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NEW APPROACH TO MILITARY PILOT EDUCATION AND TRAINING IN THE NEW SECURITY ENVIRONMENT

Summary. Military pilot education, including flight training, is a long, expensive, and complex process. The main goal is to produce as many skilled professionals as possible ready to perform flight tasks on the front-line aircraft and push them to their workload limits with complete control. To achieve this goal, it is necessary to select and educate young people with the aptitude and abilities to perform the most demanding military flight tasks. The creation of a model for the education and training of military pilots depends on the requirements of the Czech Air Force Command and the teaching capacities of the University of Defence and the Aviation Training Centre in Pardubice. Rearmament of the Czech Air Force and the required number of pilots requires a change in the new military pilot training model. This contribution describes a new approach to Czech Air Force pilot education and training in the current security conditions in the world.

1. INTRODUCTION

Aviation education is a complex pedagogical process, which we perceive as a didactic system for the creation of personnel competencies to perform aviation professions. Increasing the quality of education requires the effective use of the experience and needs of aviation practice, especially in the new security environment [1]. The term *new security environment* refers to the evolving landscape of threats, challenges, and opportunities in the realm of security, particularly in response to emerging technologies, geopolitical shifts, socio-economic changes, and unconventional threats. It encompasses both traditional security concerns, such as military conflicts and terrorism, as well as non-traditional threats like cyber attacks, pandemics, and climate change. This concept underscores the need for adaptability, resilience, and innovative approaches to address the complex and interconnected security risks facing nations, organizations, and individuals in the contemporary world [2, 3].

The Air Force Department of the Faculty of Military Technology at the University of Defence has prepared a new study bachelor program called Military Air Traffic. According to the new curriculum, the process will require new approaches to education, and especially candidate assessment. Achieving better academic and professional knowledge is based on tailoring the composition of courses to the graduate profile and selecting students through professional testing of students' psychological performance.

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The curriculum design was based on an analysis of the level of mastery of the subject matter discussed by the students, the approach of the teachers, selected practitioners, as well as the use of the department's classroom and training facilities. The creation of a positive relationship to the aviation specialization is based on the level of lecturers in terms of theoretical preparation and practical exercises, where laboratories and the use of the capacities of the Flight Training Centre in Pardubice and Czech Air Navigation Institute are combined.

The interrelationship between the curriculum and didactics lies in the context of education as a relationship between convergence and divergence, reflecting historical and epistemological experiences. Didactics as a pedagogical discipline does not necessarily reflect only scientific approaches and contributions. It can also reflect cultural traditions that indicate changes in power and security paradigms. These changes are manifested in the process of curriculum development and accreditation, which consider shifts in security and educational requirements. This is evident not only in the length of education but also in the structure of courses.

The creation of the new curriculum was aimed at unifying the activities of teachers and students in the study of professional subjects, increasing the level of coherence with practical training, and reducing the time demand by streamlining teaching and focusing on the "core business" of military pilot graduates.

The basic prerequisites for the success of the new educational program are the implementation of the results of research on the didactic level of academic staff, the implementation of the results of practical teaching where experiments are conducted, the formulation of educational objectives where theoretical and practical knowledge has been defined, and their inclusion in the didactic system and implementation by the sponsor, in this case by the Commander of the Air Force of the Czech Army [4].

The new curriculum also requires all those involved to use specific teaching methods according to subjects to be familiar with teaching strategies as well as the preferences and habits of students, which are the result of professional tests of psychological performance [5].

2. PILOT SELECTION

The selection of military pilots has been the subject of intense research for many years. The decisive factor for the successful development of the Czech Air Force is the creation of an adequate number of qualified candidates from which to select for the study program [6, 7]. The current requirements for the growing number of students in the military pilot field are due to three factors that influence the creation of an adequate number of students. The first factor is the requirement to increase the number of graduates in the field of study from 12 to 21, the rising cost of education, and the requirement to obtain an executive aviator certificate per the Department of Military Air Force Supervision's professional guidance "Eligibility of Executive Military Aviators and Military Service Personnel" and Czech Executive Order 163/2022, which establishes the categories of military aviation personnel, their qualifications, and the scope of expertise and military aviation personnel.

The cost of obtaining pilot certificates also includes practical training at the Flight Training Centre in Pardubice. So far, the students have completed a five-year study program, after which they obtain a degree in engineering. One hour on a Z-142 C-AF aircraft costs CZK 6,500, excluding VAT, while a flight hour on an Enstrom 480 helicopter is priced at CZK 25,500, excluding VAT. The cost per student graduate, when meeting the flying hour requirement for 50 hours of basic training, ranges from CZK 325,000 to CZK 1,275,000.

The final factor that has a direct impact on the number of graduates is the acquisition of a military aviator's license. The military airman's license is a legal requirement based on the structure of the accredited study program and is binding for all pilots according to the provisions of the applicable decrees and regulations, whereby graduates must hold a military airman's license according to the Czech Executive Order 163/2022.

Based on current requirements and regulations, the University of Defense must ensure, as part of the study of the relevant aviation specialization, the completion of a theoretical air transport pilot course in

accordance with the requirements of the relevant aviation regulation (EU Regulation No. 1178/2011, part Flight Crew Licensing), both for future airplane pilots as well as helicopter pilots.

Even the limited supply in relation to the demand for pilots cannot reduce the level of entry requirements and assumptions when the initial testing of the psychological performance of students of the Military Pilot specialization is carried out. The testing aims to examine the levels of five general personality dimensions: extraversion, neuroticism (emotionally unstable personality), openness to experience, agreeableness, and conscientiousness.

A new test of professional prerequisites was created to fulfill the need to better test those interested in studying the specialization of military pilot or air traffic controller at the University of Defence. It was added to the content of the admission procedure for these study specializations.

In addition to the verification of professional motivation, this test also includes the verification of cognitive abilities, which go beyond the medical examinations carried out within the Institute of Aviation Medicine. This is the basis of a new approach to the selection of those interested in studying these military specialties, which was not used at the University of Defence in the past.

For the purposes of the Czech Air Force, only two personality traits were nominated, namely neuroticism and conscientiousness (Fig. 1). These two traits represent the predispositions to study, train, and perform the profession of a military pilot.

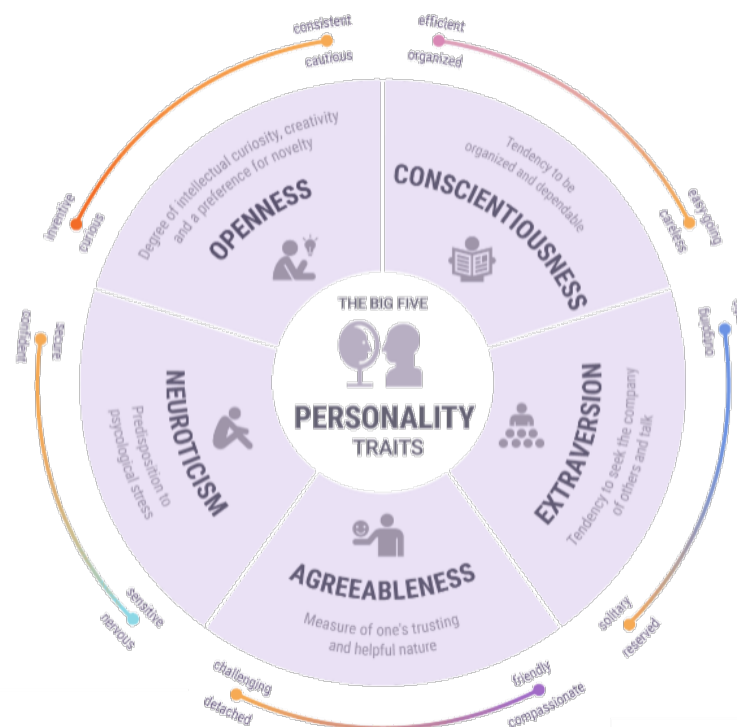


Fig. 1. Personality Traits Diagram [8]

The application of best practices in the selection of students for the new program faces many challenges and limitations (Table 1). The Department of Air Force Faculty of Military Technology's research project in the development and implementation of psychological performance testing is funded by the Institutional Support for the Development of Research Organization entitled Conduct of Airspace Operations. This project is applied research funded by the budget of the Ministry of Defence of the Czech Republic [9].

3. NEW STUDY PROGRAM AND PRACTICAL TRAINING OPPORTUNITIES

The education system in the Czech Republic provides university pilot education at many civilian universities (e.g., Czech Technical University in Prague, Brno University of Technology, Technical

University of Ostrava). In the Czech Republic, educational programs include the acquisition of a bachelor's or engineering degree, and accredited degree programs enable students to meet the requirements for a degree and initial pilot certification. The military pilot certification aligns with Czech Executive Order 163/2022, whereby the student is allowed to complete each phase of training with the minimum required flight hours. The minimum number of flight hours for each category of executive military aviators, as established by Decree No. 163/2022 Coll., is shown in Table 2.

The aim of the study program is to provide professional education corresponding to the scope of theoretical knowledge and practical skills to the requirements of the relevant military expertise administrator at the Ministry of Defense of the Czech Republic. Graduates of the study program are primarily intended to take the positions of executive military pilot (EMP) and air traffic controller (ATC) at Czech Air Force bases, where a combination of specific qualifications (medical and professional) is required for graduates to perform high workload tasks effectively. The requirements for these graduates by the military expertise administrator and their users (the Czech Air Force) differ significantly from the offer of the current five-year master's degree programs at the University of Defence, which educate future officers of the Czech Air Force because the EMP and ATC specialties are primarily operators of specific military aviation systems, for which a bachelor's degree is sufficient for their expertise and career requirements. It also allows for a significant reduction in the time required for their training and, thus, a significant increase in their time on active duty as EMPs and ATCs. A comparison of the basic parameters of the original master's program and the new bachelor's program is shown in Table 3.

Table 1

Challenges associated with personnel assessment methods on three key criteria [10]

Assessment Method	Three Key Criteria for Selection Methods		
	Validity	Adverse Impact (Fairness)	Applicant Reactions
Cognitive ability tests	High	High (against minorities)	Somewhat favorable
Job knowledge tests	High	High (against minorities)	More favorable
Personality tests	Low to moderate	Low	Less favorable
Biographical data inventories	Moderate	Low to High for different type	Less favorable
Integrity (honesty) tests	Moderate to high	Low	Less favorable
Structured interviews	Moderate to high	Low	More favorable
Physical fitness tests	Moderate to high	High (against females and older workers)	More favorable
Situational judgment tests	Moderate	Moderate (against minorities)	More favorable
Work samples (including simulation)	High	Low	More favorable
Assessment centers	High	Low	More favorable

Table 2

Range of expertise and qualification requirements for each category of executive military aviators [10]

Minimum Flight Hours	1. class	2. class	3. class
EMP – airplane commander	500 hours	350 hours	250 hours
EMP – helicopter commander	500 hours	350 hours	250 hours
Co-pilot	250 hours	200 hours	150 hours

The education of military professionals is also very specific regarding their future profession. In addition to traditional university subjects, it includes military training, practical internships, foreign

language training, and general and special physical training throughout the course of study. The study program is implemented in close cooperation with the units and facilities of the Air Force of the Czech Republic, the teaching is attended by experts from practice—experienced professional soldiers who are regularly assigned to the positions of lecturers of the University of Defence—and due to the transfer of knowledge from practice, there is a regular rotation of these lecturers from the ranks of members of the Czech Armed Forces or other units of the Ministry of Defence. The study program continues the tradition of training university-educated personnel in this field of education, which has been carried out at the University of Defence (formerly the Military Academy) since its establishment in 1951 in separate study programs, fields of study, and specializations.

Table 3

A comparison of the basic parameters of the original and new approaches to EMP education and training

Parameters	The original approach to EMP education and training	The new approach to EMP education and training
Type of study program	Magister	Bachelor
Length of study	5 years	3.5 years
Content of the admission procedure	- English language test (level B1) - Physical fitness test (level 1) - Study prerequisites test (level 1)	- English language test (level B2) - Physical fitness test (level 2) - Study prerequisites test (level 2) - Professional prerequisites test (new)
Basic graduate profile	Aviation engineer	Military air systems operator
Theory/practice ratio	70% / 30%	50% / 50%
Anticipated number of flight hours during studies	150	120

In order to prepare students for service as professional soldiers and future officers of the Czech Armed Forces, the study program also includes space for the development of military-professional knowledge and skills, which create the prerequisites for a successful start of a career as an officer of the Czech Armed Forces. For this purpose, blocks of theoretical instruction are interspersed with blocks of intensive practical training, which include flight training and internships with units of the Czech Air Force. For these reasons, the study program is designed only as a full-time program. The maximum expected number of students in each year of study is 35 based on the requirement of the Ministry of Defence of the Czech Republic, which allows one to approach individual students individually, both within theoretically focused teaching and during intensive blocks of practical professional training. The study program is designed regarding the standards of the bachelor's degree program in the fields of transport and security studies. The following basic thematic areas, as listed in Table 3, are relevant to the study program.

3.1. Graduate profile

Graduates of the study program are prepared to perform the functions of air systems operators in the Air Force, including the ability to participate in planning and conducting combat activities. By studying professional subjects, graduates acquire the necessary theoretical basis with a professional orientation toward knowledge of the principles, function, and operation of military aviation systems and technologies in the field of aircraft operations, unmanned aerial systems, and air traffic control. In the broader context of the security environment, graduates will acquire the ability to apply and design methods, procedures, and means necessary to solve a wide range of technical and organizational tasks related to the operation of military aviation systems using modern military technologies, both in peacetime and in crisis situations of a military and non-military nature. Graduates will possess knowledge, skills, and personality prerequisites for career growth both professionally and commandingly at the level of basic officer ranks. They will be physically fit, able to communicate at a working level in English, and prepared to operate in culturally diverse environments.

3.1.1. Professional knowledge

Graduates will gain expertise in the theories, concepts, and methods associated with the peaceful operation and combat use of modern military aviation technologies and systems. Graduates will understand the possibilities, conditions, and limitations of the use of these technologies, concepts, and methods in dealing with military and non-military threats, as well as their application in the wider context of the security environment. Graduates will also be able to:

- describe the structure and function of complex military aviation systems, including the principles of peacetime and combat use of air power at the operator level,
- explain the forms and methods of deployment of the forces of the Czech Armed Forces in managing military and non-military crisis situations at national and international levels,
- present knowledge of the context of national military strategy,
- discuss the principles and procedures for dealing with crisis situations arising in air traffic in times of peace, crisis, and war,
- describe the principles of human reliability and the possible consequences of human or organizational failure on air traffic safety,
- remember the principles of air radio communication in Czech and English,
- explain the requirements of national and international standards, regulations, and laws in the field of air traffic and aviation technology,
- understand the general physical principles used in aviation technology,
- describe the basic structural elements and systems used in aeronautical engineering and explain the principles of their operation and applications,
- explain the structure, nature, and content of measures related to air safety.

Table 4

Concept of fields of study of the study program

Fields	The field of education
Security fields	Security threats of a military and non-military nature
	Management of military and non-military operations
	The legal system of the Czech Republic in the field of security
	Applied informatics for security forces
Traffic fields	Transport safety
	Means of transport
	Traffic operation and management
	Legislation and law in transport

3.1.2. Specialty-specific expertise

Graduates of the study specialization AMP:

- Aircraft or helicopter commanders have professional knowledge at the level of the requirements of the ATP (air transport pilot – internationally recognized standard for military and civilian pilots) professional aviation course for aircraft or helicopters and other professional knowledge necessary to obtain the appropriate military license (EMP - Aircraft or Helicopter Commander).
- Unmanned aerial vehicle operator proficiency indicates proficiency at least at the level of the requirements of the STANAG ATP 3.3.8.1. proficiency course (NATO standard for training of unmanned aerial vehicle operators) and other proficiency necessary to obtain the appropriate military license (executive military aviator – unmanned aerial vehicle operator pilot).

Graduates of the study specialization of the ATC:

- Graduates of the ATC study specialization will have professional knowledge at the level of at least the theoretical part of the basic training according to EC Regulation 2015/340 (an internationally recognized standard for the training of military and civilian air traffic controllers)

and other professional knowledge necessary to obtain the relevant military license (air traffic controller).

3.1.3. Professional skills

Graduates will apply the theoretical and professionally oriented knowledge acquired during the study in the performance of the function of an operator of a relevant military aviation system. They will also be able to use supporting tools for managerial decision-making at the level of a junior officer and practically apply methods and procedures for dealing with unpredictable situations in military operations at the tactical level of command. Graduates will also:

- apply knowledge of the requirements of standards, regulations, and laws in professional activities,
- use the assigned aeronautical equipment, technology, or system to the required professional standard, including maintaining the required level of efficiency and safety,
- apply the tools and techniques of leading individuals and teams in the specific conditions of a military organization at the tactical level of command of a national or alliance command and control system and the principles of their use in preparation for and during stressful situations,
- decentralize tactical activities in the context of applicable military doctrines (national and alliance),
- assess the consequences of human and organizational failures on air traffic safety in their areas of expertise,
- use aeronautical radio communication in both Czech and English.

3.1.4. Specialty-specific skills

Graduates of the AMP specialization will:

- use aeronautical equipment in the performance of assigned tasks, observing the principles of safety and efficiency of air traffic,
- evaluate information, draw conclusions, and make decisions to accomplish the assigned tasks according to the type of air force to which they are assigned,
- assess the implications of the use of weapon systems of the airborne equipment operated.

Graduates of the air traffic control specialization will:

- use technologies in the field of air traffic control and knowledge of the rules of flying in individual parts of the Czech airspace to perform professional tasks with emphasis on the safety and continuity of air traffic,
- evaluate information, draw conclusions, and make decisions to accomplish the assigned task at the level of the air traffic control unit to which they are assigned.

Graduates of the study program are prepared to perform the functions of air systems operators in the Air Force, including participating in planning and conducting combat activities. By studying professional subjects, graduates acquire the necessary theoretical basis with a professional orientation toward knowledge of the principles, function, and operation of military aviation systems and technologies in the field of aircraft operations, unmanned aerial systems, and air traffic control. In the broader context of the security environment, graduates will acquire the ability to apply and design methods, procedures, and means necessary to solve a wide range of technical and organizational tasks related to the operation of military aviation systems using modern military technologies, both in peacetime and in crisis situations of a military and non-military nature. Graduates possess knowledge, skills, and personality prerequisites for career growth, both professionally and commandingly, at the level of basic officer ranks. They are physically fit, able to communicate at a working level in English, and are prepared to operate in culturally diverse environments.

3.1.5. General competences

Graduates are generally able to apply a wide range of knowledge and skills necessary for mastering the role of an officer of the Czech Armed Forces and the role of a manager operating in the field of management and security provision in the public and private sectors. They can analyze problems, identify available alternatives for dealing with emergencies, and propose appropriate measures to reduce their impact. Students are able to formulate and implement plans for the implementation of the selected alternatives while complying with technical, economic, legal, and ethical standards of conduct.

Graduates are able to:

- make independent and responsible decisions in new or evolving environments, taking into account the wider societal implications of decision-making,
- solve ethical problems independently,
- manage physical and mental stress at the required level,
- direct, organize, and participate in the conduct of combat operations,
- use their broad knowledge of military equipment and technology and understand how to apply it to the benefit of the conduct of combat operations,
- communicate their professional opinions clearly and persuasively to experts and the general public,
- use their professional knowledge, professional skills, and general competencies in an English-language environment and communicate at a basic level in a second foreign language,
- continuously meet the conditions for maintaining the necessary professional aeronautical qualifications, including the required medical fitness, according to their training plan, to improve their competencies (qualifications and grades).

3.1.6. General skills (competencies) specific to individual specializations

Graduates of the AMP specialization are eligible to:

- perform aeronautical activities according to their assignment to an individual type of aviation based on established requirements and standards within the Czech Air Force,
- use the possibilities of operation of the entrusted aviation equipment within the framework of conducting air operations while observing the principles of efficiency and safety of air operations.

Graduates of the study air traffic control specialization can:

- perform the activity of an air traffic controller according to their work assignment in the system of military air traffic services based on established requirements and standards within the Czech Air Force after completing the training and obtaining the necessary qualifications,
- independently analyze the safety and efficiency of the air traffic control process.

4. STRUCTURE OF THE ACCREDITED BACHELOR'S DEGREE PROGRAM

This chapter focuses on the structure of the accredited undergraduate degree program in military aviation at the University of Defence. This program is designed to provide students with the comprehensive education and skills needed for a successful career in military aviation. The program is designed to reflect the current needs of the Czech Air Force and meet the standards of aviation education.

Students majoring in AMP will complete 3,951 hours of instruction. This means basic theoretical training that introduces students to aircraft operation, physics related to aircraft function, aircraft instruments, etc. All this is supplemented by practical training on simulators and professional internships containing direct flight training. The total number of hours also includes 1,415 hours of classes not directly related to aviation issues and necessary pilot training such as mathematics, statistics, and leadership. An overview of the subjects and the hourly demand for the study period is shown in Figs. 2 and 3.

A military pilot student completes a total of 2,536 hours of lessons and exercises (see Fig. 3) directly related to the EMP profession, compared to 1,415 hours of general knowledge instruction worthy of an academically educated person. Graduates of the undergraduate program will be equipped with a wide range of knowledge and skills in military aviation. They will be prepared to advance to the next stages of professional training and will meet the requirements for military certification, either as an aircraft or helicopter commander or as an unmanned aerial vehicle operator.

Figs. 5 and 6 show the hourly allocations of courses of the air traffic control specialization. Air traffic control is a key element in ensuring the safe and efficient operation of military aviation. The undergraduate degree program provides structured education and training in air traffic control, equipping students with the necessary skills and knowledge needed to excel in this critical role. Again, the theoretical instruction on essential fundamentals and laws required for the license is combined with practical exercises and professional training directly at military units and the Czech Air Navigation Institute training center.

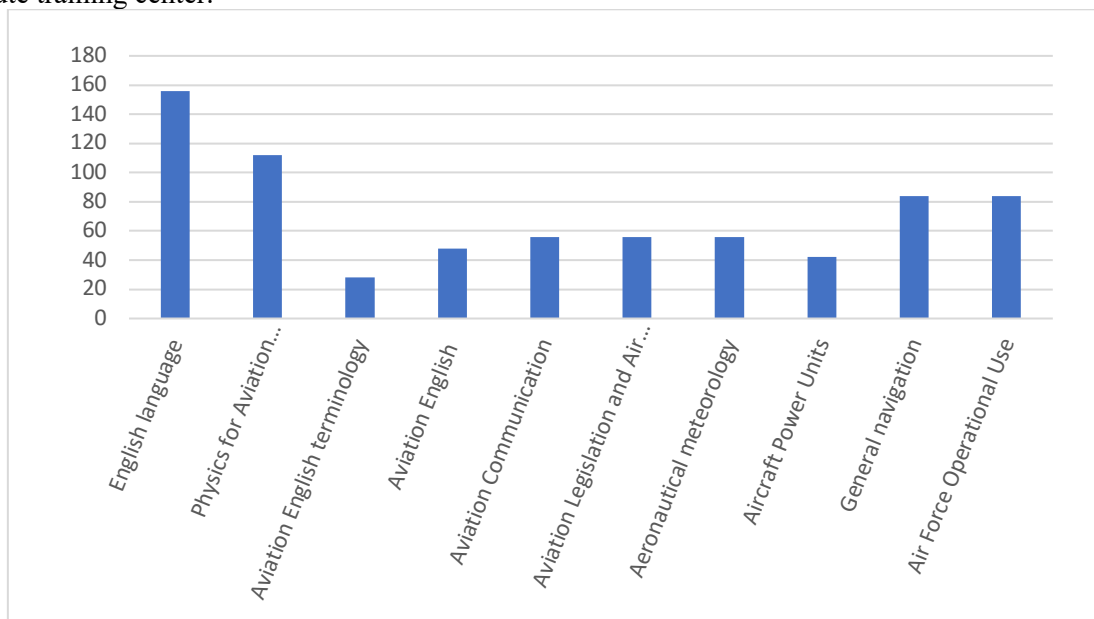


Fig. 2. Number of lessons and exercises of pilots

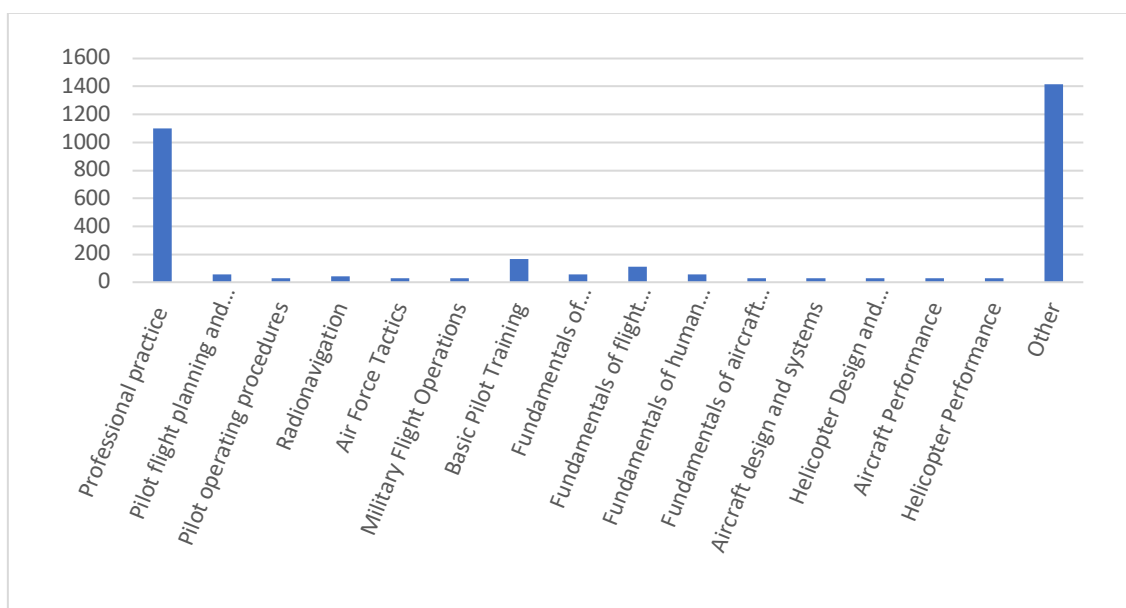


Fig. 3. Number of lessons and exercises of pilots

Air traffic control students receive a total of 2,302 hours of lessons directly related to their future occupation and 1,533 hours of other lessons such as leadership, statistics, and cybersecurity (Fig. 5).

5. FLIGHT SIMULATION FACILITY AND FLIGHT TRAINING CENTER IN PARDUBICE

The flight training center in Pardubice is part of the state enterprise LOM Praha. Since April 2004 it has been providing complete training of pilots of the Czech Air Force.

The center has at its disposal EV-97, Zlín Z-42, Zlín Z-43, and L-39C trainer aircraft, L-410 transport aircraft, and Enstrom 480, Mi-2, Mi-17 helicopters.

Its tasks include training students of the University of Defence in Brno. the students of the military pilot specialization start flights on the Zlín Z-142 aircraft or the Enstrom 480 helicopter starting in the second year of study.

This is the initial flight training, during which students learn how to control the aircraft without having pilot experience. The course is always started at CLV Pardubice with theoretical training, which builds on previous studies at the University of Defence (private pilot license theoretical course).

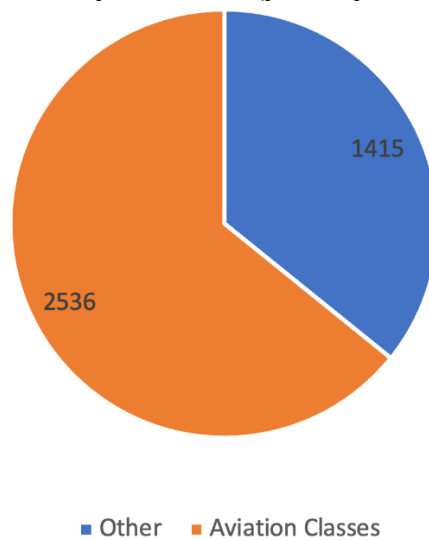


Fig. 4. Comparison of the number of aviation classes and other classes of pilots

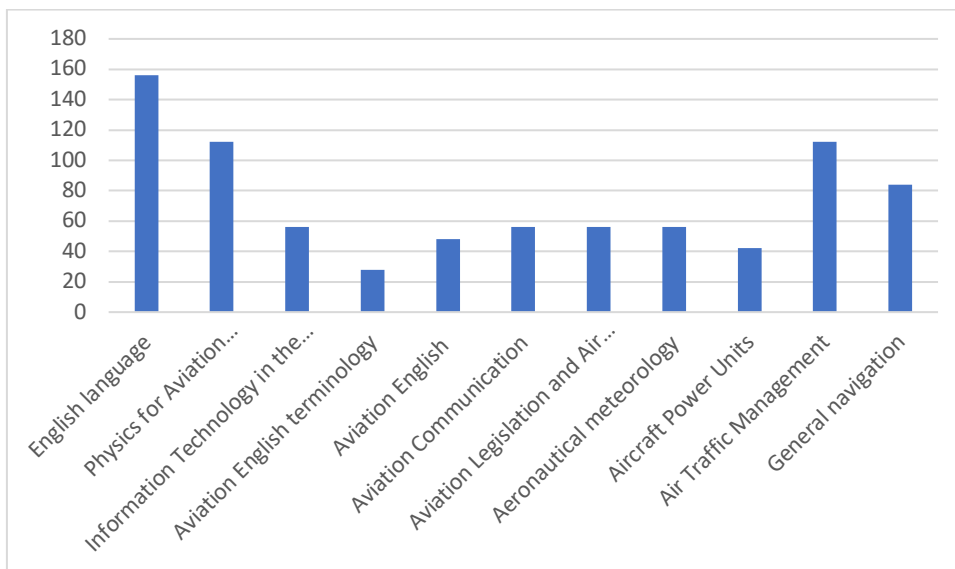


Fig. 5. Number of lessons and exercises of ATC

According to military aviation regulations, every student pilot must first undergo theoretical type training, the so-called material part of the training process. In this course, they become familiar with the aircraft they will be flying. Subsequently, together with the flight instructors, they undergo special-purpose training (specific emergency procedures, principles of piloting techniques, important landmarks in the vicinity of the aerodrome, radiotelephone procedures, and correspondence used at the LKPD aerodrome).

At the end of the training, the acquired knowledge must be demonstrated during a test, and a score of at least 75% is required before a student can start flight training.

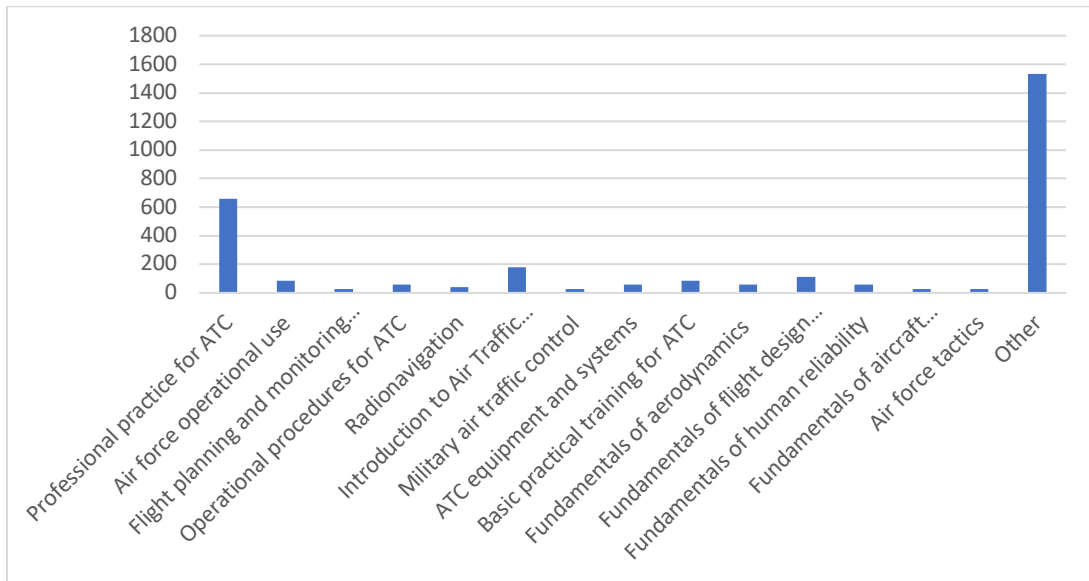


Fig. 6. Number of lessons and exercises of ATC

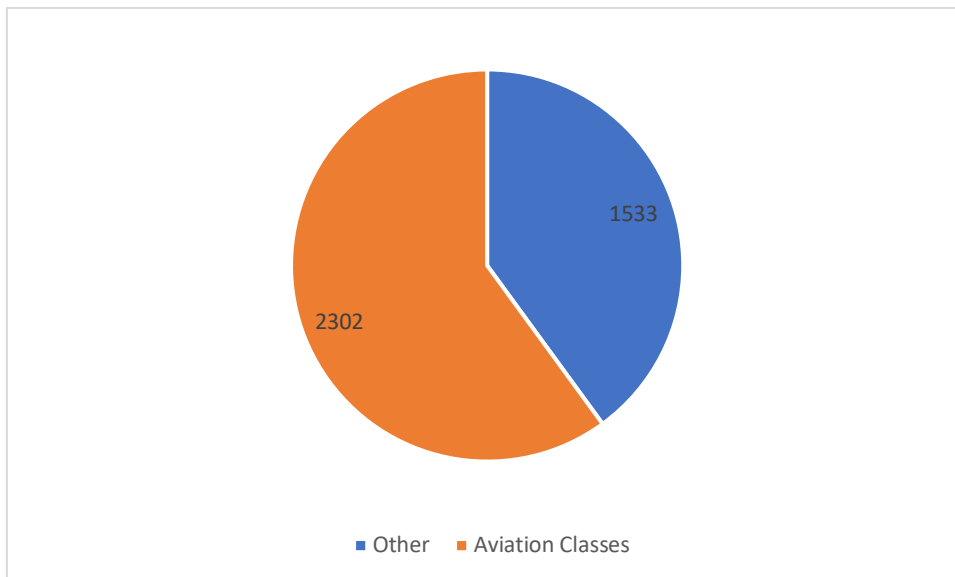


Fig. 7. Comparison of the number of aviation classes and other classes of pilots

5.1. Flight simulation equipment for testing the human performance of helicopter pilots

The Department of Air Force uses a flight simulator for the pilot of an aircraft (helicopter), comprising an instructor's station, which consists of components enabling the installation of controls,

including the preparation for the integration of the moving platform of the simulator in a single unit, equipped with a powerful ruggedized personal computer with appropriate software and display monitors and professional aviation headset and communication system (intercom).

The helicopter simulator is a comprehensive tool that brings together all the controls for general aviation helicopter control. The simulator allows one to perform all the actions related to the piloting technique (from starting, taxiing, and performing the actual flight to shutting down and decommissioning the aircraft, including the operational procedures during the flight).

The helicopter simulator is designed for the clarification and acquisition of the habits of helicopter piloting techniques covering the entire range of methodical training. The simulator is used to understand the principles of helicopter piloting techniques in basic and advanced maneuvers and can be used in different types of simulators (e.g., XPlane 11, Prepar 3Dv 1-5, Digital Combat Simulator), both in 2D environments of external scenery and cockpit view and in 3D views enabling the operation of the simulator in VR (using virtual reality technologies).

The basic structure of the simulator combines the base and individual controllers, including the seat. The available controllers including the collective are based on the Bell 206 helicopter model.

The simulator allows one to set the distance between the pedals and the seat, as well as the stiffness of the stick and the collective. The simulator is ready for eventual fitting with a three-axis moving platform of the D-BOX type, including an individually designed chassis and profiles for various types of helicopters, which can also be freely adapted to the instructor's needs in the user software.

The simulator is suitable for operation in a 2D display (with the use of external large-screen screens that can be placed both horizontally and vertically according to the diagonal size and type) and operation with the use of VR technologies. It is also possible to use the simulator without problems in both of these usage modes (2D and VR) without changing the settings or configuration.

The universal modular equipment also enables expansion for operating multiple simulators at the same time on a single type of device using the TCP/IP network protocol (e.g., for group flying training, tactical flying, or flight crew cooperation) and the direct verification of the theory and practice of the art of piloting according to VFR rules and IFR to the required extent, including the possibility of training overflights with the support of air traffic control.

6. CONCLUSIONS

The military pilot specialization study program represents a comprehensive educational and practical process aimed at preparing graduates for the demanding workload associated with the military pilot profession. The basic task is to produce highly qualified professionals capable of successfully performing flight tasks on frontline aircraft and flying them with full control even in extreme conditions. The careful selection and training of young individuals with the appropriate skills and talents to perform demanding military flight tasks are crucial to achieving this goal.

The development of a model for the education and training of military pilots depends on the specific requirements of the Air Force Command and the capabilities of the University of Defence and the Air Training Centre in Pardubice. Given the requirements of the Air Force of the Czech Republic and the number of retiring pilots required, it is necessary to change the model for training military pilots. This paper describes a possible model for training military pilots in the current conditions of the University of Defence. The aim is to prepare graduates as much as possible for the performance of the future profession and to implement as much practical teaching as possible at the simulation center of the university, which is used as a support instrument [12].

Graduates of the military pilot specialization will be prepared for a range of professional roles, including aircraft or helicopter commander and unmanned aerial vehicle operator. Graduates with the appropriate professional knowledge and skills at the level of the internationally recognized standard for the air transport pilot (ATP) professional flying course will meet the requirements for the relevant military license (EMP). The air traffic control study specialization will prepare graduates for key tasks associated with the safe and efficient management of air traffic. Graduates of this specialization will have professional knowledge corresponding to international standards for the training of military and

civilian air traffic controllers and be able to manage a high workload. Owing to their relevant skills and capabilities, they will be able to actively contribute to the planning and conduct of combat operations and ensure the smooth running of air traffic.

A high level of safety in modern and potentially dangerous aircraft systems can be ensured only by combining the capabilities of modern aircraft alert and warning systems and their management by highly qualified operators who are psychologically prepared to exhibit timely and adequate responses in conditions that can lead to accidents. Such operators can mitigate the consequences of dangerous situations and prevent the further occurrence of an accident [13]. The new approach to EMP and ATC aviation skills education and training is innovative primarily in that it:

- makes it possible to significantly speed up the entire process of education and training of military expertise in EMP and ATC skills while maintaining the basic requirements of the relevant aviation regulations and the new requirements of the Czech Air Force,
- is more attractive to potential students interested in studying these specialties because it better corresponds to their ideas about the content and duration of study and training,
- is a more attractive study program that should attract more applicants, thus enabling a better selection of the most suitable candidates,
- is a selection system that is set up as part of the admission procedure, which increases the probability of selecting the most suitable candidates based on the current requirements.

The primary limits of the new approach to EMP and ATC aviation education and training are as follows:

- the set of suitable candidates for the required military professions is constantly shrinking over time due to the deteriorating health of the young generation and the lack of interest in education in technical fields,
- the desirable use of simulation technologies in the selection of suitable candidates within the admissions process depends on the possibilities of these technologies and the procedures used,
- condensing the necessary theoretical and practical training into a shorter time requires increased efforts from both students and academic staff; this includes demanding coordination between theoretical and practical training since the training providers do not all belong to one organization.

Overall, graduates of the bachelor program will be equipped with a wide range of knowledge and skills in military aviation and will be prepared for further professional development and demanding leadership roles. Their abilities to apply and adapt to modern military technologies and manage operations in diverse environments be a key asset in the future of the Czech Air Force. A very similar approach should also be implemented for the other areas of education to ensure qualified personnel throughout the Czech Air Force [14].

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