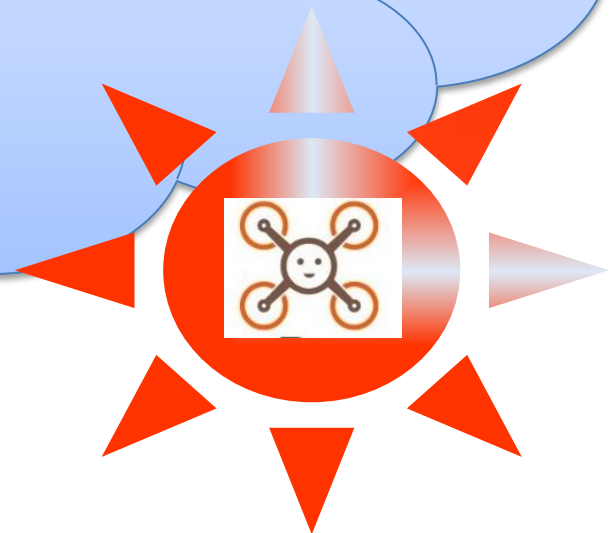


Curricula of DRONE TECHNOLOGY course



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Revision History

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Overview of drone technology curricula

Drone Technology Curricula is addressed to VET providers that teach issues related to unmanned aerial systems and their development.

Moreover, this curricula is designed to help VET students to take advantage of the huge opportunities created by Industry 4.0, through the adaptation of drone technology, in order to start a new business or to expand already existing companies.

The course is offered in a mixed format consisting of face-to-face lectures, online lessons, lab activities and online testing.

The course is meant to help students understand and get acquainted with the droning technology currently used and at the same time acquire and develop high-quality skills and competences, including entrepreneurial and digital competencies. The course also provides information on designing and manufacturing the drones, programming, operating, maintaining and using them safely.

The curricula include the 12 units focused on the elements of essential theory and design concepts of today's Drone Technology.

Each unit includes dedicated e-learning resources, power point presentations, student activities, vocabulary and definitions and assessment methods.

As part of the exploration of knowledge, VET students will have case studies in the drones' industry to show the potential for stimulating entrepreneurship during the course.

The program: VET providers to teach VET students	
Course Name: DRONE TECNHOLOGY	
Units:	
<ol style="list-style-type: none"> 1. Introduction to Drone Technology 2. Drone design and fabrication 3. Drone programming 4. Drone flying and operation 5. Drone accessories 6. Drone maintenance 7. Safety and Regulations 8. Drone commercial applications 9. Case studies in the drone industry to show the potential for boosting entrepreneurial spirit 10. Drone technology and entrepreneurship 11. Drone Technology as a tool for social inclusion 12. Future of drones 	
Time: 48 hours	24 hours/course
	24 hours/ practical applications

Conditions of deployment

Course conditions	Course room, video projector, computers and internet connection
Practical applications conditions	Laboratory room, video projector, computers, internet connection

Competences

After successful completion of the course, VET students will be able to:

- ✓ understand drone concepts, terminology and vocabulary;
- ✓ describe the development of unmanned aircraft systems (UAS);
- ✓ describe the steps for drone design;
- ✓ understand the technical characteristics of the parts;
- ✓ describe the process for drone fabrication;
- ✓ describe the algorithm for drone programming;
- ✓ understand the technology to transmit and receive data;
- ✓ increasing flight safety and prevent accidental flights in restricted areas;
- ✓ demonstrate knowledge of drone current uses;
- ✓ identify examples of related real-world applications of drones;
- ✓ understand technical aspects of flying;
- ✓ demonstrate knowledge of technical and operational requirements for the drone;
- ✓ operate a small drone in a controlled environment;
- ✓ understand and identify business opportunities with the use of drone technology;
- ✓ STEM competences.

Objectives

General objective	<p>The main objective of the Drone Technology course was established in line with industry requirements 4.0.</p> <p>The general objective is assimilation of theoretical and practical knowledge required to design, build, program and use of the drones under safety conditions and according with the legislation in force.</p>
Specific objectives	<ul style="list-style-type: none">• acquiring basic skills in exploring the potential of the drone technology in professional activities;• the use of advanced ICT solutions for the programming of drones;• establish and understand parameters for flying;• equip drones with accessories;• use smartphones and tablets to pilot a drone;• give the VET students the knowledge and skills to carry out basic tasks in commercial applications;• give the VET students the knowledge for a safety flight.

Course Organization

Unit Titles	Hours	Activities	Resources and materials	Training Method	Methods of Evaluation
Introduction to Drone Technology	4	Drone Concept Vocabulary Terminology History of drone Types of current generation of drones based on their method of propulsion	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	As teaching methods there are: lecture-debate, role play.	1 assignment – A Case study will be submitted through e-learning platform = 20 points Late submissions of assignments will not be accepted. 1quiz: 20 items x 4 points / item = 80 p
Drone design and fabrication	4	Classifications of the UAV Overview of the main drone parts Technical characteristics of the parts Function of the component parts Assembling a drone The energy sources Level of autonomy	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Lecture, Demonstrations Project-based learning Cooperative learning in the laboratory Group work Learning through exploration and discovery	
Drone programming	4	Drones configurations The methods of programming drone Download program Install program on computer Running Programs Multirotor stabilization Flight modes Wi-Fi connection	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Lecture Demonstrations Project-based learning Cooperative learning in the laboratory Group work Learning through exploration and discovery	
Drone flying and operation	4	Concept of operation for drone Flight modes Operate a small drone in a controlled environment Drone controls Flight operations management tool	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Demonstrations Cooperative learning in the laboratory Group work Learning through exploration and discovery	
Drone accessories	4	Sensors Onboard storage capacity Removable storage devices Linked mobile devices and applications	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Project-Based Learning Cooperative learning in the laboratory	
Drone maintenance	4	Method of drone inspection Charging the battery Cleaning the drone Storage Maintenance resources and standards	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Lecture Project-Based Learning Discussions	

Unit Titles	Hours	Activities	Resources and materials	Training Method	Methods of Evaluation
Safety and Regulations	4	The safety risks Guidelines to fly safely Specific aviation regulation in the European Union European system of standardization How to acquire the license required form for drone operation Drone license	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	lecture-debate, Discussions	
Drone commercial applications	4	Choosing a drone based on the application Drones in the insurance sector Drones in delivering mail, parcels and other cargo Drones in agriculture Drones in inspection of transmission lines and power distribution Drones in filming and panoramic picturing	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	lecture-debate, case studies, Project-Based Learning Demonstrations	
Case studies in the drone industry to show the potential for boosting entrepreneurial spirit	4	General Information Identified problem description Application of drone technology Resulting benefits	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Case studies Presentations Demonstrations	
Drone technology and entrepreneurship	4	Drone technology impact on the businesses Drone business through entrepreneurship	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Presentations Demonstrations Debates	
Drone Technology as a tool for social inclusion	4	General information Trainee Profile Identified Problem description Opportunities/applications for entrepreneurship and employability Resulting benefits	Internet connection E-learning platform Web resources Students will have access to the course on the e-Learning platform.	Presentation lecture-debate/Discussion Case study	
Future of drones	4	Miniaturization of drones Increasing autonomy of drones The use of drones in swarms	Internet connection E-learning platform Web resources Students will have access to the course on the eLearning platform.	Presentations Demonstrations Debates	

Assessment criteria

Final grades assigned for the course will be based on the percentage of total points earned and are assigned as follows:

Points	Performance
96 - 100	Excellent Work
91 - 95	Nearly Excellent Work
86 - 90	Very Good Work
81 - 85	Good Work
76 - 80	Mostly Good Work
71 - 75	Above Average Work
66 - 70	Average Work
61 - 65	Mostly Average Work
56 - 60	Below Average Work
0 - 55	Failing Work