GANPAT UNIVERSITY			
FACULTY OF MARITIME STUDIES			
Programme	Bachelor of Marine Technology	Branch/Spec.	Mechanical Engineering/ Mechatronics Engineering/ Automobile Engineering/ Marine Engineering
Semester	II	Version	1.0.0.0
Effective from Academic Year	2026-27	Effective from the batch admitted in	July 2026
Course Code	2ESC1120	Course Name	**Engineering Safety and Regulations**
Course Category	Engineering Science Course (ESC)		

Teaching & Learning Scheme							Examination scheme (Marks)			
	L	TU	P	Total	SL	TSL		CE	SEE	Total
Credit	3	0	0	3	45	90	Theory	50	50	100
Hours (per week)	3	0	0	3			Practical	00	00	00

L: Lecture, TU: Tutorial, P: Practical/Lab., SL: Minimum Self-Learning or Term Work Hours per Semester, TSL: Minimum Total Teaching & Self-Learning Hours per Semester, CE: Continuous Evaluation, SEE: Semester End Examination.

Pre-requisites:

Introduction to Maritime Safety and Major Conventions

Course Outcomes

COs	Description
CO1	**Remember** and understand Maritime conventions and their application.
CO2	**Understand** elements of safety, fire prevention, and pollution prevention
CO3	**Analyze** major maritime accidents understanding their root cause as well as immediate cause.
CO4	**Apply** various concepts of Engineering Safety to improve safety consciousness. Application of HIRA and JHA
CO5	**Prepare** Risk Assessments, Checklists and Permits required for various jobs in the Industrial sector
CO6	The students will be able to analyze various International Agreements.

Theory Syllabus

Unit	Content	Hours
1	**Introduction to Maritime Safety:** Various Safety symbols, Understanding and Identification of Hazards and safeguards, Hazards related to working at height, working at electric systems, working in Automated Industrial environment. working with power tools. working with chemicals. working with biologically active agents, Personal Protective Equipment (PPE), PPE Matrix	**8**
2	**Understanding various concepts of safety:** Safety Pyramid - Fatality, Lost Time & Severe Injury, Minor Injuries, Near Misses, Unsafe Acts. Causes of accidents – unsafe acts & unsafe behavior and unsafe conditions, Root Cause Analysis, Checklists, Permits, Risks assessment, HIRA and JHA models for safety.	**7**
3	**Introduction to International Agreements:** Understanding various types of International Agreements Bilateral Treaties, Multilateral Treaties, Conventions, Protocols, Memorandum of Understanding,	**10**

	Code Various International Organizations involved in development of Conventions, UN, IMO, ILO, Application of various conventions for ships trading the high seas	
4	**Case Study 1. Sinking of White star liner Titanic:** Brief timeline of events, Immediate cause, Root Cause, Introduction to SOLAS, Various chapters and functions	**7**
5	**Case Study 2. Torry Canyan disaster:** Brief timeline of events, Immediate cause, Root Cause, Introduction to MARPOL, Various Annexes and functions	**7**
6	**Case Study 3. Herald of Free Enterprise Capsize:** Brief timeline of events, Immediate cause, Root Cause, Introduction to ISM Code, Various chapters and functions	**6**
	TOTAL	**45**
Practical and Self Learning Content		
NA		
Text Books		
1	Faculty Handout	
Reference Books		
1	Code of safe working practices	
2	SOLAS 74	
3	MARPOL 73/78	
4	ISM Code	
5	Merchant Navy: An Introduction by Alexander Arnfinn Olsen	
ICT/MOOCs Reference		
1	NA	

Mapping of CO with PO and PSO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	0	0	0	1	2	0	1	2	1	0	2
CO2	3	1	2	1	1	0	1	0	1	0	1	1	0	0	2
CO3	3	1	1	1	0	1	0	1	0	1	2	0	2	0	3
CO4	3	1	1	1	0	0	0	1	1	0	1	0	1	0	3
CO5	3	1	2	1	1	0	1	0	2	0	3	0	2	0	0
CO6	3	1	1	1	0	1	0	2	1	0	1	1	0	1	2

Bloom's Taxonomy Level

Unit	Unit Title	Aligned COs	Learning Hours	BTL Level
1	Introduction to Maritime Safety	CO1, CO2	8	R, U
2	Concepts of Safety (Safety Pyramid, RCA, Risk Assessment, Permits)	CO3, CO4, CO5	7	A, N
3	International Agreements & Organizations (UN, IMO, ILO)	CO1, CO6	10	U, N
4	Case Study: Titanic – SOLAS	CO3, CO6	7	N
5	Case Study: Torrey Canyon – MARPOL	CO3, CO6	7	N
6	Case Study: Herald of Free Enterprise – ISM Code	CO3, CO6	7	N

Note:

- Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)
- 1 Hour Lecture = 1 Credit, 1 Hour Tutorial = 1 Credit, 2 Hours Practical = 1 Credit, 2 Hours Internship/Project/Seminar = 1 Credit
- As per NCrF/NEP 2020, Minimum Self-Learning or Term Work Hours per Semester should be calculated in such a way that 1 Credit should have a minimum 30 Hours of Teaching and Self Learning Engagement per semester
- Bloom's Taxonomy Level (BTL) : R: Remember, U: Understand, A: Apply, N: Analyze, E: Evaluate, and C: Create