Annexe A: New/Revised Course Content in OBTL+ Format

Course Overview

The sections shown on this interface are based on the templates UG OBTL+ or PG OBTL+

If you are revising/duplicating an existing course and do not see the pre-filled contents you expect in the subsequent sections e.g. Course Aims, Intended Learning Outcomes etc. please refer to Data Transformation Status for more information.

Expected Implementation in Academic Year	AY 2022-2023
Semester/Trimester/Others (specify approx. Start/End date)	Semester 2
Course Author * Faculty proposing/revising the course	Lee-Chua Lee Hong
Course Author Email	clhlee@ntu.edu.sg
Course Title	Port Planning and Operations
Course Code	MT4103
Academic Units	3
Contact Hours	39
Research Experience Components	Not Applicable

Course Requisites (if applicable)

Pre-requisites	
Co-requisites	
Pre-requisite to	
Mutually exclusive to	
Replacement course to	
Remarks (if any)	

Course Aims

The main objective of the course is to equip students with the fundamentals of the planning and operational processes and issues of ports and terminals.

At the end of the course, you should be able to learn all the concepts and various considerations and approaches that can contribute towards successful planning and operations of various ports and terminals.

Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

ILO 1	Identify different types of ports and terminals and their operating handling equipment
ILO 2	Discuss suitable considerations and strategies in overall planning and design of ports and terminals
ILO 3	Analyse and propose the details of the layout design
ILO 4	Analyse and propose the optimal handling capacity with respect to the overall planning
ILO 5	Identify various operations functions in ports and terminals operations
ILO 6	Discuss what are the best cargo handling equipment and technologies for the smooth operations

Course Content

No	Topic	Lecture	Tutorial
1.	Introduction to the characterization of port system	4	1
2.	Methods, techniques and processes for port planning and design	4	1
3.	Various considerations for overall port planning and operations	2	2
4.	Port and terminal design and issues	4	3
5.	Port and terminal operations	4	3
6.	Port and terminal management – traffic management, VTS, port navigational system, pilotage and tugs	2	1
7.	Port and terminal infrastructures, facilities, cargo handling equipment and technologies	4	2
8.	Cases review of various real-life port planning and operations	2	0
	Total	26	13

Reading and References (if applicable)

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. Thoresen, Carl A. (2003) Port designer's handbook: recommendations and guidelines, London: Thomas Telford

2. Takel, R. E. (1983) Planning land use in port areas: getting the most out of port infrastructure, United Nations

3. Bennett, Larry. Admiralty list of radio signals. Vol. 6, part 1, Pilot services, vessel traffic services and port operations: United Kingdom and Ireland (including European channel ports) [2005/06 ed.]

Planned Schedule

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
1	Introduction to port cluster development	1		In-person	Tutorial and lectures
2	Characterization of port system and planning	1		In-person	Tutorial and lectures
3	Methods and processes for port planning and design – vessel traffic	2		In-person	Tutorial and lectures
4	Methods and processes for port planning and design – simulation	2		In-person	Tutorial and lectures
5	Industrial applications of technology in port operations	1,6		In-person	Tutorial and lectures
6	Port planning considerations – geographical, economical, meteorological, technical and others	2		In-person	Tutorial and lectures
7	Port layout design and issues	3		In-person	Tutorial and lectures
8	Port capacity design and issues	4		In-person	Tutorial and lectures

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
9	Cargo handling & operations in container terminals – operations	5		In-person	Tutorial and lectures
10	Cargo handling & operations in container terminals – port security and others	5		In-person	Tutorial and lectures
11	Cargo handling & operations in bulk terminals	5		In-person	Tutorial and lectures
12	Cargo handling facilities and equipment	1,6		In-person	Tutorial and lectures
13	Case reviews and studies	1-6		In-person	Tutorial and lectures

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	This provides you with the needed background for outcomes (1) to (6) and to allow you to apply principles, methodologies and considerations related to strategy planning, implementation and operational management in the port industry.
Tutorials	Comprises mostly qualitative questions, where most 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 (6).

Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Team/Individual	Rubrics	Level of Understanding
1	Continuous Assessment (CA): Test/Quiz(CA1: Quiz)	1-3, 5, 6	A-J, L	15	Individual	Analytic	Multistructural
2	Continuous Assessment (CA): Project(CA2: Individual Project with Report)	1-3, 5, 6	A-J, L	25	Individual	Analytic	Relational
3	Summative Assessment (EXAM): Final exam(Final Examination)	1-6	A-H, L	60	Individual	Holistic	Relational

Description of Assessment Components (if applicable)

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 an individual report writing and a final exam. The individual report writing requires submission of a written report. Feedbacks for the report will be provided upon the completion of marking and grading where grades will also be informed.

NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

Attributes/Competency	Level
Adaptability	Intermediate
Decision Making	Intermediate
Problem Solving	Intermediate

Course Policy

Policy (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. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. 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. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Policy (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.

Policy (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.

Policy (Others, if applicable)

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Rubrics for MT4103 Port Planning and Operations

Appendix 1: Individual Project with Written Report (25%)

The topics for the Individual Report covers ILO 1-3 and 6. 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 relevant and useful 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.