Common Module
Unmanned Aerial Systems (UAS)
Module Description

Implementation Group
Doc.: ESDC/2021/248
Date: 5 Nov 2021
Origin: HAFA

Country **GR**	Institution **Hellenic Air Force Academy (HAFA)**	Common Module **Unmanned Aerial Systems (UAS)**	**ECTS 2.0 (3.0 with e-learning)**

	Minimum Qualification of Instructors

Service **ALL**	• **Officers**
	  ➢ English: Common European Framework of Reference for Languages (CEFR) Level B2 or NATO STANAG Level 3.
	  ➢ Relevant expertise on UAS as pilot or technician.
	  ➢ Experience of collaboration with multinational military personnel.

Language **English**	• **Civilian Lecturers**
	  ➢ English: Common European Framework of Reference for Languages (CEFR) Level B2 or NATO STANAG Level 3.
	  ➢ Expertise on relevant topics.
	  ➢ Relevant academic publications.

SQF MILOF	• **Competence Area** - Military Technician • **Learning Area** - Employment of Weapon/Operating Platform/Systems • **Organisation Level** - Single Arm/Branch or Single Service

Prerequisites for international participants:	**Goals of the Module**
• English: Common European Framework of Reference for Languages (CEFR) Level B1 (preferably B2) or NATO STANAG Level 2. • At least 1 year of national (military) higher education.	• Explain UAS support capabilities of subunits during CSDP missions. • Define the requirements of the UAS required to sustain CSDP missions.

Learning Outcomes		
	Knowledge	• Describe UAS classes/types/categories. Understand trends and challenges related to current/future UAS. Identify the parts comprising UAS and the basic principles behind the related technologies related to aircraft and control units/stations. • Become aware of the current/future UAS threats and the spectrum of techniques to counter hostile UAS.
	Skills	• Analyse configurations, payloads, and salient features of UAS. • Assess UAS within the contexts of civil use and security/defence operations/missions. Incorporate UAS to CSDP missions.
	Responsibility & Autonomy	• Take responsibility for exploiting current/future UAS capabilities for civil and military use. • Explore UAS technologies and challenges. Assess the feasibility and efficacy of counter-UAS techniques.

Verification of learning outcomes
• **Observation:** Throughout the Module, cadets/students deal with given topics within syndicate-work sessions. All cadets/students are evaluated during these sessions to verify their performance. • **Evaluation:** Group presentations of given topics related to UAS technologies and applications. • **Test**: Written exam at the end of the Module.

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Module Details		
Main Topic	**Recommended WH**	**Details**
Introduction to UAS	5 (+2 e-learning)	• History • Terminology, Types, Categories • EU & NATO Classification, Regulations/Framework
UAS Design, Manufacturing, Flight Control, Path Planning	5 (+3 e-learning)	• Materials, Propulsion Systems, Automatic Control Systems, • Air-Traffic Control, Flight Rules, Flight Safety • Path Planning Principles/Techniques, Swarms
UAS Anatomy, Avionics/Sensors, Payloads	6 (+5 e-learning)	• Control Units/Stations • Communications/Navigation, Avionics, Sensors, EW Suites • Payloads
UAS Civil/Military Applications, CSDP Missions	8 (+3 e-learning)	• Civil Applications, Urban Air Mobility • Security Missions, Forensics • Defence Applications, Military Operations
UAS as Threats, Countermeasures	6 (+2 e-learning)	• UCAVs • Loitering Munitions, Weaponized and Suicide Drones • Detectability, Counter-UAS Techniques/Means
Total Lecture WH	**30 (+15 e-learning)**	
Additional Hours (WH) to Increase the Learning Outcomes		
Self-Studies	20 (+10 e-learning)	• Preparation for the upcoming lessons, the syndicate work, and for the final exam. • Reflection of the topics issued.
Total WH	**50 (+25 e-learning)**	The detailed amount of hours for the respective main topic is up to the course director according to national law and home institution's rules.

List of Abbreviations:

B1, B2	CEFR Levels
CEFR	Common European Framework of Reference for Languages
CSDP	Common Security & Defence Policy
ECTS	European Credit Transfer and Accumulation System
ESDC	European Security and Defence College
EU	European Union
EW	Electronic Warfare
IG	Implementation Group
NATO	North Atlantic Treaty Organization
STANAG	Standardization Agreement
UCAV	Unmanned Combat Aerial Vehicle
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
WH	Working Hour