Intensive course

Course Title: **Terrestrial Laser Scanning: from data acquisition to deliverables**

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This course aims to illustrate the processing procedures with terrestrial laser scanners, starting from data acquisition and registration methods. Then, the procedures for converting point clouds into CAD drawings and 3D models will be explained, using both automatic and manual methods.

Synthetic program:

Day 1 11 Apr	(Friday) 12 Apr	Day 2 13 Apr	Day 3 14 Apr	Day 4 15 Apr	Day 5 16 Apr
Morning		*Morning*	*Morning*	*Morning*	*Morning*
Introduction, example of surveys with the scanner Why use a laser scanner?		First data acquisition on-site	From point clouds to deliverables: production of orthophotos, plans, sections, elevations with manual and automatic methods	Check the status of deliverables	Advanced techniques for point cloud processing: denoising, shading, smoothing, …
Demonstration with low- and high-cost laser scanners				Second data acquisition on-site	
Afternoon		*Afternoon*	*Afternoon*	*Afternoon*	*Afternoon*
What we can do with a laser scanner: advantages and problems		Processing of the data captured on-site Point cloud registration with different methods: targets, ICP, planes Registration in a superior reference system. Evaluation of accuracy	Hands-on: generation of plans and sections, revision, corrections	Hands-on: Scan Registration, Integration	Automatic 3D modeling from point clouds: autosurfacing and editing tools, texture mapping, sectioning, …
Typical errors; strategies to capture accurate and complete point clouds			Considerations after trying: how to plan a survey and the work related to acquisition, registration, and production of technical drawings	Sharing point clouds	

Type of the lecture: Theoretical session   Practical session   On-site session

Participants should install on a Windows laptop the following software:

- AutoCAD 2019 with Recap (30-day trial on https://www.autodesk.com/), student version free for 3 years
- CloudCompare (free) https://www.danielgm.net/cc/

Other software will be provided the first day of training