

Marine Coastal and Delta Sustainability for Southeast Asia

Learner's Manual

Maritime and Offshore Safety Analysis



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1.0 Introduction

This course is offered as an elective subject to the Bachelor of Maritime Operations (BMO) programme to expose students to the knowledge of maritime and offshore safety. It's related to conventions and regulations, factors contributing to maritime accidents and their related risks.

Upon completion of this course students should be able to:

1. Identify the concept of maritime and offshore risks including the main factors that contribute to accidents.
2. Explain available conventions and regulations pertaining to maritime safety in maritime operation.
3. Differentiate between risk analysis and risk assessment.
4. Examine the various types of accident analysis and investigation models.
5. Recommend the measures required in maritime emergency preparedness.



2.0 Course Structure

2.1 Learning Schedule

Topic	Description
Topic 1	SAFETY AND ECONOMY 1.1 Maritime safety regime 1.2 Why safety improvement is difficult? 1.3 The risk concept 1.4 Expertise and rationality
Topic 2	MARITIME RISK PICTURE 2.1 Maritime activity 2.2 Concept of accident types 2.3 Qualitative risk picture 2.4 Fatality risk 2.5 Pollution 2.6 Large scale accidents 2.7 The accident phenomenon
Topic 3	OFFSHORE SAFETY AND SURVIVAL 3.1 Aim and objectives 3.2 Helicopter operations 3.3 General safety 3.4 Working safety 3.5 Firefighting 3.6 Abandonment 3.7 Cold water immersion and first aid 3.8 Search and rescue
Topic 4	RULES AND REGULATION 4.1 The structure of control 4.2 The IMO conventions 4.3 ISPS Code 4.4 Coastal state enforcement 4.5 Classification societies



Topic 5

RISK ANALYSIS TECHNIQUES

- 5.1 Risk analysis and risk assessment
- 5.2 Basic theory
- 5.3 Preliminary Hazard Analysis (PHA)
- 5.4 Hazard and Operability Studies (HAZOP)
- 5.5 Failure Mode, Effect and Criticality Analysis (FMECA)
- 5.6 Fault Tree Analysis (FTA)
- 5.7 Event Tree Analysis (ETA)

Topic 6

COST BENEFIT ANALYSIS (CBA)

- 6.1 Basic theory
- 6.2 CBA in a Risk Assessment context
- 6.3 Alternative problem solving approaches
- 6.4 CBA of oil spill prevention measures

Topic 7

FORMAL SAFETY ASSESSMENT (FSA)

- 7.1 The FSA approach
- 7.2 Hazard identification
- 7.3 Risk assessment
- 7.4 Establish safety assessment
- 7.5 Cost benefit assessment
- 7.6 Recommendations for decision making
- 7.7 Application of the FSA methodology

Topic 8

ACCIDNET ANALYSIS

- 8.1 Safety and learning
- 8.2 The maritime system
- 8.3 Accident theories
- 8.4 The Loss Causation models
- 8.5 Alternative accident models
- 8.6 Accident analysis software
- 8.7 Human factors analysis
- 8.8 The CASMET approach
- 8.9 Case oriented analysis
- 8.10 Incident reporting



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Topic 9

EMERGENCY PREPEREDNESS

- 9.1 Example of maritime accidents
- 9.2 Emergency and lifesaving regulations
- 9.3 Emergency preparedness activities and functions
- 9.4 Human behavior in catastrophes
- 9.5 Evacuation simulation
- 9.6 Pollution emergency planning



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2.0 Course Structure

2.2 Mode of Delivery



Course were thought online using Microsoft Teams application. Link to the webinar will be provided by teacher through email or e-learning platform.



2.0 Course Structure

2.3 Teaching Strategy



Teaching and Learning

Teaching and learning will be via lecture, tutorial, collaborative learning and group discussion. Students will also be required to conduct self-study and information gathering on their own for certain topics, homework, and assignments



Assessment

Assessment will be both formative (with feedbacks) and summative. Students learning will be assessed using quizzes, oral presentations, tests and group assignments. Peer evaluation may be part of the assessment of a teamwork.



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2.0 Course Structure

2.4 Assessment

Type of Assessment	% Contribution
Quizzes	10%
Assignment	20%
Written Test	30%
Final examination	40%
TOTAL	100%



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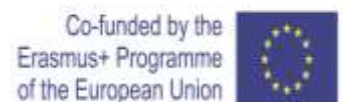


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3.0 Course Structure

3.1 Course Reading List

No.	References
1.	Kristiansen, Svein (2005), Maritime Transportation, Safety Management and Risk Analysis, Elsevier Butterworth Heinemann, Oxford
2.	Springett, Peter (1998), An introduction to Offshore Safety and Survival, Oilfield Publication Ltd.
3.	National Research Council (1991), Crew Size and Maritime Safety, National Academy Press, USA.
4.	Vinnem, Jan Erik & Hope, B. (1996), Offshore Safety Management Theoretical, Fundamental and Practical Experiences, Tapir



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