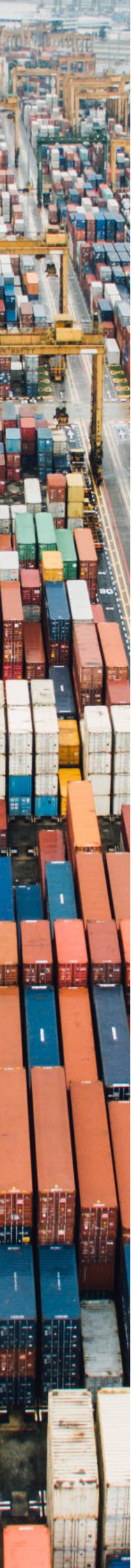




ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

LOGISTICS AND FREIGHT TRANSPORTATION

The design, optimization, management, and control of the flow of materials is one of the most critical and challenging issues in global production systems and supply chains. The aim is the development and application of integrated technologies, models and methods to move materials during the whole product life cycle, including reverse logistics and waste management.



Research on logistics and freight transportation aims to measure, control and optimize multiple performance indicators, e.g., the service cost, the customer service level, the safety and quality of the product for the final user/customer, and the environmental impacts, thanks to a multi-disciplinary approach and methodologies.

Research at the University of Bologna covers a wide range of issues:

- Supply chain design and management
- Storage and warehousing systems, including handling solution and automation, e.g. autonomous vehicles
- Order picking systems (OPS), including logistics in B2C
- Distribution system and network design, including multi-modal transportation, vehicle loading and routing
- Urban mobility and intermodal solutions
- Reverse logistics, waste collection and treatment logistics
- Sustainable supply chain and life cycle assessment (LCA) in logistics
- Perishability in logistics, including food supply chain and pharma supply chain
- Traceability (solutions and technologies for track and trace)
- Computerized decision support systems (DSS) for logistics and freight transportation
- Physical & environmental stress monitoring and simulation in storage and international shipments
- Packaging and packing (primary, secondary and tertiary) & containment design
- Logistics in manufacturing and assembly systems
- Ergonomics & safety in handling and transportation
- Humanitarian logistics
- Big data and data analytics for logistics and operations
- Electric, hybrid and autonomous vehicles in logistics

HIGHLIGHTS

Warehousing Center – advanced decision support systems (DSS) for the design, management and optimization of warehousing systems and order picking systems.

Food supply chain Center – laboratory for the monitoring and simulation of the physical and environmental stresses affecting products and packaging during their life-cycle including storage and international shipment.

Laboratory on Optimization of Operations Management (LOOM) – development of advanced models and algorithms for the optimization of freight distribution logistics, industrial packing and loading and waste logistics.

Logistics in the automotive industry, including the management of flow of materials within production systems (handling and automated solutions), assembly line part feeding, human digitalization for production and ergonomics improvement, etc.