

## MT4101 INTERMODAL TRANSPORTATION

Academic Year	2023-24	Semester	1
Course Coordinator	Dr Teo Chee Chong		
Course Type	Major Prescribed Elective		
Pre-requisites	Nil		
AU	3		
Grading	Letter Grading		
Contact Hours	39 (26 hours lecture; 13 hours tutorial)		
Proposal Date	13 June 2023		

### Course Aims

The main objective of the course is to provide students with an understanding of the development and characteristics of intermodal transportation as well as the associated commercial and environmental issues.

At the end of the course, you should be equipped with the managerial insights and skills that will contribute towards addressing the key challenges faced by commercial intermodal transportation managers in achieving successful systemic operations.

### Intended Learning Outcomes (ILO)

By the end of this course, student will be able to:

1. Explain the fundamental concepts of intermodal transportation systems and their relationship to operations and governance, highlighting key principles and interrelations.
2. Analyse how product characteristics and operating conditions affect operating costs and freight rates.
3. Perform quantitative evaluation of planning parameters and variables for achieving objectives and contributing to successful operations.
4. Analyse, compare and propose appropriate strategies for freight transportation, considering their respective advantages and disadvantages, and offering informed recommendations.
5. Identify and discuss the intermodal facilities and equipment corresponding to the different intermodal transportation modes, understanding their unique characteristics, infrastructure, and operational requirements.
6. Recognise and describe the essential hardware and managerial components crucial to the effective functioning of intermodal transportation modes, emphasizing their roles and interdependencies.
7. Describe and analyse the current issues and challenges encountered in freight transport systems.

### Course Content

No	Topic	Lecture Hour	Tutorial Hour
1	Introduction to intermodal transportation	2	1
2	Role of intermodal transport in logistics management	2	1
3	Freight transport economics and business considerations	2	1
4	Intermodal planning and compatibility	4	2
5	Development and foundations of Intermodal transportation system	2	1
6	Intermodal facilities – terminals and equipment	2	1
7	Intermodal transportation by water, land & air	6	3
8	Issues in intermodal transportation – security, technology, environmental, container management, future of intermodal transportation, etc.	6	3
<b>TOTAL</b>		26	13

#### Assessment (Includes both continuous and summative assessment)

Component	ILO Tested	EAB Graduate Attributes	Weightage	Team / Individual	Rubrics
1. CA1: Assessment	1-4	A-J	15%	Individual	Appendix 1
2. CA2: Quiz 1	1-4	A-H	15%	Individual	N.A.
3. CA3: Quiz 2	4-7	A-H	15%	Individual	N.A.
4. Final Examination	1-7	A-H	55%	Individual	N.A.
<b>Total</b>			<b>100%</b>		

#### Programme Learning Outcomes

##### ✓ **Competency**

- A. Develop an overall awareness of maritime activities, port and shipping industry and their association with economy and trade.
- B. Describe and apply concepts and theories in sub-fields as contributing to the maritime industry and integrate various related themes, skills and knowledge.
- C. Understand and manage the maritime environment.
- D. Apply related information pertaining to procedures, operations and management of maritime entities and operational issues in the maritime industry.
- E. Capture and analyse market data using analytical tools, conduct related research in the maritime arena, as well as design, develop and execute maritime projects.
- F. Engage in lifelong learning in preparation for current and future vocations and career options in the maritime environment.

##### ✓ **Creativity**

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

✓ **Communications**

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

✓ **Character**

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

✓ **Civic Mindedness**

- L. 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**

The lectures shall be interactive where your (students) inputs are highly encouraged in the process.

Instructors will 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 the three continuous assessments and a final examination. Feedbacks for both the continuous assessments will be provided upon the completion of grading. Grades will also be informed.

**Learning & Teaching Approach**

<b>Approach</b>	<b>How does this approach support students in achieving the learning outcomes?</b>
Lectures	This provides you with the needed background for outcomes (1) to (7) and to allow you to apply principles, methodologies and considerations related to strategy planning, implementation and operational management in intermodal transportation.
Tutorials	Comprises a mix of qualitative and quantitative questions. Most of the qualitative questions are open-ended case questions where quantitative questions aim to provide practices for practical data-based analysis for you. The tutorials offer you with opportunities to analyse practical problems that address outcomes (1) to (7).

**Readings & 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. J. Coyle, C. Langley, Robert A. Novack, Brian Gibson. 2016. Supply Chain Management: A Logistics Perspective. 10<sup>th</sup> Edition, Cengage Learning.
2. Sunil Chopra and Peter Meindl. (2019). Supply Chain Management, 7<sup>th</sup> Edition, Prentice Hall.
3. David, L. F. (2005). Intermodal freight transport. Elsevier Butterworth-Heinemann.
4. Ronald H. Ballou (2003). Business Logistics: Supply Chain Management, 5th edition, Prentice Hall.

**Course Policy & Student Responsibility**

(1) General

Students 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 recognise 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. If you are uncertain about the definitions of any of these terms, you should refer to the [Academic Integrity at NTU \(sharepoint.com\)](http://sharepoint.com) 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	Phone	Email
Dr Teo Chee Chong	N1-01a-09	6790 4887	Teocc@ntu.edu.sg
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### Planned Weekly Schedule

<b>Week</b>	<b>Topic</b>	<b>Course ILO</b>	<b>Readings / Activities</b>
1	Introduction to intermodal transportation	1	Tutorial and lectures
2	Role of intermodal transport in logistics management	1,4	Tutorial and lectures
3	Freight transport economics and business considerations	1,2,4	Tutorial and lectures
4-5	Intermodal planning and compatibility	1-4	Tutorial and lectures
6	Development and foundations of Intermodal transportation system	1,5	Tutorial and lectures
7	Intermodal facilities – terminals and equipment	5	Tutorial and lectures
8-10	Intermodal transportation by water, land and air	4-6	Tutorial and lectures
11-13	Issues in intermodal transportation – security, technology, environmental, container management, future of intermodal transportation, etc.	7	Tutorial and lectures

## Appendix 1: Assessment Criteria for CA1 Assignment

		<b>Needs considerable improvements (0 to 3 Marks)</b>	<b>Below expectations (4 to 5 Marks)</b>	<b>Meet Expectations (6 to 7 Marks)</b>	<b>Above Expectations (8 to 10 Marks)</b>
<b>Study of Problem</b>	<b>Interpretation and Analysis of Problem (20%)</b>	Poor or inadequate identification of managerial issues. Justification based on weak arguments and/or inappropriate evidence.	Some key managerial issues are identified and justified. Some justifications are weak and not supported by valid arguments and/or appropriate evidence.	Most key managerial issues are identified and justified. Justifications are mostly supported by valid arguments and/or appropriate evidence.	All (or almost all) key managerial issues are identified and justified. All (or almost all) justifications are based upon valid arguments and/or appropriate evidence.
	<b>Evaluation (10%)</b>	Evaluation of information is mostly absent and/or contains significant inaccuracies.	Evaluation of most information is accurate but contain some inaccuracies.	Evaluation of information is mostly accurate and are of high quality in most instances.	Evaluation of information are accurate and are of high quality in all instances.
<b>Solution to Problem</b>	<b>Recommendations (40%)</b>	Recommendations do not solve the problem. Weak attempts in justifying the effectiveness/ efficiency of the recommendations. Failure to identify and describe most of the important relationships/ trade-offs between planning variables.	Recommendations are of limited effectiveness/ efficiency and relevance. Poor justification to the some of the recommendations. Able to identify and describe some of the important relationships/ trade-offs between planning variables.	Recommendations are mostly effective/ efficient. Good justifications are provided to most recommendations . Able to identify and describe most of the important relationships/ trade-offs between planning variables.	Recommendations are highly effective/ efficient, Strong justifications are provided to all recommendations. Able to identify and describe all (or almost all) the important relationship/trade-offs between planning variables.
	<b>Limitations of recommendations (20%)</b>	Unable to identify and justify any of the existing/ potential limitations, risk and possible future modifications of the recommendations.	Able to identify and justify some of the existing/ potential limitations, risk and possible future modifications of the recommendations.	Able to identify and justify most of the existing/ potential limitations, risk and possible future modifications of the recommendations .	Able to identify and justify all (or almost all) the existing/ potential limitations, risk and possible future modifications to the recommendations.
	<b>Overall reasoning (10%)</b>	Weak in integrating ideas into arguments and recommendations in many instances. Arguments are mostly incoherent	Weak in integrating ideas into arguments and recommendations in some instances. Arguments are occasionally	Able to integrate most ideas into consistent arguments and recommendations , and contains little or no	Ideas are well integrated into arguments and recommendations without contradictions. The overall reasoning is

		and contain some significant contradictions.	incoherent and contains some contradictions.	contradictions. The overall reasoning is sound with occasional inconsistencies.	convincing and satisfying.
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