2SC7490 – Passenger transport systems optimization

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Department: DOMINANTE - GRANDS SYSTÈMES EN INTERACTION, DOMINANTE - INFORMATIQUE ET NUMÉRIQUE
Language of instruction: FRANCAIS
Campus: CAMPUS DE PARIS - SACLAY
Workload (HEE): 80
On-site hours (HPE): 48,00

Quarter number
ST 7

ST7 – 75 – OPTIMIZATION AND MANAGEMENT OF COMPLEX SYSTEMS FLOWS

Dominante : GSI (Large Interacting Systems) and VSE (Living-Health, Environment)
Langue d'enseignement : French
Campus où le cours est proposé : Paris-Saclay

Engineering problem

The growing complexity of products and services, the globalization of operations and the increasing demands of customers place the issue of flow management at the heart of the concerns of industrial and service companies.

The competitiveness of these companies is strongly linked to their ability to organize themselves to produce and distribute products and services that meet customer expectations while ensuring the sustainability of the company in its economic, social and environmental dimensions.

This leads these companies to develop innovative solutions

- in the definition of the services offered to customers (time, personalization, place of delivery,...)

- in the best way to size and use their resources (material resources, infrastructure, human resources, information systems, etc.)

One of the major challenges to meet these objectives is to optimize the management of flows, from suppliers to end customers.

This topic addresses these issues by presenting approaches, qualitative and quantitative models from Industrial Engineering and Operations Research.

Adviced prerequisites

None

Context and issue modules: These modules will include presentations by industrial partners to illustrate the problems of flow management in different sectors.

Specific course (60 HEE) : *Optimization and management of flows*

Brief description : Product flow in a factory, parcel flow in a post office, patient flow in a hospital, customer flow in a supermarket, student flow in an educational institution: the problems related to the understanding and management of flows are present in all sectors of activity. More than a specific problem, flow management is an approach to industrial problems that can be adapted to many sectors. Knowing how to understand and control flows is a major challenge for industrial performance. This course introduces the problems related to industrial flow management and presents a tool to tackle these problems, the discrete event simulation.

Project: *Flow management in industrial gas delivery*

- Associated partner: Air Liquide

- Location: Paris-Saclay

- Short description : This project will allow, on an industrial case proposed by a partner, the application of the tools seen in the specific course, and in particular of the discrete event simulation of industrial flow systems. It will consist in defining a conceptual model, transposing it into a computer model, validating this model, experimenting with it, and building a recommendation for managers based on the simulation results.