

RUTGERS UNIVERSITY
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

Security and Safety in Maritime Transportation and Port Operations
180:529 **Fall 2006**

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Text and Required Readings:

- T1:**Lewis, T.G., “Critical infrastructure protection in Homeland Security: Defending a Networked Nation”, Wiley-Interscience, 2006.
- T2:**UNCTAD, “Container Security: Major initiatives and related International Developments”, Geneva, 2004.
- T3:**IMO & ILO, “Security in Ports”, Code of Practice, Geneva, 2004
- T4:**USCG, “Marine Safety Manual”
- T5:**ILO, “Safety and Health in Ports”, Code of Practice, Geneva, 2005
- T6:**ICHCA, International Safety Panel research papers

Additional Readings:

AR1: Class notes and related scientific articles

Grading:

Homework	20%
Term Project	25%
Exam 1	25%
Exam 2	30%.

Course description

Overview of the principles of vulnerability assessment of critical transportation infrastructure. Overview of international maritime transportation and port security and safety codes. Federal and industry maritime transportation, port and container security initiatives. Overview of principles of onboard vessel and marine terminal operations relating to safety and security. Technologies to assist maritime and port security and potential for implementation. Modeling and simulation techniques to assist maritime and port security planning. Port Facility Security Plans and marine terminal operations safety. Coordination of Authorities involved in port security.

Course Outline

LECTURE	TOPIC	PRIMARY READING
1	Vulnerability Assessment of Critical Transportation Infrastructure – An Introduction	T1
2	Shipping Management and Onboard Vessel Operations – Principles relating to security and safety	AR1
3	Marine Terminal Operations – Principles relating to security and safety	AR1
4	Supply Chain, Maritime Transportation and Port Security	T2, AR1
5	The SOLAS Convention and the ISPS Code	T2, T3, AR1
6	The SOLAS Convention and the ISM Code	T4, AR1
7	Federal and Industry Initiatives for Maritime Transportation and Port Security	T2, T3, AR1
8	EXAM	
9	Technologies to support maritime transportation and port security – analysis and prospects for implementation	AR1
10	Modeling and Simulation to assist security planning in maritime and port operations –An introduction	AR1
11	Modeling and Simulation to assist security planning in maritime and port operations –Case Studies	AR1
12	Planning and implementation of safety measures in port operations	T5, T6, AR1
13	Planning, implementation, management and assessment of Port Facility Security Plans	T3, AR1
14	Planning, implementation, management and assessment of Port Security Plans- Coordination of Authorities and Stakeholders involved and the role of the Port Authority	T3, AR1

Detailed Course Outline

Vulnerability Assessment of Critical Transportation Infrastructure – An Introduction

- Critical Transportation Infrastructure
- Vulnerability and risk assessment
- Modeling and estimating risk

Shipping Management and Onboard Vessel Operations – Principles relating to security and safety

- Principles of onboard vessel operations
- Principles of ship management and crew management

Marine Terminal Operations – Principles relating to security and safety

- Principles of container terminal operations
- Principles of bulk terminal operations
- Principles of passenger terminal operations
- Human resources management in marine terminal operations

Supply Chain, Maritime Transportation and Port Security

- Principles of Supply Chain Management
- Maritime Transportation, Port Operations and cargo traceability

The SOLAS Convention and the ISPS Code

- Ship Security and the ISPS Code – Principles and implementation
- Port Security and the ISPS Code – Principles and implementation

The SOLAS Convention and the ISM Code

- The ISM Code – Principles
- The ISM Code – Implementation and auditing

Federal and Industry Initiatives for Maritime Transportation and Port Security

- The Operation Safe Commerce (OSC)
- The Container Safety Initiative (CSI)
- The C-TPAT Initiative
- Other Initiatives

EXAM

Technologies to support maritime transportation and port security – analysis and prospects for implementation

- Active security control technologies
- Passive security control technologies
- Tracking and tracing technologies
- Prospects for technology implementation – Landside and Seaside Operations

Modeling and Simulation to assist security planning in maritime and port operations – An introduction

- Principles of modeling
- Principles of Object Oriented Simulation
- Application of modeling and simulation to maritime and port security

Modeling and Simulation to assist security planning in maritime and port operations – Case Studies

- Supply Chain Security modeling and simulation case studies
- Port and marine terminal operations modeling and simulation case studies

- Micro and mesoscopic simulation to combine security and productivity issues in port operations case studies

Planning and implementation of safety measures in port operations

- Vessel service related safety measures
- Cargo handling related safety measures
- Hazardous materials handling and marine terminal operations
- Contingency plans for port operations

Planning, implementation, management and auditing of Port Facility Security Plans

- Vulnerability and risk assessment in port operations
- Port Facility Security Plans (PFSP)
- Implementation and Management of PFSP
- Auditing of PFSP
- Port Productivity and Port Security: complementary not contradictory roles

Planning, implementation, management and assessment of Port Security Plans-

Coordination of Authorities and Stakeholders involved and the role of the Port Authority

- Port Security: Authorities involved and relative responsibilities
- Coordination of Authorities and Stakeholders involved in Port Security
- The role of the Port Authority in planning, management and implementation of port security