Civil, Environmental and Geomatic Engineering

Reality Capture and Precision 3D Sensing (CEGE0092)

Description
This course covers advanced topics of 3D sensing. It is comprised of three roughly equal parts: photogrammetry, LiDAR and GNSS. The module introduces the fundamental principles and mathematical concepts for each sensing technique, which are independent of specific applications (airborne, mobile, static ...). It then shows how these techniques are used in wide varieties of application from industrial to space-borne. In the first part the course will introduce the mathematical and geometric foundation of photogrammetry, camera calibration and its application. The second part covers theory and practice of producing and validating digital models and from laser scanning (LiDAR). The module also introduces approaches for automated point cloud processing and feature extraction. The third part introduces advanced aspects of the fundamental GNSS principles, applications and integration of GNSS phase observables and other positioning and navigation systems. Special emphasis is placed on the modelling of errors and on the control and assessment of quality.

Key information
- **Year**: 2019/20
- **Credit value**: 15 (150 study hours)
- **Delivery**: PGT L7, Campus-based
- **Reading List**: View on UCL website
- **Tutor**: Dr Jan Boehm
- **Term**: Term 2
- **Timetable**: View on UCL website

Assessment
- Coursework: 100%

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For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of December 2018. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.