



PROYECTOS GRUPALES PARA ALUMNOS INTERNOS

CURSO 2026-2027

Departamento

- ☐ Ing. Mecánica y Materiales
- ☐ Ing. Biomédica y Ciencias
- ☐ Ing. Eléctrica y Electrónica
- ☒ Organización Industrial

Profesor/a responsable

Nombre y Apellidos: Zuriñe Varela Aranguren

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Investigadores involucrados (profesores, post-doc, doctorandos)

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2. **Nombre y Apellidos:** Nere Arroniz
3. **Nombre y Apellidos:** Pau Gutiérrez

Datos del proyecto

Título (divulgativo):

How Do We Choose How to Move? Comparing Mobility Models

Breve resumen:

This project is part of the City Science Lab Gipuzkoa initiative, led by MUBIL in collaboration with the MIT Media Lab.

Explore and compare different approaches to modelling how people choose how to move. The City Science Lab has developed and tested several mode choice models over recent years, using different data sources, methodologies and modelling techniques. This project aims to bring this work together, understand the differences between approaches, and explore when and why each model can be useful.

Tareas a realizar:

1. Review and consolidate the different mode choice models previously developed and tested by the City Science Lab.
2. Identify and document the data sources, variables, assumptions, methodologies, modelling techniques and code associated with each approach.
3. Reproduce and test the different models to ensure that their implementation and results are properly understood.
4. Benchmark the models by analysing their strengths, limitations, requirements and potential applications.
5. Identify contexts or research questions in which more than one model could be applied.
6. Run comparable cases using different models and analyse similarities and differences in their results.
7. Develop an interactive platform where users can explore the different models, understand their requirements and apply them to selected cases.
8. Clearly document the models, experiments, results and technical implementation so that the work can be reused and extended by the laboratory.
9. Prepare communication materials for the City Science Lab website, including an accessible text explaining the project and a short video presenting its main findings.
10. Develop a final discussion reflecting on the role of modelling tools in generating evidence and supporting urban and territorial governance.

Distribución temporal del proyecto:

☐ 1^{er} cuatrimestre

☐ 2^{do} cuatrimestre

☒ Anual

☐ Enero

☐ Verano

Perfil de estudiantes

Grado:

☒ Ing. Inteligencia Artificial

☒ Ing. Tecnologías Industriales

☒ Ing. Mecánica

☒ Ing. Eléctrica

☒ Ing. Electrónica Industrial

☒ Ing. Sistemas de Telecomunicación



Tecnun
Universidad
de Navarra

x ☐ Ing. Organización Industrial

x ☐ Ing. Organización Industrial e International Industrial Management Program

x ☐ Ing. Diseño Industrial y Desarrollo de Productos

x ☐ Ing. Diseño Industrial y Desarrollo de Productos + Ing. Mecánica

x ☐ Ing. Biomédica

Curso:

x ☐ 2

x ☐ 3

x ☐ 4

¿Cuántos estudiantes se espera que trabajen en este proyecto?

Cada proyecto debería contemplar la colaboración de ≥ 3 estudiantes

3

Otros comentarios o datos de interés

A **mode choice model** is a model used to understand or estimate how people choose between different transport modes (such as walking, cycling, public transport or private car) when making a trip. These models typically use information about people, trips, transport options and the characteristics of the territory to identify the factors that influence these choices and to estimate the distribution of trips across different modes. Different modelling approaches can rely on very different data sources, assumptions and levels of detail, and can therefore be suited to different questions and contexts.

This project is not intended to develop a new mode choice model from scratch. Instead, its main objective is to understand, consolidate and critically compare a set of models that have already been developed within the City Science Lab over the past years.

The models considered in the project differ in several dimensions: the data they use, their spatial and temporal scale, their assumptions, their methodological approach and the type of questions they can address. Some may require detailed individual-level data, while others may be more suitable when only aggregated or alternative data sources are available. Understanding these differences is a central part of the project.

The students are expected to go beyond simply describing the models. They should critically examine the relationship between **data, methodology and results**: what information does each model need, what assumptions does it make, what does it allow us to understand, and what are its limitations? Where several approaches could be used for the same question, the students should test them and investigate how the choice of model affects the resulting insights.

A key outcome of the project will be an **interactive platform** that makes this comparison tangible. Rather than presenting the models only as technical documentation, the platform should help users understand which approaches can be applied in different contexts and allow them to explore and compare their outputs. The precise scope of the platform will depend on the characteristics of the models and available data, and can be progressively defined during the project.

The project should combine technical work with critical analysis and communication. Good documentation of the existing code and workflows is therefore an important part of the expected outcome. The students should leave the laboratory with a clear, reproducible account of how the different approaches work and how they can be used in future research.

Finally, the project should reflect on the broader purpose of this work within the City Science Lab. Mobility models are not only technical instruments for producing predictions or simulations; they can also become tools for generating evidence, exploring alternative scenarios and supporting governance. The students are encouraged to discuss what makes a modelling approach useful in a governance context, what kinds of decisions it can inform, and how uncertainty, data limitations and methodological choices should be communicated to decision-makers.

The final results should therefore be useful at three levels:

1. **Research:** a structured benchmark and critical comparison of the models developed by the laboratory.
2. **Practice:** an interactive tool that helps researchers and practitioners understand and apply the different approaches.
3. **Communication:** clear documentation, a web article and a short video that make the work understandable to a broader audience.

The project will be carried out by a team of three students, encouraging them to divide responsibilities while working towards a common outcome. The final deliverable should be conceived as a coherent team project rather than three independent analyses.