical, electronic, and electrical engineering, aircraft machinery technical operation, and avionics material base is still under development. However, during the meeting with the social partners and following the contracts presented, it was confirmed that the necessary material base would be used to develop the essential practical skills at the premises of employers' enterprises. To adapt the premises of the KTK to the implementation of the Avionics Systems Engineering study programme, a modern, suitable training base — the Complex of Aircraft Systems Laboratories — is further developed. The equipment supply of these laboratories in the complex is coordinated with the resources available and their development strategies of the scientific institutions of the Kaunas region, training specialists in the field of aeronautics. For this reason, the KTK plans to purchase and use practical training laboratory equipment.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. The available material base (in assessing the cooperation of the College with partners) fully satisfies the theoretical and practical basic training of aviation specialists. Additional agreements with social partners allow students to get acquainted with aircraft systems, perform practical exercises, and acquire the necessary practical skills.

(2) Weaknesses:

1. Learning facilities should be adapted more for Experimental work, especially in the Avionics Systems Engineering modules.
2. The necessary material base has been established with the development of practical skills in the premises of employers' enterprises; KTK should follow up on the improvement of laboratories independently of social partners.

3.7. STUDY QUALITY MANAGEMENT AND PUBLIC INFORMATION

Study quality management and publicity shall be evaluated according to the following indicators:

3.7.1. Evaluation of the effectiveness of the internal quality assurance system of the studies

Figure 7.1 on page 47 of the SER indicates how students, teachers and the study programme committee can meet to deal with internal QA issues. It also shows how information is channelled through the Management, and Councils of the College. Quality issues and feedback on the same is supported by the Quality Manual received by the Panel. This manual highlights a wide range of areas such as modifications to programmes, teaching methods, resources, annual reports, assessment methods and questionnaires. The Aircraft Maintenance Engineering study programme in particular has gone through an internal assessment in 2020. Lecturers/Teachers are evaluated each year under a performance system and feedback provided to the Head of the study programme and Deputy Director for Studies and Science and inspected and approved by the Academic Council. It is evident from discussions with teaching staff and employers/ alumni/ stakeholders groups that the study programme coordinators are keeping up to date with the needs of the Industry.

3.7.2. Evaluation of the effectiveness of the involvement of stakeholders (students and other stakeholders) in internal quality assurance

It was noted by the visiting expert panel that the role played by the stakeholders in the steering, updating and modifications to the study programmes on a regular basis is at a satisfactory standard. This was especially evident in the Aircraft Maintenance Engineering study programme. Internships, work placements and student thesis work is heavily guided and influenced by the Industry and student body. Logbooks examined are signed off by Industry partners. There is a high dependency on the industry for meeting some of the study programme outcomes. One comment of concern raised was in relation to a graduate's duration after completing the course to become certified and qualified to work as an expert as a Maintenance or Avionics Engineer. From an internal quality assurance point of view, this should be a concern for the programme Management Team to ensure that graduates can qualify sooner in their career paths via EASA and Civil Aviation regulations.

Finally, the programme Management Committee has responded positively to feedback from previous evaluations, resulting in financial investments in buildings, learning facilities, resources and teaching staff, mentoring systems, E-Library, study rooms and mindfulness spaces, all leading to an improvement in the quality and standard of the learning experience.

3.7.3. Evaluation of the collection, use and publication of information on studies, their evaluation and improvement processes and outcomes

The College provides relevant and adequate Information about the Aircraft Maintenance Engineering and Avionics Systems Engineering programmes via the KTK website (<http://www.ktk.lt/>). Details of the study programmes, modules, modes of delivery along with international study opportunities, further studies, career opportunities, study duration, knowledge assessment, requirements for internships, qualifications awarded, etc., and important contact information are provided. Career days are organised on an annual basis and one was taking place during the Panel's visit to the college. From discussions with the SER Team and Management group, student numbers are healthy for both study programmes and the programmes are in demand due to the Industry needs for these forms of training skills.

3.7.4. Evaluation of the opinion of the field students (collected in the ways and by the means chosen by the SKVC or the HEI) about the quality of the studies at the HEI

KTK provides students the opportunity to voice their opinion and feedback on the study programme, modules delivery, and teaching and learning methodology in general. There is a systematic surveying system available on VLE (Moodle), where students can complete quality assessment questionnaires for the subjects they are studying for. Students are also invited to participate in focus group discussion, interviews, etc. to discuss and reflect on the relationship between lecturers and students, motivation, arisen problems related to study, and expected support. During the meeting with the students, the expert panel has had the opportunity to explore students' thoughts and perception of the study programmes in terms of structure, quality of teaching, support, internship and training and career expectation. In general, they were satisfied to a large extent, but it seems there are still limited shortfall in communicating/addressing students' needs, clarity on career pathway when it comes to licensing requirements, better organisation of online/hybrid delivery, and improved extra curricular activities.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Student involvement in internal Audits and decision making on study programmes is to be commended.
2. Collaborations with industry partners and Alumni is of a high standard.

(2) Weaknesses:

1. Lack of clarity on licensing career pathway.
2. Lack of well organised extra curricular activity.

IV. EXAMPLES OF EXCELLENCE

1. New investments in facilities and space provision for the programmes is commendable
2. KTK has developed excellent links with Industry for work placements and internships
3. Students have good hands on experience based on industrial activities as part of their training especially in Aircraft Maintenance
4. High level of student support from staff
5. Development of modules through English language

V. RECOMMENDATIONS

Evaluation Area	Recommendations for the Evaluation Area (study cycle)
Intended and achieved learning outcomes and curriculum	It is recommended that the study programmes take measures to enhance and/or expand the laboratory-based contents of the given modules, and be reflected on the learning outcome map. Some labs of science-based activities should be integrated to support the theory knowledge, e. g. use of wind-tunnel testing to support the fundamental knowledge of aerodynamics.
Links between science (art) and studies	It is recommended that the study programme takes into account the rapid evolution of the aeronautical field, especially in the avionics sector, and deserves a specific attention to prepare students to such an evolution, not focussing their interest only in current technologies faced during internships.
Student admission and support	<p>It is recommended that the information regarding the study admission on the university website be expanded to include more specific information on the qualification entry requirements, career pathway and prospective employment - especially those concerning licensing aspects of EASA 66, internship and perhaps some students testimonies.</p> <p>Also, it is recommended that students are encouraged and supported to participate on mobility programmes (ERASMUS etc.), aeronautical societies and events.</p>
Teaching and learning, student performance and graduate employment	<p>It is recommended that the route to EASA part-66 licensing qualification be made clearer in the programme structure, and there should be an explicit statement that the study programmes (Aircraft Maintenance and Avionics Systems) are not licence qualifications. Number of hours, modules and other activities that can directly contribute to the licensing should be sign posted throughout the study journey to facilitate student decision-making on post-graduation and employment aspects.</p> <p>Also, to align the subjects and the contents of both degrees with EASA Part 66 B1 (Maintenance Engineering) and B2 (Avionic System</p>

	Engineering) modules. Bearing in mind that, the degrees provided by the KTK are professional bachelor's degrees, and the volume of practical activities (training) required should be adequately high. KTK may consider applying for the specific recognition and acceptance from CAA and/or EASA
Teaching staff	<p>It is recommended that the HEI encourages teaching staff to be more active in the research field, with a pronounced attention to the participation in international conferences and to the publishing effort.</p> <p>International mobility is crucial for advancing knowledge on latest technology development and keeping current/up-to-date with the field – bringing the innovation to classrooms. It is highly recommended that KTK facilitate and encourage such staff mobility.</p>
Learning facilities and resources	It is recommended that the in-house facilities for practical and laboratory activities be improved, by acquiring more specialised equipment for (modern) avionics systems (tetsers, fault diagnostics, circuit design etc.). Also, there is a need for adequate instrumentation/tooling for the maintenance practicals to be available to the students to make use of.
Study quality management and public information	<p>It is recommended that external vetters (examiners) should be engaged with the assessment of the practical/training assessments across all study years.</p> <p>It is also recommended that students are guided and supported to take part in extracurricular activities, this include but not limited to; attending conferences, membership in student/professional societies, departmental (science/engineering) competitions.</p>

VI. SUMMARY

The panel would like to take this opportunity to thank the management team, academic members, and administration staff of Kauno technikos kolegija (KTK) in taking on the task of preparing and presenting the evaluation materials and documentations, including the self-evaluation report (SER). The panel has found that the materials – and the SER – are organised meaningfully and are crucial elements of the evaluation process. The arrangement to visit the KTK campus and its facilities, and engagement with members of the study field of aeronautical engineering were of great experience leading to informed decisions being made towards the review and evaluation.

It was evident that the KTK has been investing in the study field financially and academically. Resources have been acquired with ambition to expand and further such resources in the future.

KTK has rightly capitalised on the existing demand for specialists in the field of aeronautical engineering (aircraft maintenance and avionics engineering), and developed the study field programmes with the view to closely interact with industry and social partners for professional training and employment. The study field programmes are found to be in compliance with the HE authority and government regulations, and also meeting the standards for aircraft commission, civil aviation authority, etc. The study programmes are structured based on well-defined aim and objectives, learning outcomes assigned to study units appropriately, and aligned to the objectives. The teaching and learning methodology including the design, credit award, and distribution of study modules are fully compatible with the study cycle (professional bachelor) requirements. The teaching is delivered by highly experienced academic staff with hand-on experience in the field of study programmes. The contents of the study programmes are found to be fully relevant to the objectives, and also adequate to the technological development at industry level. The strong link with industry and local employers in the field of aeronautics, has facilitated the currency and up-to-date specialistic knowledge being delivered to students. There is a strong sense that the professional bachelor programmes at KTK are fundamentally materialised through the internship and the mastery of the instructors. And the technical content/element of the programmes is largely the main attraction for students, who appeared to be highly interested in the programmes and in the prospective career opportunity in the aircraft engineering industry. As such, the preparation of

the students in line with the current technology demand and awarding a professional bachelor degree is certainly viewed as a significant milestone in the study life cycle, both from the college and students' perspectives. Academic staff however, will bear a task of embedding and supporting the trend of education by means of creating innovative engineering minds in students and provisioning an outlook for the upcoming/new technology advancement that is supported by a strong scientific foundation.

Students at KTK do enjoy the availability of study schemes, support, ERASMUS, access to workshop and training facilities at both college and employer sites. Students have a variety of options to personalise their study and graduate opportunities seem in large supply. Level of satisfaction in developing knowledge and skills is in general high, given the majority of feedback is a reflection on the technical contents however.

All in all, the findings of the review would certainly merit a positive evaluation of the study programmes at KTK. Given the market demand for the specialities offered by KTK, it is evident that KTK has seized the opportunity to substantially capitalise on such a niche. In light with the progressive trend in the market and technology advancement and demand, the panel's vision on future, is that strategic views and plans be sought to ensure the integrity, continuity and sustainability of the programmes, and also the adequacy and currency of the knowledge, training and skills pertaining to new emerging technologies.

Expert panel chairperson signature:

Prof. dr. David Kennedy