

Syllabus form

The Hong Kong Polytechnic University

Subject Description Form

Subject Code	LGT6506
Subject Title	Shipping Finance Engineering
Credit Value	3
Level	6
Normal Duration	1-semester
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	<p>This subject contributes to the following Intended Learning Outcomes for the doctoral programme: Doctor of International Shipping and Port (D.ISP).</p> <p>#2Understand and tackle International Shipping and Port Management issues by using relevant principles and emerging technologies</p> <p>A. To provide students with a deep understanding of the principles of modern finance engineering in the shipping industry.</p> <p>B. To teach students how to apply mathematical and computational techniques to analyse financial data and develop innovative financial products.</p> <p>C. To equip students with the skills needed to design and implement effective risk management strategies in complex financial environments in the shipping industry.</p> <p>D. To develop students' critical thinking and problem-solving abilities, enabling them to contribute to the development of new financial products and solutions.</p> <p>E. To provide students with the research skills necessary to conduct original research in the field of finance engineering and contribute to the advancement of knowledge in this area.</p>

<p>Intended Learning Outcomes</p>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a) Formulate and build fundamental concepts of business, finance and engineering in the shipping industry. b) Gain practical, hands-on experience with shipping investment and financing case studies in order to master the techniques, methodologies and relevant investment and financing issues in order to handle dual decision in investment and financing for shipping investment. c) Apply mathematical and computational techniques to analyse financial data and develop innovative financial products for the shipping industry. d) Comprehend contemporary and practical issues of shipping finance. e) Undertake top-level research and gain analytical and evaluative skills for understanding complex international issues in shipping finance engineering.
<p>Subject Synopsis/ Indicative Syllabus</p>	<p>General Background</p> <ul style="list-style-type: none"> • Introduction to the shipping industry, its economic importance, and key challenges faced by the industry. • Fundamentals of shipping finance. • Dual decision (investing and financing decisions). • The four shipping markets. Shipping market cycles. The tramp/liner shipping markets. • Ship chartering (split of risk and cost of apportionment) for ship ownership and operations. • Ship registration. One ship company. Mareva injunction. Maritime Lien. • Mergers and acquisitions in shipping industry. Investment strategies in shipping business. <p>Revenue and Running Cost in Shipping – Basis for Cashflow Projection and Analysis</p> <p>Shipping accounts. Methods of cash flow: The voyage cash flow, the annual cash flow; the required freight rate analysis and discounted cash flow analysis.</p> <p>Capital Structure and Cost of Capital</p> <p>Finance of Ships</p> <p>The international financial system (IFS) and types of finance.</p> <p>General and ship-specific-types of shipping finance: private funds, capital markets (initial public offering and bond issue), special purpose vehicles, leasing, limited partnership, government loans, government guarantees, government subsidies and shipyard credit; and other ship financing schemes.</p> <p>Bank shipping finance: types of banks involved in shipping finance and their respective objectives, types of bank’s shipping facilities and services, corporate</p>

	<p>(syndicated) loans and mortgage loans, bank shipping credit policy and credit analysis, shipping loan documentation, loan monitoring and problem loan treatment.</p> <p>Sustainability Environmental sustainability challenges in shipping, including emissions reduction, energy efficiency, and alternative fuels, as well as social and ethical aspects of sustainability.</p> <p>Regulatory compliance Overview of international maritime law and regulations, including safety, environmental, and labor standards, and their implications for shipping finance and engineering.</p> <p>Emerging technologies Explore how Blockchain Technology, Artificial Intelligence (AI), Big Data Analytics, Robotic Process Automation (RPA), Internet of Things (IoT), Fintech Innovations are used in shipping finance practices.</p>																														
<p>Teaching/Learning Methodology</p>	<p>Lectures will be used to present essential conceptual and theoretical material to students in a structured and comprehensive manner. Students will be engaged actively in the learning process through activities such as problem-solving, case studies, group discussions, and debates. This can help students to apply the knowledge gained in lectures and tutorials to real-world situations. Students are also encouraged to investigate and explore concepts, theories, and research in their field. This can be facilitated through tutorials, where students can develop research questions, design experiments, and analyse data. Finally, students will be working together in groups, to achieve shared learning goals, where they can collaborate on assignments and projects, and provide feedback and support to each other.</p> <p>To monitor the students' learning progress and identify areas where they need to improve, regular feedback will be provided and regular assessments will be conducted. This can be provided formatively through quizzes and assignments, as well as summarily by means of exams and research papers.</p>																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Coursework</td> <td>50 %</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>2. Individual assessment – final assessment</td> <td>50 %</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e		1. Coursework	50 %	√	√	√	√	√		2. Individual assessment – final assessment	50 %	√	√	√	√	√	
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	Total	100 %						
	<p>To reflect the significant technology content in this subject, 10% (or more) of the overall weighting of this subject is based on individual assessment concerning technology-related knowledge.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The coursework evaluates the ability of students to comprehend, master and apply the knowledge and skills in shipping finance engineering covering various topics on both financial and environmental aspects in the shipping industry. Class discussions and individual assessments will each contribute to 10% of the final grade. A technology-focused group project will constitute 20% of the overall grade, testing students' application and communication of technological knowledge. The remaining 10% will be based on overall class participation.</p> <p>The final assessment aims to enhance students' understanding of shipping finance engineering principles and their ability to evaluate investment opportunities in the shipping industry. It encourages critical analysis, financial modeling, and sound decision-making based on the principles of shipping finance.</p>							
Student Study Effort Expected	Class contact:							
	▪ Lectures + Tutorials	30 Hrs.						
	Other student study effort:							
	▪ Revision, doing exercises and cases	49 Hrs.						
	▪ Preparation for coursework and final examination	50 Hrs.						
	Total student study effort		129 Hrs.					
	Reading List and References	<p>Brealey A. R. and Myers C. S. (2011). Principles of Corporate Finance, International Edition (10th edition), McGraw-Hill, Inc.</p> <p>Grammenos C. T. (2010). The handbook of maritime economics and business (2nd edition), LLP (London).</p> <p>Ma, S. (2020). Economics of maritime business. Routledge.</p> <p>Schinas, O., Grau, C., & Johns, M. (Eds.). (2015). HSBA handbook on ship finance. Springer Berlin Heidelberg.</p> <p>Shaxson, N. (2018). The finance curse: How</p>						

	<p>global finance is making us all poorer. Random House.</p> <p>Tooze, A. (2018). Crashed: How a decade of financial crises changed the world. Penguin.</p> <p>Ko, B.W. and Song, D.W. eds., 2021. New Maritime Business: Uncertainty, Sustainability, Technology and Big Data (Vol. 10). Springer Nature.</p> <p>Mayer Brown JSM (2011). Guide to shipping finance in Hong Kong. Kavussanos, G. M., & Visvikis, D. I. (2014). The international handbook of shipping finance: theory and practice. Palgrave Macmillan.</p> <p>Grath, A. (2016). The handbook of international trade and finance: the complete guide for international sales, finance, shipping and administration. Kogan Page Publishers.</p> <p>Stopford M. (2009). Maritime economics, Routledge.</p> <p>TradeWinds – Daily news of shipping (with focus on the Finance Section)</p>
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