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## 1SC2893 – Congestion Games for Transportation

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**Instructors:** Pascale Le Gall

**Department:** DOMINANTE - INFORMATIQUE ET NUMÉRIQUE

**Language of instruction:** FRANCAIS

**Campus:** CAMPUS DE PARIS - SACLAY

**Workload (HEE):** 40

**On-site hours (HPE):** 27,00

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### Description

This integration course aims to address the challenges of modelling and simulating transport systems in relation to the individual choices expressed by users with regard to transportation modes (public transportation, personal vehicles). Users are in a position to share resources (road, public transport) so that their choice and gain in terms of transportation time or price are determined by the number of other users and their choices. In some configurations, users make individual choices, which lead to congestion situations, which are not desirable for the general interest. This observation characterizes the so-called congestion games, for which individual and collective interests are difficult to reconcile.

In this context, policy makers aim to plan public transport systems and land-use planning with a view to optimising the balance between the cost of public infrastructure and the balances resulting from individual user choices.

### Quarter number

ST2

### Prerequisites (in terms of CS courses)

none

### Grading

1. The evaluation will be based on an oral presentation and a written report (each accounting for half)

### Course support, bibliography

Document will be given during the course

### Resources

Integration education will be developed through a special case study, for example, that of the Moulon district, including the Centrale-Supélec Gif campus.

Partners

- AnthroPOLIS chair (<https://www.chaire-anthropolis.fr/>) of the IRT SystemX
- EPA Paris-Saclay (EPAPS <https://epa-paris-saclay.fr/>)