
Title of the course

- **230006 Citizen Science applied to research bringing together co-creation & Open Science**

Organizing center/area leading the course

Deusto International Research School (DIRS) – PhD program in Engineering for the Information Society and Sustainable Development

Training category

Methodology and research techniques

Professor/Coordinator of the training course

[Diego López-de-Ipiña](#) and [Diego Casado-Mansilla](#)

Priority group

First year, second year, third year PhD students

Competences

Describe basic aspects of citizen science such as the history and typologies of citizen science.

Differentiate between methods in citizen science, community science, crowdsourcing, participatory science, and co-design practices.

Understand the benefits and current limitations of citizen science for engineering, social sciences, and humanities.

Explain and critique the various levels of citizen engagement from contributory to extreme citizen science.

Describe the benefits and challenges of collaborating and co-creating with citizen scientists.

Understand the technological aspects of citizen science projects and review the most used digital tools.

Understand communication strategies that are beneficial for explaining and conveying scientific methods and research results to the public and specific audiences.

Understand biases in data collected by citizens. Understand limitations of the data gathering for further analysis.

Draw links between citizen science research, Open Science, and the UN Sustainability Goals.

Pre-requisites / prior knowledge

Knowledge of the Scientific Research Method, basic statistics and some acquaintance with web and mobile phone-based tools.

Contents

Unit 1. Introduction to Citizen Science. Definition, basic concepts, and history. Typologies of Citizen Science. Distinction and complementarity between citizen science, community science, crowd sourcing, participatory design, and co-creation/co-production.

Unit 2. Multi-disciplinary success cases of Citizen Science. Exemplary success cases of applying Citizen Science for Humanities, Social Sciences, Natural Sciences and Engineering. Main benefits and limitations of Citizen Science for the scientific endeavour.

Unit 3. Theoretical background to realize Citizen Science. Citizen engagement approaches. Behaviour change. Methodologies for realizing Citizen Science experiments. Gamification and incentivization mechanisms. Qualitative and quantitative approaches to gather citizens' contributions. Data processing and analysis lifecycle and quality assurance. Policy making and verification. Ethical challenges in Citizen Science. Measuring the impact of citizen science initiatives.

Unit 4. Citizen Science in practice. Design Thinking. Co-design of CS experiments. Readily available open-source tools for Citizen Science. Inclusive engagement of CS practitioners. Catalogue of support tools and knowledge enablers. Communication and dissemination of CS.

Unit 5. Practical team project on Citizen Science. CS experiment specification around UN's Sustainable Development Goals (SDG). Field work to realize CS. Report on insights and conclusions after CS experiment. Appealing storyline to summarize CS experiment. Groups presentations.

Level of the course

Introductory

Methodology

Group-based learning, project-based learning

Language of instruction

English

Mode of instruction

In-class and virtual attendance

Number of places

PhD students: 20

Personnel: No

Assessment

Every student will be part of a 3–4-member team which will specify a possible experiment where Citizen Science or co-creation will be put in practice in their domain of knowledge.

Number of hours

6 hours

Bilbao Campus

- Month when the course begins: March 2024
- Dates:
 - Tuesday, 12 March 2024
 - Thursday, 14 March 2024
- Time: 15:30-18:30

NOTE: It is advisable that students bring their own laptop. The main device to be used in CS experimentation will be either a mobile phone or some printable materials.

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- **Prestaciones especiales del aula y/o para la actividad formativa. Está sección es de uso interno para DIRS y no se publicará.**

Aula estándar (incluye wifi, pizarra y videoprojector, por ejemplo Aula 3 del CRAI)