



**UNIVERSITÀ  
DEGLI STUDI  
DI BERGAMO**

Dipartimento  
di Ingegneria Gestionale,  
dell'Informazione e della Produzione

## **Networking Seminars Series**

### A.Y. 2022-2023 2<sup>nd</sup> Term

March, 13<sup>rd</sup> 2023 – 12:30 p.m. (CET)  
Room A101, Via Albert Einstein, Dalmine (BG)  
Online on Microsoft Teams ([Link](#))

**Presenter:**  
**Nadia Lahrichi**

*Professor*  
*@ Polytechnique Montreal (Canada)*

**TITLE** – *“Integrating bed use and patient selection to the master surgical planning in the OR”*

**ABSTRACT** – In this talk, I will introduce a novel approach to the master surgical planning in the operating room. Patient case mix is integrated to the problem to have a finer estimation of the use of resources. This problem consists of selecting patients (from the wait list) to be on the operating list for a selected horizon, and assigning a day, an operating room, and a time block to each specialty. Bed resources in the surgical wards and in the ICU are also considered. Two case studies will illustrate this approach. The first one focuses on clusters of patients to be scheduled to better use the beds in a deterministic setting. In the second one, I will show how the integration of the cancellation probability due to congestion in the intensive care unit can be done. The approach is based on integrating the graph derived from a Markov Decision Process that computes the probability of canceling cases on each day. We show that prioritizing patients based on wait times only increases the quality of the schedule without decreasing the occupancy rate of the OR.

**METHOD** – Data-driven optimization, mathematical programming

**JOURNEY OF THE PAPER** – one published in OMEGA, and one is working paper

**Discussant** – Prof. Ettore Lanzarone (University of Bergamo)

For further information please refer to: [wavelab@unibg.it](mailto:wavelab@unibg.it)