

**K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

Grade: 12
Subject Title: Safety 2

Semester: 2nd Semester
No. of Hours: 80 hours
Pre-requisite: Engine Watch 2

Subject Description:

This course covers safety standards as stipulated in Section A-III/4 of the 1978 Standards of Training, Certification, and Watchkeeping(STCW) Convention, as amended. It aims to acquaint Senior High School (SHS) students on the requirements of safety inherent to the work of Ratings Forming Part of an Engineering Watch (RFPEW). Specifically, it provides the knowledge, skills, and attitudes vital to emergency situations in machinery spaces. The competencies covered in this course are: 1) application of emergency procedures in machinery spaces, and 2) operation of emergency equipment.

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
Introduction 1. Observe procedure, specification, and manuals of instruction 2. Relevance of the course 3. Career opportunities	The learners demonstrate an understanding of the basic concepts and underlying principles in Safety 2	The learner shall be able to independently demonstrate an understanding of the competencies in Safety 2 as prescribed under the 1978 STCW Convention, as amended	1. Interpret manuals 2. Discuss the relevance of the course 3. Explore on opportunities for Safety 2 as a career	
LESSON 1: APPLY EMERGENCY PROCEDURES IN MACHINERY SPACES (EPMS) (40 hrs)				
1. Emergency Situations a. Flooding b. Fire c. Blackout d. Medical emergency	The learners demonstrate an understanding of the basic concepts and underlying principles in applying emergency procedures	The learners shall be able to apply emergency procedures as prescribed under the 1978 STCW Convention, as amended	LO 1. Explain the causes of various emergency situations [8hrs] 1.1 Identify the various emergency situations 1.2 Determine the causes of each emergency situation	TVL_MS212EPMS-IIIf-b-1
2. Duties and responsibilities of emergency response team a. Chief engineer b. Leadman c. Member d. Watchkeeper			LO 2. Explain the duties and responsibilities of the emergency response team [12hrs] 1.1 Discuss specific duties and responsibilities of each member of emergency response team, given an emergency situation	
3. Emergency Plans and Procedures a. specific initial actions			LO 3. Perform emergency procedures applicable to specific emergency situation [20hrs]	TVL_MS212EPMS-IIIf-j-3

**K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
b. contingency measures c. means of d. communication			1.1 Discuss the initial actions on the specific emergency situation 1.2 Discuss effective means of communication during emergency situation 1.3 Interpret emergency plans used in fire, flooding, blackout, and medical emergencies 1.4 Execute contingency measures in an emergency situation	
LESSON 2: OPERATE EMERGENCY EQUIPMENT (OEE) (40 hrs)				
1. Different types of emergency equipment used in various types of emergency situations	The learners demonstrate an understanding of the basic concepts and underlying principles in operating emergency equipment	The learners shall be able to operate emergency equipment as prescribed under the 1978 STCW Convention, as amended	LO1. Identify the different types of emergency equipment (8hrs)	TVL_MS212OEE-IVa-b-1
2. Functions of each type of emergency equipment			LO2. Discuss the functions of the different type of emergency equipment (12hrs)	TVL_MS212OEE-IVc-e-2
3. Uses of different types of emergency equipment			LO3. Demonstrate the use of the different types of emergency equipment (20hrs)	TVL_MS212OEE-IVf-j-3

**K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

Glossary

Accident	A deviation from normal operations or activities associated with a hazard, which has the potential to result in an emergency
Activity	Any operational process, system, structure, equipment, or group that fulfills a programmatic purpose
Classification Guide	A document issued or approved by an authorized original classification authority or the senior agency official and containing explicit classification guidance for the use of Authorized Classifiers and Derivative Declassifiers in making classification, declassification, and appropriate downgrading determinations
Common Hazardous Material	The material is commonly used by the general public. This includes any substance used for personal, family, or household purposes or is present in the same form and concentration as a product packaged for distribution and use by the general public (e.g., motor oil, gasoline, diesel fuel). Common hazardous material also is composed of material in such small quantities (end user quantities) that the hazard can be qualitatively determined to be a local (e.g., worker) concern only.
Condition	Any as-found state, whether or not resulting from an event, that may have adverse safety, health, quality assurance, security, operational or environmental implications. A condition is usually programmatic in nature; for example, an error in analysis or calculation; an anomaly associated with design or performance; or an item indicating a weakness in the management processes are all conditions.
Drill	Supervised, "hands-on" training for members of emergency response organizations
Emergency	An emergency is the most serious event and consists of any unwanted operational, civil, natural-phenomenon, or security occurrence that could endanger or adversely affect people, property, or the environment
Emergency Action Level (EAL)	Specific, predetermined, observable criteria used to detect, recognize, and determine the emergency class of Operational Emergencies; they are based on consequence estimates and evaluations performed using information from the Hazards Assessment
Emergency Assistance Planning	The preparation for deployment of departmental resources, emergency response assets, and personnel, and/or use of facilities to support federal interagency plans, presidential direction, and state, local, or tribal agreements of mutual aid. Emergency Assistance may be implemented coincident with an Energy Emergency response and Preparedness.

**K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

Glossary

Emergency Assistance Program	All activities whereby departmental resources, emergency response assets, personnel, and/or facilities are deployed in support of federal interagency plans, international agreements, presidential direction, and state, local, or tribal agreements of mutual aid. The Emergency Assistance Program may be implemented coincident with implementation of the Energy Emergency Program.
Emergency facilities	Facilities used to support an emergency response
Emergency facilities and Equipment	Facilities, equipment, and supplies that should be established and maintained for adequate emergency response support
Emergency equipment	Equipment and supplies that are used to support an emergency response
Emergency Management Exercises	Evaluated demonstrations of the integrated capabilities of emergency response resources (personnel, procedures, facilities, and equipment) conducted for the purpose of validating elements of an emergency management program. Exercises should be realistic simulations of emergencies to include command, control, and communication functions and event-scene activities and may vary significantly in size and complexity to achieve their respective purposes.
Emergency planning	The identification of hazards and threats, hazard mitigation, development and preparation of emergency plans and procedures, and identification of personnel and resources needed for an effective response
Emergency response	The application of resources to mitigate consequences to workers, the public, the environment, and the national security, and the initiation of recovery from an emergency
Explosion	The rapid release of a large amount of energy within a limited space [FEMA Radiological Emergency Management Glossary]
Explosive	A chemical that is capable of burning or bursting suddenly or violently [Union Pacific Railroad Environmental Terms Glossary]
Explosive Limits	Some items have a minimum and maximum concentration in air which can be detonated by spark, shock, fire. The lowest concentration is known as the lower explosive limit (LEL). The highest concentration is known as the upper explosive limit (UEL). [Union Pacific Railroad Environmental Terms Glossary]
Exposure	A measurement of the total amount of radiation to which an individual is exposed related to the ionization produced in air by x-ray or gamma radiation. Similar to "dose." [FEMA Radiological Emergency Management Glossary]

**K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

Glossary

Flammable	Capable of being easily ignited and/or burning with extreme rapidity, and has a flashpoint under 100 degrees F. [Union Pacific Railroad Environmental Terms Glossary]
Flammable gas	Materials considered by the DOT as flammable: gases having a Lower Explosive Limit of less than 13% or gases having flammable range wider than 12 percentage points. [Union Pacific Railroad Environmental Terms Glossary]
Flammable (Explosive) Limits	The concentration of a gas that will burn in air. The Lower Explosive Limit (LEL) is the lowest percentage of a gas that will burn in air. The Upper Explosive Limit (UEL) is the highest percentage of a gas that will burn in air. [Union Pacific Railroad Environmental Terms Glossary] Emergency Management Terms: Glossary TRADE/EMI SIG MAY 1999 Page 22
Flash point	The minimum temperature at which a liquid gives off enough vapors to form an ignitable mixture with the air near the surface of the liquid [Union Pacific Railroad Environmental Terms Glossary]
Hazard	A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation) (10 CFR 830.3) [DOE-EM-STD-5502-94]
Hazard categorization	Evaluation of the consequences of unmitigated releases to categorize facilities or operations into the following categories: [DOE G 151.1-1] <ul style="list-style-type: none">• Hazard Category 1 - The hazard analysis shows the potential for significant offsite consequences.• Hazard Category 2 - The hazard analysis shows the potential for significant onsite consequences.• Hazard Category 3 - The hazard analysis shows the potential for only significant localized consequences.
Hazard classes	Non-nuclear facilities will be categorized as high, moderate, or low hazards based on the following [DOE 5481.1B] [DOEEM-STD-5502-94] <ol style="list-style-type: none">1. High - hazards with a potential for onsite and offsite impacts to large numbers of persons or for major impacts to the environment;2. Moderate - hazards which present considerable potential onsite impacts to people or the environment, but at most only minor offsite impacts; and3. Low - hazards which present minor onsite and negligible offsite impacts on people and the environment.

K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2

Glossary

Hazardous air pollutant	A pollutant to which no ambient quality standard is applicable and that may cause or contribute to an increase in mortality or in serious illness. [Union Pacific Railroad Environmental Terms Glossary]
Hazardous chemicals	The U.S. Occupational Safety and Health Administration (OSHA) uses the term hazardous chemical to denote any chemical that would be a risk to employees if exposed in the work place. Hazardous chemicals cover a broader group of chemicals than the other chemical lists. [Union Pacific Railroad Environmental Terms Glossary]
Hazardous classes	A series of nine descriptive terms that have been established by the U.N. Committee of Experts to categorize the hazardous nature of chemical, physical, and biological materials. These categories are flammable liquids, explosives, gases, oxidizers, radioactive materials, corrosives, flammable solids, poisonous and infectious substances, and dangerous substances [Union Pacific Railroad Environmental Terms Glossary]
Hazardous materials	Any solid, liquid, or gaseous material that is toxic, flammable, radioactive, corrosive, chemically reactive, or unstable upon prolonged storage in quantities that could pose a threat to life, property, or the environment [DOE G 151.1-1]
Hazardous Material Incident	A situation in which a hazardous material is or may be released into the environment [Union Pacific Railroad Environmental Terms Glossary]
Hazards assessment	The identification and characterization of hazardous materials specific to a facility/site, analyses of potential accidents or events, and evaluation of potential consequences. The Hazards Assessment also includes a determination of the size of the geographic area surrounding the site, known as the Emergency Planning Zone (EPZ), within which special planning and preparedness activities are required to reduce the potential health and safety impacts from an event involving hazardous materials. The Hazards Assessment provides the technical basis for the Hazardous Materials Program. [DOE G 151.1-1, Vol. 2]
Incident	Any deviation from normal operations or activities which has the potential to result in an emergency. [DOE G 151.1-1]
Ingestion	The term used when radioactive materials are taken into the body through the mouth, such as by eating or drinking. Also applies when breathing results in the inhaled materials being swallowed. [FEMA Radiological Emergency Management Glossary]
Inhalation	The term used when radioactive materials are taken into the lungs by breathing [FEMA Radiological Emergency Management Glossary]

**K TO 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

Glossary

Oil	Any kind of oil including petroleum, according to the Clean Water Act (33 U.S.C. 1321)] [DOE O 151.1]
Preventive actions	Actions taken to prevent a negative situation from occurring [DOE-STD- 7501-95, Development of DOE Lessons Learned Programs Actions]
Protective action	Physical measures, such as evacuation or sheltering, taken to prevent potential health hazards resulting from a release of hazardous materials to the environment from adversely affecting employees or the offsite population [DOE G 151.1-1]
Smoke	An air suspension of particles, often originating from combustion or sublimation [Union Pacific Railroad Environmental Terms Glossary]
Standard (Standing) Operating Procedure	A procedure prepared for operation of a facility or performance of a task on a routine basis [Draft DOE Glossary]
Toxicity	The harmfulness of a contaminant[Union Pacific Railroad Environmental Terms Glossary]
Training	The process of providing for, making available to, and placing or enrolling an employee(s) in a planned, prepared, and coordinated program, course, curriculum, subject, system, or routine of instruction or education, in fiscal, administrative, management, individual development, or other fields which improve individual and organizational performance and assist in achieving the agency's mission and performance goals [Draft DOE Glossary]
Vapor	An air dispersion of molecules of a substance that is liquid or solid in its normal physical state, at standard temperature and pressure [Union Pacific Railroad Environmental Terms Glossary]

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SAFETY 2**

Code Book Legend

Sample: TVL_MS2-12EPMS-IIIa-b-1

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Technical-Vocational Livelihood Maritime Track Safety 2	TVL_MS2 12
	Grade Level	12	
Uppercase Letter/s	Domain/Content/ Component/ Topic	Apply Emergency Procedure in Machinery Spaces	EPMS
			-
Roman Numeral <i>*Zero if no specific quarter</i>	Quarter	Third Quarter	III
Lowercase Letter/s <i>*Put an en dash (-) in between letters to indicate more than a specific week</i>	Week	Week One to Two	a-b
			-
Arabic Number	Competency	Explain the causes of various emergency situations	1

DOMAIN/ COMPONENT	CODE
Apply Emergency Procedures in Machinery Spaces	EPMS
Operate Emergency Equipment	OEE

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SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD MARITIME SPECIALIZATION
SAFETY 2**

References

Main Reference:

International Maritime Organization. *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and STCW Code including the 2010 Manila Amendments*. London: International Maritime Organization, 2011.

Other Reference:

International Maritime Organization. *International Convention for the Safety of Life at Sea, 1974, as amended by the resolutions of the 1997 SOLAS Conference relating to bulk carrier safety*. London: International Maritime Organization, 1999.

"Radiological Emergency Management Glossary", <http://training.fema.gov/emiweb/downloads/is3gloss.pdf>.

"Railroad Terms", https://www.up.com/aboutup/reference/glossary/railroad_terms/index.htm.

The Training Resources and Data Exchange (TRADE) Emergency Management Issues Special Interest Group Glossary Task Force. *Glossary and Acronyms of Emergency Management Terms*. 3rd ed., 1999. Retrieved from <https://orise.orau.gov/emi/training-products/files/glossary-emt.pdf>

U.S. Department of Energy. *Emergency Management Fundamentals and the Operational Emergency Base Program Emergency Management Guide*. Washington: U.S. Department of Energy, 2007.