



## PORT MANAGEMENT

**Course Duration:** 30 hrs (20 sessions)

**Name of the Faculty:** Prof. Vivekanand Khanapuri and Prof. Maheswar

### Introduction:

India is on a journey to become a \$5 trillion economy by 2026. To achieve this feat, export is an important contributor. 80 percent of the world's goods are traded through sea and port is an integral part of this logistic process. The Port management course will offer a holistic view of port operations, and their challenges at all levels such as technological, financial, commercial, infrastructural, regulatory, environmental, and sociopolitical. Data-driven decision-making for efficient and smooth port management is a necessity in today's era to remain competitive. Implementation of the ESG compliance management framework is another important aspect, this course will offer.

### Course Objective:

1. To understand the key activities related to port operations.
2. To provide the knowledge and expertise to use data-driven port operations models for generating values for the customers.
3. To understand the systematic implementation and sustainable execution of port operations.

### Relevant Industry:

Shipping Industry, Logistics Industry, Fleet forward industry, etc.

**Target Audience:** Frontline Executives and Mid-Level Managers interested in or working in port management

**Pedagogy/Teaching Method:** Lectures, Case Studies, Modeling & Simulations, and Discussions in the class

### Reference Material:

- MinMaria G. Burns. (2018). Port Management and Operations. CRC Press.
- Theo Notteboom, Athanasios Pallis, Jean-Paul Rodrigue. (2022). Port Economics, Management and Policy. Routledge, London.  
<https://doi.org/10.4324/9780429318184>

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### Session Plan (Each Unit 1.5 Hours):

Module No.	Session No.	Topics	Readings / Case Study / Videos
<b>Module 1: Introduction to Port Management (6 hrs)</b>	1-4	<ul style="list-style-type: none"> <li>• Importance of port management</li> <li>• Understanding basics of port management</li> <li>• What are different port activities?</li> <li>• What are the current challenges?</li> </ul>	<p>Port Management and Operations by Maria G. Burns. (2018). CRC Press.</p> <p>Chen, R., Meng, Q., &amp; Jia, P. (2022). Container port drayage operations and management: Past and future. <i>Transportation Research Part E: Logistics and Transportation Review</i>, 159, 102633</p>
<b>Module 2: Managing Port Operations through data-driven models (15hrs)</b>	5-14	<ul style="list-style-type: none"> <li>• Demand Forecasting using Analytics</li> <li>• Capacity requirement</li> <li>• Berthing</li> <li>• Ship Scheduling (Real-time &amp; Robust)</li> <li>• Container loading/unloading</li> <li>• Cargo handling</li> <li>• Decision-making using machine learning algorithms, application of deep learning, AI along with optimization techniques.</li> <li>• Uncertainty handling and responsive scheduling</li> <li>• Resources allocation and utilization</li> <li>• Economics, Pricing, and Financing of port operations</li> <li>• Asset integration &amp; management</li> <li>• Performance evaluation and benchmarking</li> </ul>	<p>Bakshi, N., Flynn, S. E., &amp; Gans, N. (2011). Estimating the operational impact of container inspections at international ports. <i>Management Science</i>, 57(1), 1-20</p> <p>Besbes, O., &amp; Savin, S. (2009). Going bunkers: The joint route selection and refueling problem. <i>Manufacturing &amp; Service Operations Management</i>, 11(4), 694-711.</p> <p>Gifford, T., &amp; Gremley, R. (2019). Chassis leasing and selection policy for port operations. <i>INFORMS Journal on Applied Analytics</i>, 49(4), 239-248.</p> <p>Saurí, S., &amp; Robusté, F. (2012). Promoting incentives: performance improvement in container port terminals. <i>Transportation science</i>, 46(2), 233-246.</p>

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<p><b>Module 3</b> <b>Sustainability, Safety &amp; ESG in Port Management</b> <b>(3 hrs)</b></p>	<p>15-16</p>	<ul style="list-style-type: none"> <li>• Handling, storing, and import of hazardous chemicals</li> <li>• Management and disposal of hazardous waste</li> <li>• Best practices for environmental, social, and governance,</li> <li>• Compliance requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Lim, S., Pettit, S., Abouarghoub, W., &amp; Beresford, A. (2019). Port sustainability and performance: A systematic literature review. <i>Transportation Research Part D: Transport and Environment</i>, 72, 47-64.</li> </ul>
<p><b>Module 4</b> <b>Case Studies/Real-life applications</b> <b>(6 Hours)</b></p>	<p>17-20</p>	<ul style="list-style-type: none"> <li>• Different case studies related to port operations</li> </ul>	<ul style="list-style-type: none"> <li>• Shinohara, M., &amp; Saika, T. (2018). Port governance and cooperation: The case of Japan. <i>Research in transportation business &amp; management</i>, 26, 56-66.</li> <li>• Gujar, G. C., Ng, A. K., &amp; Notteboom, T. (2019). The impacts of major government initiatives on the development of dry ports: A case study of the direct port delivery scheme in India. <i>Journal of Transport Geography</i>, 80.</li> </ul>

### Learning Objectives:

After completion of the course, participants would be able to:

1. To demonstrate how different operations are to be performed for smooth and efficient port management.
2. To apply analytical tools and emerging technologies for effective decision-making and optimum utilization of available resources.
3. To Implement of optimum schedule of port activities for smooth movement of goods to and from through port in an efficient and sustainable manner.
4. To understand the economic, pricing, and financial part of the port operation