

## THE POSSIBILITY OF DISTANCE LEARNING IN AIRCRAFT SPECIALISTS TRAINING

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**Abstract:** The article considers the possibility of implementing of studies for aviation specialists in the form of distance learning. Currently, the Transport and Telecommunication Institute is implementing a three-stage system for students studying in aviation programs. For all three, only full-time studies are provided. Currently part-time / distance training is not provided. This is due to the fact that a large amount of practical training (laboratory work, practical classes) is required in the process of studying for the acquisition of professional competences with the use of special equipment and aviation simulator. But graduates of the Technical Maintenance of Aircraft Transport Program have the opportunity to obtain an academic bachelor's degree by studying in a special shortened program.

**Keywords:** education, professional competences, additional practical skills.

### 1. INTRODUCTION

A correct combination of both theoretical and practical studies is required for a qualitative training of aeronautical specialists in the technical maintenance of aircraft. In this regard, the training of such specialists is traditionally conducted only in the form of full-time studies. This is due to the fact that during the studies in educational organizations a large amount of practical training is provided with the use of specific equipment (aeronautical simulators, elements of aircraft structures). In addition, it is required to obtain the required minimum amount of work on a real aircraft equipment (passing practice in organizations dealing with maintenance and repair of aircraft). The right to perform the work and the admission of an aircraft to flights is entitled to a licensed specialist (certifying specialist).

Obtained classical academic education in modern conditions is no longer sufficient for the professional activity of aviation specialist. To become such a specialist, the following requirements must be met:

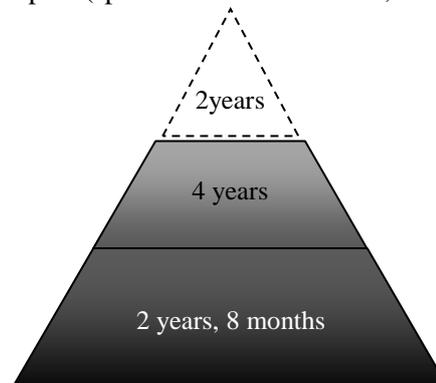
- undergo basic education in the corresponding category (mechanic or avionics);
- have proven professional experience in the organizations of aircraft technical maintenance;
- study the appropriate aircraft type.

## 2. AVIATION STUDIES IN TTI

Studies in aviation programs at the Transport and Telecommunication Institute are taking place since 2008. In accordance with the requirements of the legal acts of the European Union and the Republic of Latvia, the basic education is confirmed by obtaining the corresponding certificates. Examination in professional modules can be organized in special educational institutions EASA Part-147 [1]. Such a training organization in the Transport and Telecommunication Institute was established in 2009 [2]. In accordance with the license obtained, the Academic and Profession Aviation Centre (APAC / TSI) has the right to conduct training and examination on modules of the Part-66 program of categories B1 (technician-mechanic) and B2 (technician-avionics).

Academic studies of such specialists in the Transport and Telecommunication Institute are carried out in two programs (see Fig. 1) [3]:

- Program of the first professional level – Technical Maintenance of Aircraft Transport (duration - 2 years 8 months). Upon graduation, graduates receive a diploma of higher education of the 1st professional level of the state standard and a professional qualification of technician for technical operation of aircraft (specialization: technician-mechanic or technician-avionics).
- Academic bachelor program Aviation Transport (duration – 4 years). Upon graduation, graduates receive a Bachelor's degree of Engineering Science in Aviation Transport (specialization: mechanic, avionics).



*Fig. 1. Scheme of aviation education provided in*

Graduates of the program may work as mechanics and technicians for the technical maintenance of aircraft in organizations operating aircrafts or performing

technical maintenance of aircrafts in accordance with the requirements of the state standard and international regulatory acts in the field of aviation transport, as well as in repair enterprises and in other areas of aviation industry.

When studying in any of these two programs students are given the opportunity to obtain the necessary set of professional certificates in the chosen specialization:

- mechanics must have 13 modules under Part-66 program;
- avionics must have 12 modules under the Part-66 program.

But for the full cycle of higher education, the third level of education is also required – the master's program. With a bachelor's degree in Aviation Transport Program obtained, a graduate of the institute can continue to study in the masters studies both at the Transport and Telecommunication Institute, as well as in any other university of the Republic of Latvia or the European Union.

Below we will only consider only the first two programs. It can be explained by the fact that it is sufficient to complete one of the implemented programs in order to fulfil one of the requirements for a certifying specialist (basic education of the corresponding category).

The study process is organized in such a way that students receive in academic programs all the necessary theoretical knowledge and practical skills necessary for passing the exams in the modules of the professional program (modules Part-66 are integrated into academic disciplines).

Taking into account this feature, during the first five semesters, studies in both programs are taking place synchronously. Basic practical classes are held during this period. Starting with the sixth semester, the differences are the following:

- the 1st professional level – preparation of diploma paper;
- Bachelor program – continuation of education (practical classes in the disciplines studied are not related to the use of special aviation equipment).

Besides that, the graduates of the institute with a 1st level professional higher education degree obtained have the opportunity to complete a baccalaureate program under the shortened program [4]. Duration of studies in the shortened program is three semesters (1.5 years). At present, studies are provided only in a form of full-time education. From 68 people who have completed the studies under this program only 18 people were able to continue their education in the Bachelor's program.

After analysing the reasons for refusals to continue their education, the main reason for the graduates was the impossibility to study in the full-time form. This is due to the fact that the specifics of the profession require work in shifts and not only in Riga. At present, graduates of this specialization work in the organizations for the technical maintenance of the Baltic countries, as well as in many countries of the European Union. This specificity has determined the practical impossibility of continuing of studies after obtaining of such a diploma. This in turn significantly reduced the attractiveness of this program. If in 2008 for the first course of this program entered more than 30 people, in 2016 only 1 person entered the first course.

But according to the feedback from operating enterprises, the need for specialists of this level is much higher than the need for specialists with a bachelor's or master's degree.

### **3. PROPOSALS FOR IMPLEMENTATION OF PART-TIME STUDIES**

To this date, the Transport and Telecommunication Institute has gained considerable experience in organizing of distance learning courses [5]. In essence, this is an implementation of part-time studies, but in which the student does not need an on-the-spot contact during the study process (with the exception of defence of attestation work). This is possible due to the following:

1. The Institute has a department of management and control of distance learning. The staff of this department performs operational management of the process.
2. Lecturers engaged in distance learning have undergone special training (method of developing learning content for distance learning).
3. The contents of programs of training courses includes were developed including (lectures, assignments and guidelines for independent work of students, test questions for exam preparation, tests of current monitoring and other materials).
4. Each distance learner, in accordance with the syllabus, has the opportunity of remote access (through the closed part of the Institute's site [6]) to all the specified materials. The student places the completed individual tasks in the block of discipline. The course instructor / tutor also have the ability to remotely check and evaluate completed assignments.
5. If an oral exam is required in a specific training course, then an individual full-time exam is conducted on Skype at the appointed time.

At the moment, the Institute has accumulated extensive experience in implementing distance learning. In 2016 and 2017, about 30 students who received training only in distance form have completed the training and successfully defended their qualification papers on a number of bachelor's and master's programs.

In connection to this, the institute is developing the possibility of realisation of part-time studies/distance learning for aeronautical programs. The paradigm of this idea is presented in Fig. 2.

This will enable specialists with a first-level higher education diploma to continue their education and receive higher-level diplomas.

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For the implementation of part-time training, it is necessary to insignificantly modify the existing shortened Bachelor's program (1.5 years): the correct redistribution of disciplines by semester while taking into account the increase of the duration of studies to up to 2 years.

More significant changes are required to prepare the studies in the form of distance learning:

- redistribution of disciplines (due to the increase of the duration of studies to up to 2 years);
- development of contents of disciplines, which are absent in the Department of Distance Learning);
- the development of methodological materials for the development of bachelor's diploma paper (this is due to the fact that the students will perform it without consulting the traditional contact mentor, it is possible to consult the mentor only with the use of e-mail or other means of distance communication).

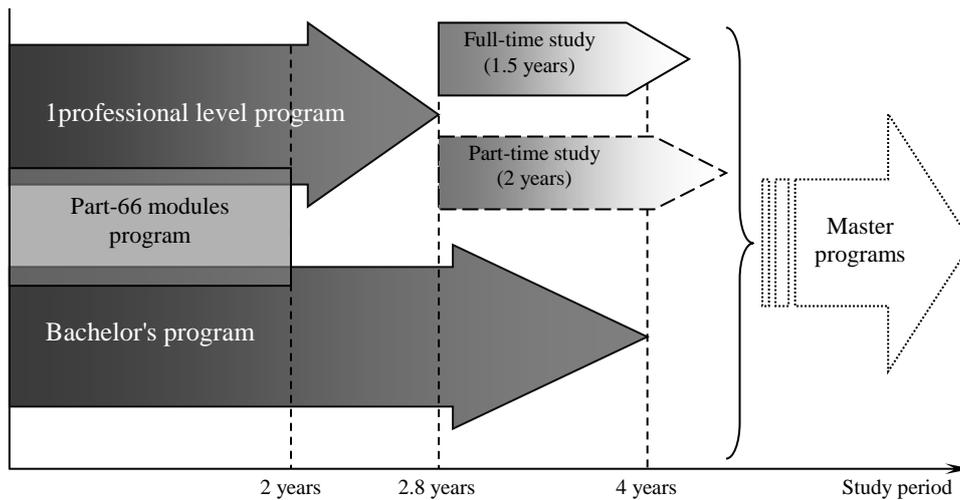


Fig. 2. Paradigm of organisation of aviation education in the Transport and Telecommunication Institute

#### 4. CONCLUSION

The need for the mid-level specialists (technicians) for the technical maintenance of aircraft requires an increase in specialists with special professional education. But at the same time, enterprises do not have a mandatory requirement of specialists with a higher education level of a bachelor's or master's degree. But not all countries have a higher education of the first professional level. This may reduce the competitiveness of specialists with similar diplomas and impede their career growth. In order to eliminate this disadvantage and provide the possibility of continuation of education on the next steps higher education, the concept of organisation of comprehensive education (full-time + part-time/distance learning) for aviation specialists is proposed.

For realization of correspondence / distance learning it is necessary to solve several problems:

1. Conduct a review of the existing curricula of the first professional level and the continuation of the bachelor's program (1.5 years) - so that at the second stage of education (bachelor), the disciplines that require the use of special aviation equipment are completely eliminated.
2. If necessary, conduct special training for lecturers, taking into account the specifics of the organization of distance learning.
3. Develop contents for a number of disciplines, which are currently absent from the distance learning department of the Institute.

## **REFERENCES**

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[2] <http://www.apac.lv/training-courses/basic-training/examination/>

[3] <http://www.tsi.lv/en/content/study-programmes>

[4] <http://www.tsi.lv/ru/content/bakalavr-inzhenernyh-nauk-na-aviacionnom-transporte>

[5] <http://distant.tsi.lv/>

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**Alexander Medvedev** – Doctor of Engineering (Dr. sc. ing.), Professor of the Transport and Telecommunication Institute, Head of the Department of Aviation Transport. Lecturer of the Academic Professional Aviation Centre of the Transport and Telecommunication Institute (TSI / APAC). In 1985 he graduated from the Riga Institute of Civil Aviation Engineers (specializing in the Maintenance of Aircraft). In 1995 he graduated the degree of Doctor of Engineering. Author of 3 inventions, more than 120 scientific works and 20 learning textbooks.

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