

Dear Colleagues,

On behalf of the ESJF European Jewish Cemeteries Initiative, we would like to invite your department to participate in our educational programme designed for architecture and engineering students, which will equip them with knowledge about the potential application of UAVs and photogrammetric modelling in heritage protection projects.

The ESJF is a German-based NGO active in Central and Eastern Europe, founded in 2015, in recognition of the thousands of Jewish cemeteries in Europe that lie neglected and unkempt. In 2018, the ESJF received support from the European Union for a mass survey project of Jewish burial sites using cutting-edge UAV technology. To date, ESJF has mapped and researched around 3,000 cemeteries across eight countries. Our website hosts a database of the surveyed sites in these countries, with photos, maps, and descriptions to make information on Jewish cemeteries in Europe public and accessible to all (<https://www.esjf-surveys.org>).

The ESJF carries out various education projects for high school students, teachers, and local historians but a truly unique part of our educational work is our outreach programmes for those in higher education, that goes beyond usual target audiences like history students. We firmly believe that heritage preservation is a field that should include not only humanities, social sciences but also technical fields, and that engineers and architects are key in the digital heritage revolution we are witnessing around the world today.

Surveys and photogrammetry are among the core areas of expertise at the ESJF, and in cooperation with Dron.ua company we have developed a training package with which engineering and architecture students can learn about the cutting-edge UAV and 3D modelling technology we deploy. Beyond this technical training, students are introduced to Jewish history and heritage, specifically the significance of cemeteries in Jewish life. Our pilot outreach programme already took place in two Ukrainian higher education institutions (<https://www.esjf-surveys.org/lviv-students-complete-technical-training/>).

Due to the COVID-19 pandemic, we were forced to abandon plans for similar on-site events and have shifted our model to instead deliver this training online, allowing students to join in from the comfort of their homes. This led us to put together an online UAV training course for European Universities students. Overall, 150 individuals registered for the course, and it received universally positive feedback from participants, thereby providing a model for future courses.

We would welcome any support from your institution in disseminating this news, reaching interested students, or discussing potential accreditation and/or the possibility of incorporating the course into existing modules. We look forward to cooperating with you. Please find the pertinent details below.

Best regards,

Alexandra Fishel

Educational Projects Officer

alexandra.fishel@esjf-cemeteries.org

+38 05 01 97 96 78 (Whatsapp)

Questions and Programme

When? The course will be available from January 15th 2023 until the end of March 2023. It will encompass circa 2.5 hours of video course + one Zoom webinar (date and time TBC)

How to apply?

Just submit this form <https://forms.gle/DdGQod7ycMwr5F6w9>

You will receive access to the course within 48 hours of filling in the application form. But not earlier January 15th 2023.

For whom? This programme is oriented for students with no prior experience with UAV (drone) technology.

This programme has been developed for university students to provide an introduction to the use of UAVs, and the opportunities drones can provide in various spheres, such as agriculture, ground surveys, and mining. It covers the main aspects of implementation, and will include an overview of different models of drones, as well as an introduction to the largest manufacturers and software developers in the field.

We discuss spheres in which drones can be used and their value in comparison to traditional methods of data acquisition.

The second lecture is devoted to hardware. It presents an overview of different UAV models (quadcopter, fixed wing, VTOL, etc). By discussing the relative strengths and limitations of each, students will be given a better idea of which model should be applied to specific situations. Part of the material is also devoted to sensors and their purpose in drone surveying, as well as the hardware specifications which must be taken into account in flight planning.

The third lecture is dedicated to data processing and presents a brief overview of photogrammetric modelling. This is essential for students unfamiliar with the technology, and those who believe in “one button” processing. In this lecture, we will discuss the main

parameters of photogrammetry (internal and external camera orientation parameters, accuracy, etc.) and the consequences and purpose of each stage in the process.

After the workshop, attendees will receive a short but comprehensive overview of the process, to help them understand how they can use this technology and decide which areas of the material to study further.

We will also share test materials.

If the university curriculum includes all the information that has been presented above, it is possible to create modified presentations, focusing instead on data processing, or delving deeper into any of the aspects of the course, with accompanying case studies.

Finally, the programme will impart a basic knowledge of the reality of preserving Jewish cemeteries, and background information on the Jewish heritage of Europe.

Language? All materials are in English.

Programme

8 videos (about 2.5 hour all together) + 1 live webinar

Participants will be provided with a special guide to drone modelling in heritage preservation (pdf)

Part 1. (circa 30 min)

- ❖ **The ESJF: our mission, surveys, and the technologies we use.**
- ❖ **Jewish cemeteries in Europe as a form of local and European cultural heritage.**
- ❖ **What we should know about Jewish cemeteries in Europe.**
- ❖ **ESJF Survey in Dubno and 3D modelling**

Part 2. (circa 2 hours)

Introduction

Topic 1. The impact of drones in different spheres

- ❖ Agriculture
- ❖ Cartography
- ❖ Mining
- ❖ Architecture
- ❖ Oil and gas
- ❖ Inspection
- ❖ 3D modelling

Topic 2. Intro to drones

- ❖ Types of aircrafts
- ❖ Sensors
- ❖ Intelligent flight modes
- ❖ Flight planning parameters

Topic 3. Introduction to Photogrammetry

- ❖ From 2D to 3D

- ❖ Main photogrammetry parameters
- ❖ Processing procedure

Webinar

Live session with Tatiana Kondratenko, one of Ukraine's foremost experts on drones, and Ester Zyskina, Jewish cemetery expert. The date is TBC.

Certificates: All participants will receive a certificate. In order to receive it, they must first fill out a feedback form, which they will receive upon completing the programme in February. Participation will be tracked, and only those who have completed more than 70% of the course will receive a certificate.

For any questions please contact Alexandra Fishel

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