

COURSE CONTENT

Academic Year	2023-24	Semester		2
Course Coordinator				
Course Code	MT4102			
Course Title	Distribution & Warehousing			
Pre-requisites	Nil.			
No of AUs	3 AU			
Contact Hours	Lecture: 26 hr ; Tutorial: 13 hr ; Lab: 0 hr			
Proposal Date	14 September 2023			

Course Aims

The fundamental objective of the course is to provide you with managerial fundamentals of physical distribution and warehousing operation. You will learn concepts and approaches that can contribute towards successful physical distribution and warehousing operations. This course will therefore focus on three areas of student learning:

- a. Operational aspects of distribution: management of inventory and freight transport
- b. Tactical/Strategic aspects of distribution: Distribution Network Design and Facility Location
- c. Warehousing operations: Planning and designing of basic warehousing processes and layouts

Intended Learning Outcomes (ILO)

After successfully completing the course, you will be able to:

1. Analyse the core logistics drivers (Facility, Inventory and Transport) and their cost trade-offs with relation to customer service in physical distribution.
2. Identify and explain how non-logistical factors can influence the success of physical distribution.
3. Propose suitable distribution networks for different products and/or businesses environments.
4. Discuss the purposes, benefits and limitations pertaining to various technologies and methodologies of different warehousing processes.
5. Propose suitable warehousing solutions for different operational scenarios with the aim of enhancing warehousing productivity.

Course Content

List of key topics taught

	Topic	Lecture (hours)	Tutorial (hours)
1.	Introduction to the distribution and warehousing environment	2	1

2.	Distribution management (1): Inventory management	4	2
3.	Distribution management (2): Transport management	2	1
4.	Distribution management (3): Facility location	2	1
5.	Distribution network design	2	1
6.	Classification of warehouses	2	1
7.	Sizing of warehousing facilities	2	1
8.	Inbound warehousing operations (Receiving, putaway and internal transportation)	2	1
9.	Storage and Cross-docking. Order-picking. Shipping.	4	2
10.	Warehouse efficiency and productivity Warehouse Management Systems (WMS).	4	2

Assessment (includes both continuous and summative assessment)

Component	Course LO Tested	Related Programme LO or Graduate Attributes	Weighting	Team/ Individual	Assessment rubrics
1. Final Examination	1-6	SLO* A, C, F, G, H	55%	Individual	
2. Continuous assessment (individual project with report)	1-3	SLO* A, C, D, F, G, H, I	15%	Individual	Appendix
3. Quiz 1	1-3	SLO* A, C, F, G, H	15%	Individual	
4. Quiz 2	4-5	SLO* A, C, F, G, H	15%	Individual	
Total			100%		

Programme Learning Outcomes

✓ **Competency**

- A. Develop an overall awareness of maritime activities, port and shipping industry and their association with economy and trade. Describe and apply concepts and theories in sub-fields as contributing to the maritime industry and integrate various related themes, skills and knowledge

- B. Understand and manage the maritime environment
- C. Apply related information pertaining to procedures, operations and management of maritime entities and operational issues in the maritime industry
- D. Capture and analyse market data using analytical tools, conduct related research in the maritime arena, as well as design, develop and execute maritime projects
- E. Appreciate the maritime environment for vocations and career options

✓ **Creativity**

- F. Approach and solve basic maritime problems, through both strategic and research methods, and put theoretical knowledge into practical applications in related industries
- G. Develop maritime related risk management strategies.

✓ **Communications**

- H. Communicate shipping and maritime management in policy, strategy, and prevailing issues and requirements in an organization and to achieve good teamwork.
- I. Write professional reports and conduct public speaking confidently

✓ **Character**

- J. Recognise the importance of a strong and just leadership, comply to ethical standards, and uphold highest standards of integrity as a professional

✓ **Civic Mindedness**

- K. Integrate all related skills and knowledge into the industry and exercise due diligence as a highly responsible professional, contributing towards nation and the society.

Formative feedback

Instructors take questions during and at end of lectures, and provide on-the-spot clarifications. You (students) can also confer with instructors at tutorials/discussions, at appointed consultations or via email.

You (students) are assessed on an individual project and two quizzes. The individual project requires submission of a written report. Feedback for both the project and quizzes will be provided upon the completion of grading. You will also be informed of your grades.

Learning and Teaching approach

Approach	How does this approach support students in achieving the learning outcomes?
Lectures	This provides you with the needed background for outcomes (1) to (5) and to

	allow you to apply principles and methodologies related to Distribution and Warehousing management, as well as the multi-disciplinary relationship with other factors (e.g., cross-functional factors and disruptive technologies).
Tutorials	Comprises mostly qualitative questions, some of which are open-ended case questions. Some quantitative questions are also included to provide practices for practical data-based analysis. The tutorials offer you with opportunities to analyse practical problems that address outcomes (1) to (5).

Reading and References

List of references used in the course:

Readings are revised year to year to keep up with the latest development in the subject. Other more classic readings are mostly from the following books:

1. Chopra, S. & Meindl, P. (2015). Supply Chain Management – Strategy, Planning & Operations, Pearson Prentice Hall.
2. Frazelle, E.H. (2001). World-class warehousing and material handling, McGraw Hill.
3. Mulcahy, D.E. (1994). Warehouse distribution and operations handbook, McGraw Hill
4. Napolitano, M. (1998). Using modeling to solve warehousing problem: a collection of decision-making tools for warehouse planning, Warehousing Education and Research Council.

Course Policies and Student Responsibilities

(1) General

You are expected to take responsibility to follow up with course notes, assignments and course related announcements. You are also expected to participate in class discussions and submit the project report before the stipulated deadline.

(2) Absenteeism

Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what

is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning. If you are uncertain of the definitions of any of these terms, you should go to the [Academic Integrity Handbook](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Course Instructors

Instructor	Office Location	Phone	Email

Planned Weekly Schedule

Week	Topic	Course LO	Readings/ Activities
1	Introduction to course. Introduction to physical distribution and warehousing environment	1	Lectures
2	Distribution management (1): Inventory management – inventory policies (periodic and continuous)	1	Tutorial and lectures
3	Distribution management (1): Inventory management – centralization/decentralization of inventories; aggregation of stocks; postponement strategy.	1, 2	Tutorial and lectures
4.	Introduction to distribution network design	1, 2, 3	Tutorial and lectures
5	Distribution management (2): Transport management – transport network configurations	1, 2, 3	Tutorial and lectures
6	Distribution management (3): Facility location	1, 2	Tutorial and lectures
7	Classification of warehouses; Sizing of warehousing facilities	5	Tutorial and lectures
8	Quiz 1		
9	Inbound warehousing operations	4	Tutorial and lectures
10	Storage and Cross-docking.	4	Tutorial and lectures
11	Order-picking. Shipping.	4,	Tutorial and lectures
12	Warehouse Analysis. Principles of World-Class Warehousing.	4, 5	Tutorial and lectures
13	Warehouse Management Systems (WMS). Quiz 2.	4, 5	Tutorial and lectures

Appendix: Individual Project with Written Report (15%)

The topics for the Individual Project covers ILO 1-3. You (student) will write an individual report on your findings. This assessment is covered by the following marking scheme. More details of the report length and specific requirements will be briefed by the course instructor.

Criteria	Good (8-10)	Ave (6-7)	Fair (4-5)	Poor (1-3)	Remarks
Report generated by Turnitin	Within acceptable degree of originality? (Yes/No)				Fresh report, in case of too many commonalities.
Background/ Objective/ Purpose					Accurate contextualisation of background and description. Well defined issues; clear objectives.
Methodology/ Information / Data Collection					Ability and independence in acquiring <u>relevant and useful</u> information/data for the study.
Findings and Discussion					Well-presented results with discussion, showing ability to understand problem, interpret information obtained, and be cognisant of limitations. Innovative (and well justified) solutions will be favourably evaluated.
Conclusions and Recommendations					Summarise report clearly and show ability to make appropriate and relevant conclusions, with clear and workable recommendations.
References and Report Format					Report is clear and concise; good grammar and spelling with appropriate tables/ graphs/ figures. Report is presented well with logical sequence.