FLYING OVER HILLY ENVIRONMENT

Syllabus

Couse provided by Vertical Master and in compliance with:

COMMISSION IMPLEMENTING REGULATION (EU) 2019/947 / EASA

Open and specific category operations

Certified Institut

Duration: 1 day (7 hours)

Schedule: **9.30 – 17:30**

Prerequisites: A1/A3 & STS

Course Objective:

- Explain the causes and effects of turbulence, wind, and surface conditions on UA operations.
- Describe how diurnal and seasonal variations, as well as cloud formations, influence flight performance.
- Identify and exploit orographic lifting while applying the appropriate pilot actions in slope or ridge conditions.
- Recognize typical vertical air movements, wind shear, and turbulence associated with hilly environments.
- Apply knowledge of meteorological effects to anticipate challenges and maintain safe UA flight in varied terrain.

Syllabus:

Chapiter	Topic	Description
1.	Temperature inversions	• the effect of thermic-induced turbulence near the Earth's surface. • Surface effects. • Diurnal and seasonal variations. • The effect of clouds. • The effect of wind.

2.	Orographic lifting	• Exploiting Orographic Lifting (Slope or Ridge)
		  ○ Effects of using orographic lifting
		  ○ Required pilot actions when encountering slope or ridge lift
		• Hilly Environment Meteorology
		  ○ Typical vertical air movements
		  ○ Characteristics of wind shear in hilly terrain
		  ○ Turbulence associated with hilly environments

3.	Higher winds through passes	• Wind Behavior in Mountainous Environments • Effects of Strong Winds • Pilot Awareness and Response
4.	Mountain waves	• Wind Characteristics in Mountainous Environments ○ Smooth airflow on the windward side of mountains

		○ Turbulent airflow on the leeward side, following terrain contours (katabatic wind) • Impact of Strong Winds ○ Stronger winds increase downward pressure ○ Risk of UA (Unmanned Aircraft) being pushed toward the mountain surface • Pilot Awareness ○ Need to recognize downdrafts (downward-moving air) ○ Failure to identify downdrafts can create challenging flight conditions
5.	High- and low-pressure patterns	• Fronts and Pressure Systems • Prediction Rules • Front Characteristics
6 .	Density altitude effects	• Density Altitude and Air Characteristics • Impact on UA Performance • Operational Relevance