

## Sensors and Location (CEGE0095)

### Description

Basic principles of operation, applications and integration of sensors used in smartphones and professional geomatic engineering equipment. Location technology with an emphasis on Global Navigation Satellite Systems (GNSSs), but also other radio signals, inertial sensors, digital maps (for map matching), vehicle odometers, compasses, sonar/radar and cameras. Context determination using smartphone sensors. Application of low-cost imaging and 3D imaging sensors to 3D reconstruction and positioning. Students will be introduced to the principles of citizen science and crowd sourcing and how low cost sensors and smart phones can be used to gather data about the urban environment. Strengths (e.g. ability to represent individual views) and issues (data quality, coverage) will be discussed in theory and validated via practical sessions.

### Learning Outcomes

The aim of this module is to give students a broad understanding of the capabilities of smartphone and geomatics sensors and their application in location, context determination, image understanding and crowdsourcing for both geomatics professionals and consumers. Students will develop a broad knowledge of sensors used both by geomatic engineering professionals and by consumers on smartphones, including their basic principles of operation and their applications. There will be a particular focus on location technology, including global navigation satellite systems (GNSS). Students will learn the strengths and weaknesses of the different location technologies and how to select different combinations of sensors for different location tasks. Students will also learn how to use imaging sensors for 3D reconstruction, how to determine context from smartphone sensors and how to crowdsource data.

### Key information

<b>Year</b>	2019/20
<b>Credit value</b>	15 (150 study hours)
<b>Delivery</b>	PGT L7, Campus-based
<b>Reading List</b>	<a href="#">View on UCL website</a>
<b>Tutor</b>	<a href="#">Dr Paul Groves</a>
<b>Term</b>	Term 2
<b>Timetable</b>	<a href="#">View on UCL website</a>

### Assessment



■	Coursework: 60%
■	Coursework: 40%

### Find out more

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