The current study pathway was developed to represent a new entrant remote pilot in the open category persona. (S)He represents many hundreds of people who have no technical skills, having finished their high-school, and are looking for some acknowledgment and easy access to a salary by doing something that they love – flying their drones, editing the videos and posting them online. Furthermore, it covers new entrants with close to zero experience in the topic, and who will face a significant change in responsibility, with the end goal of flying small drones/UA commercially as a service type operation for clients.

NEW ENTRANT REMOTE PILOT: Skilling		
FORMAL TRAINING		
	Main Topic	**Description of content**
Theoretical Training: Learning Courses and Instruction required to being ex. Pilot	Regulations and Air Safety	- Introduction to EASA and the aviation system - Regulation (EU) 2019/945 and Regulation (EU) 2019/947 (or other Vigeant at time) - National Regulation applicable to UAS - Subcategories in the “open” category and the associated classes of Unmanned Aircraft Systems (UAS) - Registration of UAS operators - The responsibilities of the UAS operators and remote pilot - Incident / accident reporting - Airspace restrictions - Introduction to U-space - Operation in Visual Line of Sight (VLOS) - Insurance - Security - Environment protection. noise, lost hazardous parts and protection of wildlife and its cycles
	UAS General Knowledge	- Information obtained from the UAS manual - Understanding of the UA’s capabilities and limitations - Control basics (e.g., hierarchies, loops, rules, observation, and actuator variables) - Artificial intelligence, automation, and flight modes - Novel propulsion systems and energy sources (e.g., fuel cells, new batteries) - Changing and discharging of batteries - Safety concerns to operators and other people hazards - Aerodynamics and propulsion (specific to the type of UA) - Mass and Balance - Performance - Electric and electronic components - Principles of automatic flight

		- Datalinks and telecommunication - Lost link procedures and pre-flight configurations for safe return to land - GNSS and localization - Loading and update of geo-fences and awareness zones - Payload operation
	Operational Procedures	- Surrounding environment analysis, including terrain, airspace, people, buildings, electromagnetic interferences, and jamming - Meteorology and limitations imposed on the flights - Databases and accesses - where and how to consult the required updated information - Briefing and debriefing - Pre/post flight inspections - Flight planning - Take-off and landing planning - Contingency planning - Air Navigation - Overflight of uninvolved people - Maintenance - MEUH method: Meteorology, Environment, UAS, Human - Procedures in case of unintended operation near other aircraft
	Human Performance and Limitations	- Fit to fly self-analysis - IMSAFE assessment methodology - Limitations on perception (depth of field, distance/height to/from the UA, speed of the UA, night operations) - Disorientation - Error management and mitigation - Stress, arousal, and fatigue – detection and mitigation
	Privacy and data protection	- Regulation of privacy and data protection - Authorizations for image viewing, recording and dissemination
	Risk Assessment and Management	- Risk and danger definition - Methodologies for assessing risk - Risk management and mitigations - Safety concerns to operators and other people hazards - Security
	Main Topic	**Description of content**

Practical Training: All the hands-on training, which can include simulation, on-site training, supervision flying…	Simulation Training	- Situational awareness training - Interaction with UAS software, firmware, and hardware - Checklists for simulated flight and operations - Flight planning and preparation according to theoretical training and knowledge - Decision making - Briefing and debriefing - Hand-eye coordination - Simulated flight training - Emergencies and contingency
	Initial and Intermediate practical real-flight training on basic UA (if final UA operations is heavier or much more complex)	- Operational procedures - Application of theoretical knowledge - Interaction with the UAS, safety precautions, performance, and limitations - Familiarization with the operating environment, how to perform the evaluations of the presence of uninvolved people in the overflown area. Identification of obstacles and hazards. - Preparation for flight and checklists - Flight and contingency planning - Pre-flight preparation and inspection - Flight instruction, including all parts of the flight, flight modes and maneuvers - Keep the UA outside of no-fly or restricted zones - Perform return to home/land point manually and automatically - Emergency simulations during flight - Control distance to/from obstacles and people - Exercise good judgment and airmanship - Always maintain control of the UA in such a manner that the successful outcome of a procedure or maneuver is never seriously in doubt - Return the UA to the remote pilot after it has been flown to a location far enough not to distinguish the orientation of the UA - Landing, missed approach and return for landing - Flight in abnormal conditions - Decide and act on a situation of loss of attitude or position caused by internal and external phenomena - Simulation of temporary loss of control, either by internal failure or datalink loss, and consequent failsafe activation - Debrief and flight logs - Post-flight inspections - Maintenance

	Real-flight training on operational UA	- Familiarization with the UA, safety precautions, performance, and limitations - Methodic application of operational procedures and theoretical knowledge - Airspace segregation and other airspace limiting factors, including air safety - Familiarization with the operating environment, how to perform the evaluations of the presence of uninvolved people in the overflown area. Identification of obstacles and hazards - UAS meets technical requirements of the geographical zone - Assessment and evaluation of meteorological conditions and their impact on the operation - Flight briefing, preparation, and checklists - Flight and contingency planning - Pre-flight preparation and inspection - Flight instruction, including all parts of the flight, flight modes and maneuvers - Emergency simulations during flight - Control distance to/from obstacles and people - Exercise good judgment and airmanship - Always maintain control of the UA in such a manner that the successful outcome of a procedure or maneuver is never seriously in doubt - Operational standard scenario simulation

TECHNICAL COMPETENCES					
Competence	**Competence Description**	**Knowledge**	**Skill**	**Level**	**Preliminary Training Topics**
Name	***Short competence description***	***The individual should have knowledge of…***	***With this skill someone should be capable of….***	***Beginner Intermediate Advanced***	***How to acquire the skill?***
Hand-eye coordination & UA flight path control and management	Coordinate the necessary in-flight maneuvers with intended and hand commands and automation processes. Coordinate the flight path, maintaining proper guidance, and appropriate distance to obstacles, terrain, and people	-How a handset/RC remote typically works, in terms of inputs and common outputs of the UA -Typical UA dynamics in 3D space	-Fly the UA in VLOS and FPV (video - first person view) operations. -Coordinate his intentions with the proper drone control -Perform proper, steady, coordinated flights and operations, controlling the various payloads in a correct manner	Beginner to Intermediate	-Understanding of the UA flight performance, capabilities, and limitations. -Practical (both simulated and real) flights in various weather conditions within the limitations of the UA; Operation in abnormal conditions

Application of Procedures	Identify and apply procedures in accordance with published operating instructions and applicable regulations, using the appropriate knowledge (Source: EBT ICAO)	-The importance of understanding and following procedures -The importance of regulations and rules of the air	-Understand the rules and restrictions applicable to the operation of the UA, in different locations and scenarios -Collect and assess proper information about airspace limitations and segregation -Fulfil all requirements in terms of licenses and requests necessary for the operations	Beginner to Intermediate	Studying and learning from the theoretical course; applying the theoretical knowledge to the location/scenario of the operation
Assessment of operational scenario	Assess the operational scenario of the operations, prior to and during the flight. Adjust flight path and control over the UA to changing conditions	The importance of being alert to the external factors affecting an operational scenario	-The remote pilot should be able to properly identify the limiting factors of the foreseen scenario of operation, including overflight of people, buildings, airspace limitations, weather, take-off and landing zones, contingency zones (MEUH) -Understand clouds in the sky, their type and movement, understand the wind in trees or on the water, infer uses for different zones in the scenario, including buildings, people actions and movement"	Beginner to Intermediate	Studying and learning from the theoretical course; attention to detail and all aspects comprising a given scenario; practical training, in normal and abnormal conditions
Risk assessment and safety-based judgement	Identify and ranks risks, to determine which are critical and above the risk tolerance or threshold and thus require attention, and then to select the risk management action(s) to take in response	Risk assessment of the operational scenario, limiting factors and status of the UA	Establish hierarchies of priorities according to the mission and MEUH, define "go/no go" and "return-to-home" conditions, forbidden areas or actions based on MEUH	Beginner to Intermediate	This skill is highly dependent on the knowledge and attitude of the remote pilot; it will depend on intrinsic factors, like the boldness of the RP to take risks and to consider risks with low probability of occurring as being risk that should be acknowledged and mitigated. The trainees should be aware of the safety behaviors and trained of how they can follow them on the field. The training should have a practical component with case studies from real pilot situations and even with on-field training
KEY BEHAVIOURAL SKILLS AND COMPETENCES					
Competence	**Competence Description**	**Knowledge**	**Skill**	**Level**	**Preliminary Training Topics**

Name	*Short competence description*	*The individual should have knowledge of…*	*With this skill someone should be capable of….*	*Beginner Intermediate Advanced*	*How to acquire the skill?*
Situational awareness	Perceive and comprehend all the relevant information available and anticipate what could happen that may affect the operation (s: ICAO EBT)	Factors affecting situational awareness of external factors and UA statuses. Additionally, the RP should be able to place identify the correct location and trajectory that the UA should take to perform the desired action 3D space	-Perform solid navigations in 3D space and manage both external factors that have changed during the flight, as well as internal status of the UA (e.g., low battery, loss of link, geofence violation, inability to control payload) -Perform proper, solid, and precise navigation of the UA in 3D space	Beginner to Intermediate	This skill is dependent on the capability of absorbing and paying distributed attention to several factors extrinsic and intrinsic to the UA. This skill can be acquired by training distributed attention during daily activities, as well as simulated and real flying/training
Problem solving and Decision making (with focus on stress management)	Accurately identify risks and resolves problems. Use the appropriate decision-making processes (s: ICAO EBT)	Coping strategies for stress, anxiety, and doubt, to properly decide on a situation, using rational and balanced decisions; Additionally, the RP should demonstrate humility, recognize his errors, and be able to learn from them in a constructive and positive way	-Keep still when facing disturbances: orally explain possibilities and elaborate troubleshooting process to understand abnormalities in flight and final decision making -Review and improve past decisions during debriefing	Beginner to Intermediate	This skill is deeply connected to the attitude and personal behaviour of the RP. Nevertheless, it can be trained by stimulating stress and forcing the RP to cope with it during simulated and real operations. This skill is also dependent on the experience of RP
Analytical Capability	Collect and analyze information, problem-solve, and make decisions	Basic forms of processing information and channeling it to perform sensemaking and logic-related tasks	-Properly manage and prioritize the several the stimuli received from all five senses, which can be provided by the surroundings, internal to the UA system, instructor, or other team members -Process information from different sources in well organized, priority- based management strategy -This information can come be provided to all five senses of the RP	Beginner to Intermediate	This skill can be trained in classroom where we can assess the individual's level and present different techniques to analyze information. The simulation will be the practical exercise, where information with different priorities is provided via stimuli to all five senses

Change adaptability	Respond to changing factors, e.g., trends, innovation, destabilization, industry shifts	Coping well and adapting to changing conditions and scenarios	-Quickly and efficiently respond to changes in the surrounding and be flexible in adaptation to new contexts -Expose the RP to sudden changes such as mission modification, technical issues, wind changes (prepare mission at 150ft and fly at 350ft)	Beginner to Intermediate	This skill can be trained in classroom to recall scenarios exercises. The practical training is complementary to the simulation exercises on Situational Awareness
Workload management	Manage available resources efficiently to prioritize and perform tasks in a timely manner under all circumstance	Aviation psychology (human overload and underload, fatigue and stress management, etc), how to threat and error management, manage and plan time, manage multi-tasking strategies	Maintain self-control in all situations Plan, prioritise and schedule tasks effectively Manage time efficiently when carrying out tasks Offer and accept assistance and ask for help early Review, monitor and cross-check actions conscientiously Manage and recover from interruptions, distractions, variations, and failures effectively	?	?