NATIONAL BOARD FOR TECHNICAL EDUCATION

PLOT B BIDA ROAD, P.M.B. 2239, KADUNA, NIGERIA

HIGHER NATIONAL DIPLOMA

IN

NAUTICAL SCIENCE PROGRAMME

CURRICULUM AND COURSE SPECIFICATIONS

IN

COLLABORATION WITH

NIGERIAN MARITIME ADMINISTRATION & SAFETY AGENCY

NIMASA TOWERS, 35, ADETOKUNBO ADEMOLA STREET, VICTORIA ISLAND, LAGOS, NIGERIA

MARCH, 2026

PREFACE

The recent review of the National Diploma (ND) and Higher National Diploma (HND) in Nautical Science curricula and course specifications marks a significant milestone in our continuous commitment to excellence in maritime education and training. This reviewed curriculum has been carefully structured to align with the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978, as amended, to ensure full compliance with global standards and best practices in maritime operations.

The maritime industry is dynamic and increasingly technology-driven. As such, it is imperative that our training programmes reflect current international regulations, emerging trends, and the competencies required of modern seafarers. This review strengthens the quality, relevance, and global competitiveness of our diplomates, equipping them with the knowledge, skills and professional attitudes necessary to perform effectively and safely at sea.

The successful completion of this review process would not have been possible without the invaluable support of the Nigerian Maritime Administration and Safety Agency (NIMASA). We sincerely appreciate the Management of NIMASA for organising and sponsoring the series of workshops that brought together key stakeholders, maritime educators, industry experts and regulatory authorities. Their commitment to capacity building and standardisation in maritime education continues to play a pivotal role in advancing Nigeria's maritime sector.

We also extend our profound gratitude to all the resource persons, facilitators, and participants who contributed their expertise, experience, and insights during the workshops. Their dedication, constructive engagement, and professional input greatly enriched the review process and ensured that the revised curriculum meets both national needs and international expectations.

It is our firm belief that this updated curriculum will enhance the competence of cadets, strengthen institutional delivery and contribute significantly to safe navigation, maritime safety, and sustainable development within the global shipping industry.

We hope this reviewed curriculum will serve as a robust framework for producing highly skilled and internationally compliant maritime professionals at operational and management levels by the Nigerian Maritime Education and Training Institutions and other key stakeholders.

Prof. Idris M. Bugaje
Executive Secretary
National Board for Technical Education
Kaduna
March, 2026

TABLE OF CONTENTS

GENERAL INFORMATION

1. PROGRAMME NOMENCLATURE

Higher National Diploma in Nautical Science

2. PROGRAMME GOAL

The Higher National Diploma (HND) in Nautical Science is aimed at producing diplomates with sound knowledge in seafaring activities with technological, professional skills and competence necessary for employment as Management level Deck Officers who can plan, manage, and control shipboard operations in compliance with international regulations and best maritime practices.

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3. OBJECTIVES OF THE PROGRAMME

On completion of this Programme, the HND diplomates should be able to:

i. Keep a navigation watch;
ii. Do cargo work onboard ship;
iii. Plan and execute voyage plans;
iv. Carry out safety and fire prevention techniques on board ships;
v. Plan and conduct voyages at the management level;
vi. Manage bridge operations and navigational watch systems;
vii. Apply advanced principles of ship stability, trim, and stress;
viii. Supervise cargo operations and ensure compliance with safety standards;
ix. Apply international maritime conventions, regulations, and codes;
x. Lead and manage shipboard personnel effectively;
xi. Manage emergencies, incidents, and environmental protection measures;
xii. Demonstrate professional judgment and ethical leadership at sea; and
xiii. Develop an ability to accept position of leadership and higher responsibility in the Maritime Industry.

4. ENTRY REQUIREMENTS

The entry requirements into Higher National Diploma in Nautical Science Programme are as follows:

a. Basic entry requirement for National Diploma in Nautical Science;
   i. Five (5) GCE, WASC, SSCE, SAISSCE, NECO or NABTEB subjects passed at not more than two sittings. The subjects must be passed at Credit level and should include English Language, Mathematics, Physics, Geography and one (1) relevant subject from the list contained in the most current Directory of Accredited programmes of Polytechnics and similar tertiary technical institutions in Nigeria.

b. National Diploma (ND) in Nautical Science with a minimum of lower credit pass (CGPA of 2.50 and above) obtained from an NBTE accredited Institution plus a minimum of one-year post-ND cognate work experience in Nautical Science or Sea time.

c. In exceptional cases, the ND Nautical Science diplomates with a pass grade (CGPA 2.0 - 2.49) that had two or more years of cognate work experience, may be considered for admission into the programme. However, the number of such candidates should not be more than 10% of the total student in take in each class.

5. PROGRAMME STRUCTURE AND DURATION

The structure of the HND programme consists of four semesters of classroom, laboratory, workshop, simulation and studio activities in the Institution. Each semester shall be of 17 weeks duration made up as follows: 15 contact weeks of teaching (Lecture, Tutorial and Practical Exercises). Tests, quizzes, examinations and registration take the remaining two weeks.

6. CURRICULUM

6.1 The curriculum of all HND programme consists of three main components.
These are;

a. General studies/education
b. Foundation courses.
c. Professional courses.

6.2 The General education component shall include courses in:

- Art and Humanities – English Language, Communication. These are compulsory.
- Mathematics and Science (for non-Science based programmes)
- Social Studies – Entrepreneurship Studies.

The General Studies component shall include courses in: English Language is compulsory. The general Studies component shall account for not more than 10-15% of total contact hours for the programme.
Foundation courses include courses in Science and Technology related programmes, Computer/ICT and Entrepreneurship Education. The number of hours will account for about 10-15% of the total contact hours. Professional Courses are the core Nautical Science courses which give the student the theoretical and practical skills needed to practice as a seafarer. These may account for between 70-80% of the contact hours.

7. STAFFING REQUIREMENTS

7.1 Core Teaching Staff

A minimum of four (4) core Lecturers who should be at least the rank of Lecturer II and above staff, with minimum qualification of HND or B.Sc. in Nautical Science or related disciplines. In addition, core lecturers should possess Management-level Certificate of Competence (Unlimited).

7.2 Technical Staff

Technical staff shall have at least HND in Nautical Science or B.Sc. in Nautical Science (Minimum of Third Class)

7.3 Headship of the Department

The Head of Department shall have at least a First and Master's degrees in Nautical Science or related field. He or she shall not be less than the rank of a Senior Lecturer and must be registered with the relevant Professional Body(s).

7.4 Career/Academic Prospects

The diplomate would work in Maritime Industry. They can also proceed to Postgraduate studies.

8. CERTIFICATION

A diplomate of this programme shall be awarded the HND in Nautical Science.

9. ACCREDITATION

The Higher National Diploma (HND) in Nautical Science shall be accredited by NBTE before the diplomates can be awarded the Higher National Diploma certificate. Details about the process of accrediting a programme for the award of the HND are available from the Executive Secretary, National Board for Technical Education (NBTE) Plot 'B', Bida Road, P.M.B. 2239, Kaduna, Nigeria.

10. CONDITIONS FOR THE AWARD OF THE HND

10.1 Institutions offering accredited programmes will award the Higher National Diploma to candidates who successfully completed the programme after passing prescribed coursework, examinations, diploma project and the Students Industrial Work Experience Scheme (SIWES). Such candidates should have completed a minimum of between 72 and 80 semester credit units depending on the programme.

10.2 Higher National Diploma should be awarded in four classes as follows:

Distinction	CGPA of 3.50 and above
Upper Credit	CGPA of 3.00- 3.49
Lower Credit	CGPA of 2.50 – 2.99
Pass	CGPA of 2.00 – 2.49

10.3 Grading of Courses:

Courses shall be graded as follows:

MARKED RANGE	LETTER GRADE	WEIGHTING
75% and above	A	4.00
70% – 74%	AB	3.50
65% – 69%	B	3.25
60% – 64%	BC	3.00
55% – 59%	C	2.75
50% – 54%	CD	2.50
45% – 49%	D	2.25

40% – 44%	E	2.00
Below 40%	F	0.0

Pass mark for all professional courses in the curriculum is 60% in line with the international best practice while general studies and other non-professional courses remain 40% as specified by the NBTE minimum academic guidelines.

11. GUIDANCE NOTE FOR LECTURERS

11.1 The new curriculum is drawn in unit courses. This is keeping with the provisions of the National Policy on education which stress the need to introduce the semester credit units which will enable a student who so wishes to transfer the units already completed in an institution of similar standard from which he is transferring.

11.2 In designing the units, the principles of the modular system by product have been adopted; thus making each of the professional modules, when completed provide the students with technical operative skills, which can be used for employment purposes.

11.3. As the success of the credit unit system depends on the articulation of programmes between the institutions and industry, the curriculum content has been written in the behavioral objectives, so that is clear to all, the special Learning objective of the student who successfully completed some of the courses or the diplomates of the programme. There is a slight departure in the presentation of the performance-based curriculum which state categorically, the special learning objective for the students, also, there is a deliberate attempt to further involve the staff of the department teaching by having another column called Teacher's activities. This is to ensure that the lecturers deliver the required learning objectives. There is a third column for the Resources required for each learning objective. Each department is expected to develop its own teaching curriculum from this minimum Guide curriculum and ensure that the resources required are available. The Academic Board of the institution may vet departmental submission on the final curriculum. Our aim is to continue to see to it that a solid internal evaluation system exists in each institution for ensuring minimum standard and quality of education in the programmes offered throughout the TVET Institutions.

11.4 The teaching of the theory and practical work should, as much as possible, be integrated. Practical exercises, especially those in professional courses and laboratory work should not be taught in isolation from the theory if possible. For each course, there should be a balance of theory to practice in the ratio 50:50 or 60:40, or the reverse.

12. PRACTICAL LOGBOOK

A practical logbook to be kept by each student shall contain all day-to-day, weekly summary and semester summary of all the practical activities from day one to the end of the programme. This is to be checked, marked, endorsed and recorded by the lecturers concerned at the end of every week.

13. FINAL PROJECT

Final year students in this programme are expected to carry out a project work. This could be on individual basis or group work of not more than five students per group, but reporting must be undertaken individually. The project should, as much as possible be related to the programme and core professional discipline. Project reports should be well presented and should be properly supervised. The department should make its own arrangement of schedules for project work.

14. GUIDELINES ON MANDATORY SKILLS QUALIFICATIONS (MSQ)

Please, see the Guidelines for the Implementation of MSQ in Polytechnics in Nigeria, available on NBTE website (www.nbte.gov.ng/downloads).

CURRICULUM TABLE

YEAR I – SEMESTER I

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	GNS 301	Use of English III	2	0	0	2	2
2.	MSQ 311	Principles of Quality Assurance Assessment	1	0	1	2	2
3.	NSC 311	Chartwork and Nautical Publications III	2	1	1	4	4
4.	NSC 312	Watchkeeping II	2	0	0	2	2
5.	NSC 313	Celestial Navigation III	2	1	1	4	4
6.	NSC 314	Meteorology and Oceanography I	2	0	1	3	3
7.	NSC 315	Seamanship and Ship Operations	2	0	2	4	4
8.	NSC 316	Maritime English and Communication III	2	0	0	2	2
9.	NSC 317	Human Resource Management and Shipboard Organization	2	0	0	2	2
10.	NSC 318	General Marine Engineering Knowledge	2	0	1	3	3
Total			**19**	**2**	**7**	**28**	**28**

YEAR I – SEMESTER II

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	ENT 326	Practice of Entrepreneurship I	2	0	2	4	4
2.	MSQ 321	Practice of Quality Assurance Assessment	1	0	1	2	2
3.	NSC 321	Terrestrial and Coastal Navigation I	2	0	2	4	4
4.	NSC 322	Compass Work and Compass Error Management	2	0	2	4	4
5.	NSC 323	Collision Regulations Application	2	0	2	4	4
6.	NSC 324	Cargo Handling and Stowage I	2	0	2	4	4
7.	NSC 325	Ship Construction and Stability III	2	1	1	4	4
8.	NSC 326	Emergency Procedures and Damage Control I	2	0	2	4	4
9.	NSC 327	Celestial Navigation IV	2	1	1	4	4
Total			**17**	**2**	**15**	**34**	**34**

YEAR II – SEMESTER I

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	ENT 416	Practice of Entrepreneurship II	2	0	2	4	4
2.	NSC 411	Voyage Planning and Navigation Management	2	0	2	4	4
3.	NSC 412	Navigational Aids and Instruments III	2	0	2	4	4
4.	NSC 413	Cargo Handling and Stowage II	2	0	2	4	4
5.	NSC 414	Maritime Law and Regulatory Compliance I	3	0	0	3	3
6.	NSC 415	Research Methodology	1	0	1	2	2
7.	NSC 416	Shipping Management I	2	0	0	2	2
8.	NSC 417	Computer Application in Navigation System II	2	0	1	3	3
Total			**16**	**0**	**10**	**26**	**26**

YEAR II – SEMESTER II

S/N	Course Code	Course Title	L	T	P	CU	CH
1.	NSC 421	Terrestrial and Coastal Navigation II	2	1	1	4	4
2.	NSC 422	Meteorology and Oceanography II	2	0	1	3	3
3.	NSC 423	Maritime Law and Regulatory Compliance II	3	0	0	3	3
4.	NSC 424	Advanced Safety Trainings	2	0	1	3	3
5.	NSC 425	Shipping Management II	2	0	0	2	2
6.	NSC 426	Industrial and Maritime Labour Relations	2	0	0	2	2
7.	NSC 427	Project	0	0	4	4	4
Total			**13**	**1**	**7**	**21**	**21**

L - Lectures
T- Tutorials
P - Practical
CU - Credit Unit
CH - Contact Hours

YEAR I SEMESTER I

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CHARTWORK AND NAUTICAL PUBLICATIONS III	**COURSE CODE: NSC 311**	**Contact Hours: 4 Hours/Week**
Year: I Semester: I	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**
GOAL: This course enables students to develop competence to appraise, plan, execute, and monitor the passage using nautical publications and all other available means in accordance with of STCW Code, Section A - II/2, Table A - II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0: Understand the Management-Level Voyage Appraisal and Route Selection; 2.0 Understand detailed Passage Planning and Use of Nautical Publications; 3.0 Understand Navigational Risk Assessment and Management Control; 4.0 Understand Voyage Monitoring, Review and Corrective Actions.		
COMPETENCES: • Plan a voyage and conduct navigation		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CHARTWORK AND NAUTICAL PUBLICATIONS III	Course Code: NSC 311	Contact Hours: 4 Hours/Week
	Credit Unit: 4	Theoretical: 2 Hours/Week
Year: I Semester: I	Pre-requisite:	Practical: 2 Hours/Week
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course enables students to develop competence to appraise, plan, execute, and monitor the passage using nautical publications, in accordance with of STCW Code, Section A - II/2, Table A - II/2.		
General Objective 1.0: Understand the Management-Level Voyage Appraisal and Route Selection		

THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the master's responsibilities in voyage planning. 1.2 Explain comprehensive voyage appraisal using charts and publications. 1.3 Evaluate navigational constraints including traffic density, water depth, and environmental factors. 1.4 Explain the use of appropriate routes based on risk and regulatory requirements. 1.5 Demonstrate professional judgement in management-level route selection.	• Explain management-level responsibilities: risk assessment, cost efficiency, environmental considerations, and compliance with international regulations. • Show how to conduct a voyage appraisal using updated charts and nautical publications, weather forecasts and oceanographic data and traffic separation schemes and port entry requirements. • Demonstrate route selection on ECDIS or paper charts,	Admiralty charts, Nautical Publications, such as Sailing directions, Company voyage planning procedures Projector, Writing Materials, White board, Markers, Multi-media resources etc.	• Conduct voyage appraisal exercises. • Perform simulation exercises on route selection decisions.	• Provide students with a voyage scenario • Guide them in: – Collecting appraisal data (weather, tides, traffic schemes, cargo constraints), – Evaluating risks (piracy zones, restricted waters, seasonal weather) and	ECDIS, Admiralty charts, Nautical Publications, Projector, Audiovisual, etc.

		considering safety, efficiency, and fuel economy. • Present examples of alternative routes and explain why one is chosen over another.			selecting the most appropriate route. • Supervise group work and compare results of each group.	
General Objective 2.0: Understand detailed Passage Planning and Use of Nautical Publications						
5-8	2.1 Describe how to develop complete passage plans covering appraisal, planning, execution, and monitoring stages. 2.2 Explain the application of Notices to Mariners and chart corrections accurately. 2.3 Explain the use of Tide tables, sailing directions, and routeing publications. 2.4 Discuss passage plans compliance with SOLAS and company SMS requirements. 2.5 Demonstrate accuracy and completeness in documentation.	• Explain importance of detailed passage planning for safety, efficiency, and compliance with SOLAS and company SMS. • Show students how to use nautical publications to gather data for passage planning. • Demonstrate plotting a passage on a chart (paper or ECDIS) using information from publications. • Walk students through updating a chart using Notices to Mariners. • Illustrate how tide tables and sailing directions influence route choice.	Nautical publications, Chart correction records, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc.	• Use updated charts for passage planning. • Compile passage planning folders.	• Provide students with a voyage scenario. • Guide them in; collecting relevant publications, extracting data (tides, lights, port entry requirements) and plotting the route with waypoints and safety margins. • Encourage group work on chart corrections, tides effects, and port information,	ECDIS, Nautical publications, Chart correction records, smart board, Projector, Writing Materials, White board, Markers, Audiovisual, etc.

					then combine results.	
General Objective 3.0: Understand Navigational Risk Assessment and Management Control						
9-11	3.1 Identify navigational hazards along planned routes. 3.2 Describe how to conduct formal navigational risk assessments. 3.3 Discuss control measures and contingency plans. 3.4 Explain human-element and environmental risks in passage planning. 3.5 Describe sound management-level risk judgement.	• Explain the principles of navigational risk assessment with particular reference to; Hazard identification (shoals, traffic, weather, equipment failure), Risk evaluation (likelihood × severity), Control measures (procedures, technology, crew training). • Clarify management control as regards BRM, compliance with company SMS and continuous monitoring and updating of risk assessments during the voyage. • Show how to conduct a risk assessment matrix for a navigational scenario.	Risk assessment templates, Accident reports, etc.	• Complete navigational risk assessments. • Design navigational contingency plan.	• Use diagrams or flowcharts to show the risk assessment cycle: Identify → Assess → Control → Monitor → Review. • Demonstrate how management controls (checklists, passage plans, ECDIS alarms, radar plotting) reduce risks.	Risk assessment templates, Accident reports, etc.
GENERAL OBJECTIVE 4.0: Understand Passage Monitoring, Updating and Position Determination						
12-15	4.1 Describe voyage execution and monitoring against the approved passage plan. 4.2 Identify deviations and assess their	• Explain in detail the three pillars of Passage Monitoring, Updating and Position Determination. • Use diagrams or	Nautical charts, Nautical Publications, Voyage monitoring records, sample	• Execute a passage plan. • Monitor a passage plan. • Record navigational data correctly	• Provide students with a sample voyage plan and simulated positions.	ECDIS or Nautical charts, Nautical Publications, Voyage monitoring records, sample of company SMS

	implications. 4.3 Explain the implementation of corrective actions where necessary. 4.4 Discuss post-voyage review and reporting.	flowcharts to show how these processes interact. • Walk students through deviation and different methods of implementing corrective actions. • Discuss the responsibility of the Master in post-voyage review and reporting. • Evaluate readiness for management-level navigational responsibility.	of company SMS procedures smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc.	during simulated passages.	• Guide them in monitoring progress against the plan. • Demonstrate to students how to use updated information (e.g., a Notice to Mariners or weather change) in adjusting voyage plan. • Assign exercises where students determine position using different methods and compare accuracy.	procedures smart board, Projector, Audiovisual, etc.

Course Assessment:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	**100%**

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: WATCHKEEPING II	**COURSE CODE: NSC 312**	**Contact Hours: 2 Hours/Week**
	Credit Unit: 2	**Theoretical: 2 Hours/Week**
Year: I Semester: I		**Practical: 0**
GOAL: This course is designed to equip students with command-level competence in ship handling, bridge team supervision, and emergency maneuvering to ensure safe, compliant, and effective navigation under all conditions, in accordance with of STCW Code, Section A - II/2, Table A - II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Understand the Principles of Ship Handling and Command Responsibility; 2.0 Understand Watchkeeping Standards and Bridge Team Supervision; 3.0 Understand Ship Handling in Confined Water, Heavy Weather and Restricted Visibility; 4.0 Understand Emergency maneuvering.		
COMPETENCES: • Establish Watchkeeping arrangements and procedures		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: WATCHKEEPING II			Course Code: NSC 312		Contact Hours: 2 Hours/Week	
			Credit Unit: 2		Theoretical: 2 Hours/Week	
Year: I Semester: I			Pre-requisite: -		Practical: 0	
COURSE SPECIFICATION: Theoretical						
General Objective 1.0: Understand the Principles of Ship Handling and Command Responsibility						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain ship-handling principles and hydrodynamic effects. 1.2 Describe the Master's responsibilities in ship manoeuvring. 1.3 Assess factors affecting ship handling in various conditions. 1.4 Evaluate risks associated with poor manoeuvring decisions. 1.5 Demonstrate sound command judgement in ship handling.	• Begin by linking ship handling principles to command outcomes. • Guide students to understand that turning circles, stopping distances, squat, and bank effect matter because the master is legally accountable for the consequences. • Explain core ship-handling principles propeller action, rudder effectiveness, interaction effects, wind and current influence always tying each principle to decision-making under command.	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.			

		• Integrate risk-based handling, showing how speed selection, under-keel clearance, and proximity margins are command-level decisions that shape handling options. • Analyze case studies of ship handling incidents, such as groundings, allisions, and berth damage, focusing on command judgment rather than mechanical explanations.				
General Objective 2.0: Understand Watchkeeping Standards and Bridge Team Supervision						
5-8	2.1 Explain international watchkeeping standards and procedures. 2.2 Discuss appropriate bridge watchkeeping arrangements. 2.3 Describe supervision of Officers of the Watch and bridge teams. 2.4 Explain how to manage workload, fatigue and situational awareness. 2.5 Describe leadership in watchkeeping supervision.	• Begin with defining watchkeeping as a safety system, not a shift schedule. • Guide students to understand that standards exist to manage fatigue, error, and workload, not to satisfy paperwork. • Explain international watchkeeping standards, drawing from STCW,	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.			

		COLREG and flag-state (NIMASA) requirements. • Emphasize on minimum manning, lookout requirements, and the OOW's continuous responsibility. • Integrate bridge team supervision principles, explaining planning, briefing, monitoring, cross-checking, and intervention. • Analyze case studies of collisions and groundings, identifying failures in watchkeeping discipline and bridge team supervision rather than technical navigation errors.				
General Objective 3.0: Understand Ship Handling in Confined Water, Heavy Weather and Restricted Visibility						
9-12	3.1 Describe the application of ship-handling techniques in confined waters. 3.2 Explain safely ships manoeuvre in heavy weather conditions. 3.3 Exemplify of handling ships effectively in	• Begin by framing the common risk across confined waters, heavy weather, and restricted visibility: reduced reaction time, increased forces, and limited escape options.	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media			

	restricted visibility. 3.4 Assess navigational risks and apply corrective measures. 3.5 Demonstrate sound judgement in challenging manoeuvring situations.	• Explain ship handling principles in confined waters bank effect, squat, interaction with other vessels, shallow-water effects, and under-keel clearance. • Discuss how each principle is tied to command decisions on speed, track, and helm orders. • Address heavy weather handling, explaining pitching, rolling, slamming, green water, and parametric rolling. • Link these to course and speed selection, stability considerations, and cargo safety. • Explain restricted visibility handling, emphasizing reliance on radar, sound signals, safe speed, and early maneuvering under COLREG. Students are corrected if they apply clear-weather logic to reduced-	Resources etc.			

		visibility situations. • Describe Case studies of groundings, heavy-weather damage, and fog collisions are analyzed to identify where handling decisions failed, not just what the ship did.				
GENERAL OBJECTIVE 4.0: Understand Emergency Manoeuvring.						
13-15	4.1 Explain ship manoeuvring during navigational and operational emergencies. 4.2 Discuss emergency watchkeeping supervision arrangements. 4.3 Ensure compliance with watchkeeping and manoeuvring standards. 4.4 Review ship-handling performance and lessons learned.	• Begin by defining emergency manoeuvering as a command situation, not just a helm action. • Guide students to distinguish between routine avoidance and true emergencies involving immediate danger to life, ship, or environment. • Explains types of emergency manoeuvres such as crash stop, hard-over turns, engine reversal, man-overboard recovery turns, loss of steering response, and propulsion failure	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.			

		responses. Each manoeuvre is linked to ship characteristics and limitations. • Describe compliance requirements, explaining how COLREGs, SOLAS, STCW, company SMS, and port regulations apply during emergencies.				

Course Assessment:
Course work: 20%
Test/Assignments: 20%
Examination: 60%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CELESTIAL NAVIGATION III	**COURSE CODE: NSC 313**	**Contact Hours: 4 Hours/Week**
Year: I Semester: I	**Credit Unit: 2**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**
GOAL: This course is designed to enable students acquire competence in celestial navigation, assess the accuracy and reliability of position fixing by celestial means, and integration of celestial navigation into voyage monitoring and redundancy in accordance with of STCW Code, Section A - II/2, Table A - II/2.		
GENERAL OBJECTIVES: On completion of this course the student should be able to: 1.0 Understand the management level roles regarding celestial navigation; 2.0 Understand the verification and analysis in celestial navigation; 3.0 Know the role of Celestial Navigation in Voyage Monitoring; 4.0 Know Management Decisions, Oversight and Navigational Assurance.		
COMPETENCES: • Determine position and accuracy of resultant position fix by Celestial observation methods		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CELESTIAL NAVIGATION III	**COURSE CODE: NSC 313**	**Contact Hour: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: I	**Pre-requisite:**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to enable students acquire competence in celestial navigation, assess the accuracy and reliability of position fixing by celestial means, and integration of celestial navigation into voyage monitoring and redundancy in accordance with STCW Code, Section A - II/2, Table A - II/2.		
General Objective 1.0: Understand the management level roles regarding celestial navigation.		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the management-level responsibilities for position fixing by celestial navigation method. 1.2 Explain the role of celestial navigation as a redundancy to electronic systems. 1.3 Evaluate when celestial navigation is operationally appropriate. 1.4 Relate celestial navigation oversight to SOLAS and company procedures.	• Facilitate a guided lecture and discussion on management-level responsibilities for position fixing. • Use operational case studies and failure scenarios (e.g. GPS outage, ECDIS malfunction) to explain celestial navigation as an essential redundancy to electronic navigation systems. • Lead scenario-based evaluations where different voyage	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.	• Carry out oversight requirements for celestial navigation. • Use celestial fixes in given scenarios.	• Scenario simulation studies. • Guide students to perform the practical's	Nautical almanacs, Company navigation manuals, etc.

	1.5 Demonstrate professional judgement to approve celestial fixes.	conditions are analyzed to determine when celestial navigation is operationally appropriate. • Review and interpret SOLAS Chapter V requirements and company SMS procedures, relating them to oversight and control of celestial navigation practices onboard. • Conduct structured bridge-management simulations or role-play discussions to illustrate professional judgement in requiring, approving, and recording celestial position fixes.				
General Objective 2.0: Understand the verification and analysis in celestial navigation						
5-8	2.1 Identify sources of error in celestial observations. 2.2 Appraise the accuracy of sextant observations and time inputs. 2.3 Verify celestial fixes using cross-bearings and comparisons. 2.4 Assess reliability of	• Review the use of sextant. • Illustrate common sources of error in celestial observations using worked examples, including instrumental, observational, environmental, and	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.	• Analyze celestial fixes for errors. • Identify probable error sources.	• Use examples to show errors in fixes and how to identify them.	Sight reduction tables, Error analysis charts, Sextant, Audio visual.

	results produced by junior officers. 2.5 Demonstrate sound judgement in accepting or rejecting fixes.	computational errors. • Guide learners through accuracy appraisal exercises using sample sextant readings, chronometer errors, and time signal data to evaluate observation reliability. • Demonstrate verification techniques by comparing celestial fixes with cross-bearings, dead reckoning positions, and alternative position-fixing methods. • Lead evaluation sessions on junior officer work outputs, reviewing plotted fixes and calculation sheets to assess consistency, accuracy, and procedural compliance. • Facilitate judgement-based decision scenarios where learners discuss whether to accept, question, or reject a celestial fix based on risk level and corroborating evidence.				

General Objective 3.0: Know the Role of Celestial Navigation in Voyage Monitoring						
9-12	3.1 Compare and evaluate different position-fixing methods. 3.2 Integrate celestial fixes with terrestrial and electronic positions. 3.3 Discuss voyage monitoring progress by using multiple navigation inputs. 3.4 Summarize inconsistencies among navigational systems.	• Compare types of fixes • Discuss advantages and disadvantages of each type of fix.	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.	• Determine the accuracy and suitability of the various position fixing methods.	• Use worked examples to demonstrate integration of fixes from various methods. • Identify the merits and demerits of each method.	• Charts, • Position plots, etc.
GENERAL OBJECTIVE 4.0: Understand Management Decisions, Oversight and Navigational Assurance						
13-15	4.1 Exercise command judgement in validating position fixes. 4.2 Establish procedures for verification of navigational data. 4.3 Discuss the essence of compliance with company and statutory navigation policies. 4.4 Support investigations of navigational discrepancies. 4.5 Discuss navigational responsibilities.	• Illustrate common sources of error in celestial observations using worked examples, including instrumental, observational, environmental, and computational errors. • Guide learners through accuracy appraisal exercises using sample sextant readings, chronometer errors, and time signal data to evaluate observation reliability. • Demonstrate verification techniques by comparing celestial	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.	• Justify acceptance or rejection of fixes. • Recommend corrective actions.	• Justify acceptance or rejection of fixes. • Recommend corrective actions.	Voyage records, SMS procedures, etc.

		fixes with cross-bearings, dead reckoning positions, and alternative position-fixing methods. • Lead evaluation sessions on junior officer work outputs, reviewing plotted fixes and calculation sheets to assess consistency, accuracy, and procedural compliance. • Facilitate judgement-based decision scenarios where learners discuss whether to accept, question, or reject a celestial fix based on risk level and corroborating evidence.				

Course Assessment:

Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: METEOROLOGY AND OCEANOGRAPHY I	**Course Code: NSC 314**	**Contact Hours: 3 Hours/Week**
	Credit Unit: 3	**Theoretical: 2 Hours/Week**
Year: I Semester: I	**Pre-requisite:**	**Practical: 1 Hour/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with competence in meteorology and oceanography, including interpretation of weather systems, oceanographic phenomena, and environmental data, enabling them to assess weather-related navigational risks and integrate environmental considerations into voyage planning, monitoring, and decision-making, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: On completion of this course the student should be able to: 1.0 Understand Atmospheric Structure and Weather Systems; 2.0 Understand Marine Weather Forecasting and Risk Assessment; 3.0 Know Oceanography and Sea State Influences on Navigation; 4.0 Know Environmental Decision-Making and Voyage Planning Integration.		
COMPETENCES: • Forecast weather and oceanographic conditions		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: METEOROLOGY AND OCEANOGRAPHY I	**Course Code: NSC 314**	**Contact Hours: 3 Hours/Week**
	Credit Unit: 3	**Theoretical: 2 Hours/Week**
Year: I Semester: I	**Pre-requisite:**	**Practical: 1 Hour/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with competence in meteorology and oceanography, including interpretation of weather systems, oceanographic phenomena, and environmental data, enabling them to assess weather-related navigational risks and integrate environmental considerations into voyage planning, monitoring, and decision-making, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
General Objective 1.0: Understand Atmospheric Structure and Weather Systems		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the structure and composition of the atmosphere. 1.2 Analyse large-scale atmospheric pressure systems and wind patterns. 1.3 Explain formation and movement of fronts and depressions. 1.4 Relate weather systems to navigational risk. 1.5 Demonstrate professional judgement in interpreting	• Introduce the composition of the earth's atmosphere, mentioning Dry air and its constituents, water vapour, Ozone and aerosol. • Discuss the importance of the sun as the principle energy source for atmospheric processes. • Describe the nature of solar	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.	• Run simulation exercise on atmospheric systems and weather systems to take decisions to avoid risk. • Interpret pressure systems from charts. • Predict general weather trends. • Draw a typical vertical temp profile through the lower 100 km of the earth's atmosphere. • Draw different pressure systems e.g. low or cyclone, High or Anticyclone, Col, ridges of high pressure and Trough of Low pressure.	• Chart interpretation exercises • Simulation exercises, Bridge simulation resources	Synoptic charts, Meteorological texts, Tide tables, Admiralty charts, Bridge simulation resources, etc.

	synoptic charts.	radiation (Scattering, reflection and absorption). • Explain the effect on insulations of a variation in latitude and in the length of Day light • Define Water Vapour. • Define evaporation, condensation and latent heat of vaporization. • Describe the processes of mixing cooling and the evaporation of water vapour by which. • Define Isobar, Isallobars, Pressure-Gradient and Pressure Tendency. • Explain the cause of atmospheric pressure and why it decreases with height.		• Use Buys – Ballot law to determine the pattern of synoptic chart. • Use Meteorological symbols and codes to interpret synoptic weather. • Draw a diagram of a polar front depression for both northern and southern hemisphere.		

		• Explain the use of Beaufort scale. • Describe the stages in the life cycle of a polar front depression and describe the usual movement of a polar front depression. • Describe a family of depression. • Describe the process that leads to the occlusion of a polar front depression. • Explain how weather system constitutes navigational risk.				
General Objective 2.0: Understand Marine Weather Forecasting and Risk Assessment						
5-8	2.1 Describe how to interpret marine weather forecasts and warnings. 2.2 Assess weather-related risks to navigation and cargo operation. 2.3 Evaluate forecast reliability and limitations. 2.4 Integrate forecast data into voyage	• Apply previous concepts to the interpretation of symbols and isobaric patterns on weather charts and facsimile chart. • Apply previous concepts to the interpretation of symbols weather and prognostic chart to ascertain	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.			

	planning decisions. 2.5 Demonstrate sound judgement in weather-related routing.	and directions, areas of strong wind, cloud and precipitation area, fog, area, the area of fire weather. • Explain how weather observations on a ship can be used to improve the forecast derived from synoptic and prognostic charts.				
General Objective 3.0: Know Oceanography and Sea State Influences on Navigation.						
9-11	3.1 Explain ocean currents, tides, and sea-state characteristics. 3.2 Assess the effect of currents and swell on ship motion. 3.3 Integrate oceanographic data into route selection. 3.4 Explain interaction between weather and sea state. 3.5 Discuss environmental protection considerations.	• Explain how the current strength affects motion. • Explain importance of tidal stream in ship navigation. • Explain the use of tidal atlases, tide table, Admiralty charts, ECDIS in tidal information. • Explain the effect of current in narrow channel on ship- Handling. • Explain how the following oceanographic data can be use in ship	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.			

		routing: current, sea state, sea temperature, tide and tidal stream, salinity and density. • Explain the sources of oceanographic data, • Use Beaufort table to estimate sea state.				
GENERAL OBJECTIVE 4.0: Know Environmental Decision-Making and Voyage Planning Integration.						
12-15	4.1 Discuss integration of meteorological and oceanographic data into voyage planning. 4.2 Evaluate alternative routes based on environmental conditions. 4.3 Discuss the implementation weather-related contingency plans. 4.4 Monitor environmental conditions during voyage execution. 4.2 4.5 Explain	• Scenario-based lectures. • Review sessions	Laptop Computers, Smart Board, Projector, Writing Materials, White Board, Markers, Multi-Media Resources etc.	• Run simulation exercise on route and speed adjustments. • Use software packages to analyse meteorological and oceanographic data to plan voyage.	• Scenario simulations. • Practical assessment.	Voyage plans examples, simulator, practical manual, etc.

	management-level environmental decision-making.					

Course Assessment:
Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: SEAMANSHIP AND SHIP OPERATIONS	**COURSE CODE: NSC 315**	**Contact Hours: 4 Hours/Week**
Year: I Semester: I	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**

GOAL: To develop the competence to manage seamanship operations by supervising anchoring and deck activities, coordinating ship–shore interfaces, and enforcing safe working practices in shipboard operations and compliance, in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:
1.0: Understand Seamanship Operations Management;
2.0 Understand Anchoring Operations and Equipment Supervision;
3.0 Comprehend Ship Operations Interface and Supervision of Deck Personnel;
4.0 Know Compliance and Safe Working Practices in seamanship operation.

COMPETENCES:

- Maintain safety of navigation and ship operations

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: SEAMANSHIP AND SHIP OPERATIONS	**Course Code: NSC 315**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: I	**Pre-requisite:**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with competence to manage seamanship operations by supervising anchoring and deck activities, coordinating ship–shore interfaces, and enforcing safe working practices in shipboard operations and compliance, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
General Objective 1.0: Understand Seamanship Operations Management		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the responsibilities in seamanship operations. 1.2 Describe planning and controlling of mooring and unmooring operations. 1.3 Describe risks associated with deck operations. 1.4 Explain safe working arrangements on deck. 1.5 Demonstrate professional judgement in seamanship decision-making.	• Begin with a discussion on the scope of seamanship operations with regards to anchoring, mooring, towing, cargo handling, heavy weather operations, emergency procedures. • Highlight the management dimension in planning, risk assessment, resource allocation, professional judgement, safe working arrangements, and compliance with international regulations in ship operation.	Sample of mooring plans and Safety manuals, Extract of company SMS, Projector, Writing Materials, White board, Markers, Multi-media resources etc.	• Prepare seamanship operation plans. • Identify hazards and control measures in seamanship operation.	• Planning exercises. • Discuss guiding question: "What makes seamanship at management level different from operational-level seamanship?" • Demonstrate how management-level officers use checklists, passage plans, and safety management systems to control operations.	Sample of mooring plans and Safety manuals, Extract of company SMS, Checklists, Projector, etc.

		• Discuss crew resource management and delegation during ship operation.				
General Objective 2.0: Understand Anchoring Operations and Equipment Supervision						
5-8	2.1 Describe anchoring operations under varying conditions. 2.2 Describe anchoring and heaving-up procedures. 2.3 Identify holding ground and environmental factors. 2.4 Explain how to monitor anchor equipment and deck machinery use. 2.5 Identify anchoring-related hazards and control measures.	• Begin with a discussion on the importance of anchoring in ship handling (safety, stability, emergency situations). • Explain the principles of anchoring operations with regards to; Types of anchors and their uses, how factors such as depth, seabed type, weather, traffic influence anchoring, and Standard procedures for anchoring and weighing anchor. • Clarify equipment supervision including; Windlass operation and maintenance, Anchor chain markings and scope of chain and Crew roles and communication during anchoring. • Highlight safety precautions (crew positioning, PPE,	Anchoring diagrams Sample of Equipment manuals Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc.	• Design anchoring plans. • Run scenario-based simulation exercise to identify risks and corrective actions.	• Scenario-based exercises to show students anchoring equipment (windlass, chain locker, anchors) via diagram or video. • Demonstrate how to prepare the anchor for letting go, how to monitor chain length and tension, and how to supervise crew during anchoring operations.	Anchoring diagrams, Sample of Equipment manuals, Smart board, Projector, Writing Materials, White board, Markers, Audiovisual etc.

		communication signals) during anchoring.				
General Objective 3.0: Comprehend Ship Operations Interface and Supervision of Deck Personnel						
9-12	3.1 Explain the interface between seamanship and cargo operations. 3.2 Describe deck operations during port and sea activities. 3.3 Discuss the allocation of duties and management of workload for deck personnel. 3.4 Discuss leadership and communication skills on deck. 3.5 Discuss human-element factors in the interface and supervision of deck personnel.	• Begin with a discussion on the ship operations interface: how navigation, engineering, cargo, and deck operations interconnect. • Explain the ship operations interface with regards to; Coordination between bridge, engine room, and deck; Integration of safety management systems (ISM Code); and Communication protocols during operations (anchoring, mooring, cargo handling). • Explain the supervision of deck personnel, including roles and responsibilities of Officers and Ratings; including Crew Resource Management (CRM) and leadership principles and safety precautions and use of PPE.	Projector, Writing Materials, White board, Markers, Multi-media resources etc.	• Organize deck teams effectively. • Demonstrate supervisory decision-making.	• Give examples of deck operations (anchoring, mooring, cargo handling) and highlight supervisory roles. • Demonstrate effective communication signals and reporting lines during operations. • Present examples of checklists and standard operating procedures used in deck supervision.	Operational procedures, Supervision guidelines, PPEs, Practical manual, simulators, etc.

		• Use diagrams to illustrate the flow of communication and responsibilities.				
GENERAL OBJECTIVE 4.0: Know Compliance and Safe Working Practices in seamanship operation.						
13-15	4.1 Explain compliance with operational procedures and safety standards. 4.2 Describe the enforcement of safe working practices during deck operations. 4.3 Discuss risk assessments for seamanship activities. 4.4 Describe how to monitor operations and implement corrective actions. 4.5 Discuss ship operation responsibilities.	• Begin with a discussion on why safe working practices are essential for crew welfare and ship safety. • Explain the principles of safe working practices with regards to; Personal protective equipment (PPE), Safe use of tools and machinery, and Hazard awareness and reporting, and risk assessment. • Clarify compliance requirements with international conventions (SOLAS, MARPOL, ISM Code); Company safety management systems and Port and flag state regulations. • Define operational assurance such as Procedures to ensure operations are carried out safely and efficiently; Continuous	Projector, Writing Materials, White board, Markers, Multi-media resources, Risk assessment templates, Sample of Company SMS Code of safe working practice for merchant seamen, etc.			

		monitoring, audits, and checklists, and Role of supervisors in enforcing compliance.				

Course Assessment:

Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: MARITIME ENGLISH AND COMMUNICATION III	**COURSE CODE: NSC 316**	**Contact Hours: 2 Hours/Week**
Year: I Semester: I	**Credit Unit: 2**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 0**
GOAL: This course is designed to equip students with Maritime English competence for precise communication, correct use of IMO Standard Marine Communication Phrases, accurate maritime reporting, and effective bridge resource management within multicultural teams, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Understand the importance of proficiency in Maritime English; 2.0 Understand correct application of IMO Standard Marine Communication Phrases; 3.0 Understand maritime reporting systems and documentations; 4.0 Know communication skills for bridge resource management and multicultural teamwork.		
COMPETENCES: • Use the IMO Standard Marine Communication Phrases. • Use English in written and oral form.		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: MARITIME ENGLISH AND COMMUNICATION III	**Course Code: NSC 316**	**Contact Hours: 2 Hours/Week**
	Credit Unit: 2	**Theoretical: 2 Hours/Week**
Year: I Semester: I	**Pre-requisite:**	**Practical: 0**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with Maritime English competence for precise communication, correct use of IMO Standard Marine Communication Phrases, accurate maritime reporting, and effective bridge resource management within multicultural teams.		
General Objective 1.0: Understand the importance of Proficiency in Maritime English		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain maritime vocabulary and expressions used in navigation, cargo, safety operations, etc. 1.2 Interpret spoken Maritime English used in bridge communication, Very High Frequency (VHF) radio, and ship-shore exchanges. 1.3 Demonstrate correct understanding of shipboard instructions and commands. 1.4 Interpret	• Explain maritime vocabulary and expressions relevant to navigation, cargo handling, and safety operations. • Demonstrate the use of spoken Maritime English through simulated bridge, VHF, and ship–shore communications. • Present and explain shipboard instructions and commands using standard Maritime English. • Guide students in reading and	Ship manuals, VHF radios, Maritime English textbooks, Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc			

	information contained in maritime manuals, notices, and technical documents.	interpreting maritime manuals, notices, and technical documents. • Conduct listening exercises to improve comprehension of Maritime English in operational contexts. • Facilitate group discussions and role-plays to reinforce correct use of Maritime English in shipboard scenarios.				
General Objective 2.0: Understand the correct application of IMO Standard Maritime Communication Phrases (SMCP)						
5-8	2.1 Explain IMO Standard Maritime Communication Phrases (SMCP). 2.2 Explain IMO Standard Maritime Communication Phrases (SMCP) used in routine and emergency shipboard operations. 2.3 Apply Standard Maritime Communication Phrases (SMCP) accurately in bridge, engine-room, and ship–shore communications.	• Explain the structure and use of IMO SMCP in routine and emergency operations. • Demonstrate correct pronunciation and phrasing in bridge, engine-room, and ship shore communication drills. • Supervise students during SMCP simulations and provide corrective feedback. • Present distress, urgency, and safety scenarios and guide students in responding correctly.	Ship manuals, VHF radios, Maritime English textbooks, Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc.			

	2.4 Demonstrate correct use of SMCP in distress, urgency, and safety situations. 2.5 Respond appropriately to messages delivered using SMCP in simulated or real maritime scenarios. 2.6 Prepare written and oral communications using SMCP in compliance with international maritime standards.	• Assign exercises in preparing written and oral communications using SMCP templates.				
General Objective 3.0: Understand maritime reporting systems and documentations						
9-12	3.1 Identify the types of maritime reports and documents. 3.2 Explain types of maritime reports and documents used in shipboard operations. 3.3 Interpret instructions for preparing logbooks, incident reports, and official correspondence in accordance with maritime standards.	• Explain different types of maritime reports and documentation and their purposes. • Demonstrate correct procedures for preparing logbooks, incident reports, and official correspondence. • Present templates and formats used in maritime documentation according to international standards.	Ship manuals, VHF radios, Maritime English textbooks, Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc.			

	3.4 Apply correct formats and conventions when preparing maritime documentation. 3.5 Demonstrate accurate recording and reporting of shipboard events, operations, and incidents. 3.6 Evaluate the completeness and correctness of maritime reports and documents against international requirements.	• Supervise students while preparing reports and log entries and provide corrective feedback. • Facilitate exercises in evaluating the completeness and correctness of reports against standard requirements. • Conduct group discussions and practical demonstrations on reporting best practices in shipboard operations.				
GENERAL OBJECTIVE 4.0: Know communication skills for bridge resource management and multicultural teamwork						
13-15	4.1 Explain the principles of Bridge Resource Management (BRM) and its importance in safe navigation. 4.2 Interpret the roles and responsibilities of team members in bridge operation. 4.3 Explain effective interpersonal and intercultural communication strategies in a	• Explain the principles and objectives of BRM to students using examples. • Present the roles and responsibilities of bridge team members in routine and emergency situations. • Facilitate discussions on effective interpersonal and intercultural communication strategies. • Provide case studies	Video recordings, VHF radios, Bridge Resource Management (BRM) manuals and textbooks, Laptop computers, smart board, Projector, Writing Materials, White board,			

	multicultural crew. 4.4 Evaluate communication procedures used in bridge team operations.	and scenarios for students to evaluate communication effectiveness. • Conduct question-and-answer sessions to reinforce understanding of theory concepts.	Markers, Multi-media resources etc.			
Course Assessment: Course work: 20% Test/Assignments: 20% Examination: 60% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: HUMAN RESOURCE MANAGEMENT AND SHIPBOARD ORGANISATION	**COURSE CODE: NSC 317**	**Contact Hours: 2 Hours/Week**
Year: I Semester: I	**Credit Unit: 2**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 0**
GOAL: This course is designed to equip students with knowledge and skills to apply human resource management principles applicable to shipboard organization, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: On completion of this course, students should be able to: 1.0 Understand Shipboard Organization and Management Responsibilities; 2.0 Understand Leadership, Motivation and Personnel Management; 3.0 Understand Discipline, Conflict Resolution and Professional Conduct; 4.0 Understand Human Resource Management and Safety Culture Integrations.		
COMPETENCES: • Use leadership and managerial skills		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: HUMAN RESOURCE MANAGEMENT AND SHIPBOARD ORGANISATION			Course Code: NSC 317		Contact Hours: 2 Hours/Week	
			Credit Unit: 2		Theoretical: 2 Hours/Week	
Year: I Semester: I			Pre-requisite:		Practical: 0	
COURSE SPECIFICATION: Theoretical						
General Objective 1.0: Understand Shipboard Organization and Management Responsibilities						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1–4	1.1 Explain shipboard organizational structures and authority lines. 1.2 Describe the responsibilities of the Master and Chief Mate in shipboard human resource management. 1.3 Discuss the process of allocating duties and responsibilities effectively. 1.4 Explain the relationship between organization and ship safety. 1.5 Demonstrate professional judgement in organizational decision-making.	• Describe shipboard organizational structures and authority lines. • Discuss the responsibilities of the Master and Chief Mate in shipboard human resource management. • Identify management duties and responsibilities effectively. • Evaluate the relationship between organization and ship safety. • Illustrate professional judgement in organizational decision-making.	Smart board, White board, Laptop, Desktop computer, Multi-media resources, Online resources, tutorial videos, writing materials, etc.			
General Objectives 2.0: Understand Leadership, Motivation and Personnel Management						

5- 8	2.1 Discuss leadership styles appropriate to shipboard operations. 2.2 Motivate personnel to maintain performance and morale. 2.3 Supervise Officers and Ratings effectively. 2.4 Recognize human-element factors affecting behaviour. 2.5 Explain the role of leadership to provide safety culture.	• Describe the leadership styles appropriate to shipboard operations. • Outline ways of motivating personnel to maintain performance and morale. • Describe ways to Supervise officers and ratings effectively. • Identify human-element factors affecting behaviour. • Examine leadership consistent with safety culture.	Smart board, White board, Laptop, Desktop computer, writing material, online resources, etc.			
General Objective 3.0: Understand Discipline, Conflict Resolution and Professional Conduct						
9-12	3.1 Explain the application of disciplinary procedures and professionally. 3.2 Discuss the sources of conflict on board ships. 3.3 Apply conflict-resolution techniques effectively. 3.4 Maintain professionalism and impartiality in personnel matters. 3.5 Demonstrate sound judgement in managing interpersonal issues.	• Identify disciplinary procedures fairly and professionally. • Discuss sources of conflict on board ships. • Discuss conflict-resolution techniques effectively. • Establish and Maintain professionalism and impartiality in personnel matters. • Share real-life examples of managing disagreements to express sound judgement in managing	Smart board, White board, Laptop, Desktop computer.			

		interpersonal issues.				
General Objective 4.0: Understand Human Resource (HR) Management and Safety Culture Integration						
13-15	4.1 Explain the functions of HR management in ship safety and operational control. 4.2 Discuss various company safety management policies such as: i. Drug and Alcohol; ii. Sexual harassment; iii. Sexual assault; iv. Bullying and violence; v. Work-rest hour; vi. Fatigue and stress management; vii. Energy Efficiency, etc. 4.3 Discuss leadership in the implementation of company safety management system. 4.4 Monitor personnel performance and behaviour. 4.5 State corrective actions to promote safety culture where necessary. 4.6 Outline management-level personnel responsibility.	• Explain the role of HR management in ship safety and operational control. • Discuss various company safety management policies such as; i. Drug and Alcohol ii. Sexual harassment iii. Sexual assault iv. Bullying and violence v. Work-rest hour vi. Fatigue and stress management vii. Energy Efficiency, etc. • Evaluate and Monitor personnel performance and behaviour. • Implement corrective actions where necessary. • Illustrate readiness for management-level personnel responsibility.	Smart board, White board, Laptop, Desktop computer, writing materials, online resources, Multi-media resources, projector, etc.			

Course Assessment:

Course work:	20%
Test/Assignments:	20%
Examination:	60%
Total:	**100%**

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: GENERAL MARINE ENGINEERING KNOWLEDGE	**COURSE CODE: NSC 318**	**Contact Hours: 3 Hours/Week**
Year: I Semester: I	**Credit Unit: 3**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 1 Hour/Week**

GOAL: This course is designed to impart students 'with knowledge of marine engineering systems, enabling them to interpret propulsion and auxiliary machinery operations, communicate effectively with the engine department, and support safe and efficient operations, in accordance with the STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

On the successful completion of this course, the student should be able to:

1.0 Understand marine propulsion systems
2.0 Understand auxiliary machinery and ship support systems
3.0 Understand Engine-room operations and departmental interdependency
4.0 Understand Bridge - Engine room cooperation and command decision support.

COMPETENCES:

- Apply general knowledge of marine engineering to support safe and efficient operations.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: GENERAL MARINE ENGINEERING KNOWLEDGE			Course Code: NSC 318		Contact Hours: 3 Hours/Week	
			Credit Unit: 3		Theoretical: 2 Hours/Week	
Year: I Semester: I			Pre-requisite:		Practical: 1 Hour/Week	
COURSE SPECIFICATION: Theoretical and Practical						
General Objective 1.0: Understand marine propulsion systems						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1 - 4	1.1 Explain the purpose and components of ship propulsion systems. 1.2 Distinguish between major types of marine propulsion arrangements. 1.3 Describe propulsion power transmission from engine to propeller. 1.4 Interpret propulsion performance limitations. 1.5 Discuss propulsion system risks. 1.6 Discuss auxiliary machinery that support propulsion	• Discuss auxiliary machinery that support propulsion. • Use diagrams to support lectures to make it less abstract.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources, Machinery diagrams, Ship system schematics			
General Objectives 2.0: Understand auxiliary machinery and ship support systems						

5-8	2.1 Explain the functions of major auxiliary machinery systems. 2.2 Describe fuel, lubrication, cooling and pumping systems. 2.3 Identify auxiliary machinery critical to navigation and safety. 2.4 Assess operational limitations affecting bridge decisions. 2.5 Discuss the understanding of machinery dependency.	• Use lectures and case studies to explain relevant topics. • Discuss auxiliary machinery critical to navigation and safety such as: - Power generators - Pumping systems - Steering Gear - Firefighting arrangements, etc. • Ask students to use multi-media resources to find out more about the topics discussed. • Give specific assignment to students involving use of multi-media resources.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Identify auxiliary systems and their functions. • Run simulation exercise to relate machinery condition to navigational planning. • Carryout machinery dependency.	• Identify auxiliary machinery critical to navigation and safety.	Auxiliary system layouts, simulators, practical manual, students' logbook, etc.
General Objective 3.0: Understand Engine-room operations and departmental Interdependency						
9-12	3.1 Explain engine-room organization and operational routines. 3.2 Discuss engineering terminology used in bridge - engine communication. 3.3 Explain common machinery alarms and operational implications. 3.4 Support engineering decision-making during manoeuvring	• Lecture. • Interactive discussions. • Interpret engineering terminology used in bridge - engine communication. • Identify communication gaps and solutions	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyse bridge - engine scenarios. • Identify machinery alarms and interpret them.	• Guide students during identification and communication exercises.	Engine room procedures

	and emergencies. 3.5 Explain effective departmental Interdependency.					
General Objective 4.0: Understand Bridge - Engine room cooperation and command decision support						
13-15	4.1 Discuss the integration of engineering knowledge into navigational decision-making. 4.2 Demonstrate bridge - engine cooperation during critical operations. 4.3 Evaluate engineering limitations affecting voyage execution. 4.4 Apply engineering awareness to emergency and contingency planning. 4.5 Demonstrate command-level accountability for inter-departmental coordination.	• Use lecture to explain 4.1-4.5. • Revision sessions. • Demonstrate bridge - engine cooperation during critical operations.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	Use simulators to: - Justify command decisions considering engineering constraints. - Recommend operational adjustments.	• Case study analysis	Incident reports, Company procedures, practical manual, etc.

Course Assessment:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	**100%**

YEAR I SEMESTER II

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: TERRESTRIAL AND COASTAL NAVIGATION I	**COURSE CODE: NSC 321**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: II	**Pre-requisite:**	**Practical: 2 Hours/Week**
GOAL: This course is designed to equip students with knowledge and skills to manage and supervise terrestrial and coastal navigation, verify position fixing, assess navigational risks, and ensure safe navigation in coastal and confined waters. in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Know Coastal Navigation Principles; 2.0 Understand Position Fix Verification and Deviation Monitoring; 3.0 Know Navigational Risk Assessment in Coastal and Confined Waters; 4.0 Understand Corrective Actions, Management Oversight and Navigational efficiency.		
COMPETENCES: • Determine position and the accuracy of the resultant position fix by all means appropriate		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: TERRESTRIAL AND COASTAL NAVIGATION I	Course Code: NSC 321	Contact Hours: 4 Hours/Week
	Credit Unit: 4	Theoretical: 2 Hours/Week
Year: I Semester: II	Pre-requisite:	Practical: 2 Hours/Week
COURSE SPECIFICATION: Theoretical and Practical		
General Objective 1.0: Know Coastal Navigation Principles		

THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain crew responsibilities related to coastal navigation. 1.2 Evaluate terrestrial navigation techniques used by Officers of the Watch. 1.3 Explain the importance of redundancy in position fixing for safe navigation. 1.4 Describe risks associated with navigation in confined waters. 1.5 Discuss professional judgement in navigation oversight.	• Present Crew roles and responsibilities associated with coastal navigation. • Provide examples of terrestrial navigation techniques used on board ships. • Illustrate the use of multiple position-fixing methods during navigation. • Present scenarios involving navigation in confined waters for analysis. • Organize case studies or simulations requiring navigation oversight decisions. • Conduct review questions and guided exercises to reinforce learning outcomes.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyze navigation practices. • Identify potential weaknesses.	• Scenario discussions	Coastal charts, Navigation manuals.

General Objective 2.0: Understand Position Fix Verification and Deviation Monitoring						
5-8	2.1 Explain methods used to verify terrestrial position fixes using more than one technique. 2.2 Evaluate the accuracy of bearings, distances, transits, and other terrestrial observations. 2.3 Describe how deviations from an approved passage plan may be detected during navigation. 2.4 Discuss the significance of discrepancies observed in navigational position fixing. 2.5 Demonstrate sound professional judgement in accepting or rejecting terrestrial position fixes.	• Present various terrestrial position-fixing methods used in coastal and confined waters. • Provide worked examples involving bearings, distances, and transits for accuracy assessment. • Introduce passage plans and illustrate situations where deviations may occur. • Use case scenarios involving conflicting or doubtful fixes for student analysis. • Organize exercises or simulations requiring judgement in the acceptance or rejection of position fixes. • Conduct review questions and guided practice to reinforce learning.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Conduct position verification exercises. • Identify deviations.	• Advanced chartwork exercises	Chartwork tools, Passage plans.
General Objective 3.0: Know Navigational Risk Assessment in Coastal and Confined Waters						
9-12	3.1 Describe hazards associated with navigation in coastal	• Introduce standard navigational risk assessment procedures	Laptop computers, smart board,	• Complete coastal risk assessments. • Propose mitigation	• Risk assessment exercises	Risk assessment templates, Accident reports.

	and confined waters. 3.2 Explain the process of conducting navigational risk assessments. 3.3 Evaluate traffic density, environmental factors, and human-element risks affecting navigation. 3.4 Discuss appropriate risk control measures and contingency arrangements for safe navigation. 3.5 Discuss situational awareness in navigational decision-making.	and frameworks. • Provide scenarios involving traffic congestion, environmental conditions, and human-factor challenges. • Illustrate risk control measures and contingency planning practices used onboard ships. • Organize case studies or simulated navigation situations requiring situational awareness and decision-making. • Conduct review questions and guided exercises to reinforce learning outcomes.	Projector, Writing Materials, White board, Markers, Multi-media resources etc	measures.		
GENERAL OBJECTIVE 4.0: Understand Corrective Actions, Management Oversight and Navigational efficiency						
13-15	4.1 Explain appropriate corrective actions to be taken in response to navigational deviations. 4.2 Describe procedures for supervising navigation adjustments in a safe and effective manner. 4.3 Explain the	• Illustrate safe supervision practices during navigation adjustments. • Provide examples of passage plans and applicable navigational regulations. • Introduce post-voyage review practices using voyage records and reports.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Justify corrective actions. • Recommend improvements.	• Scenario simulations	Voyage monitoring records, SMS procedures.

	importance of compliance with approved passage plans and relevant navigational regulations. 4.4 Discuss the purpose and process of conducting post-voyage navigation reviews.	• Evaluate readiness to assume responsibilities in navigation. • Organize case studies or simulated exercises requiring management-level navigation decisions. • Conduct review questions and guided exercises to reinforce learning outcomes.				
Course Assessment: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: COMPASS WORK AND COMPASS ERROR MANAGEMENT	**COURSE CODE: NSC 322**	**Contact Hours: 4 Hours/Week**
Year: I Semester: II	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**

GOAL: This course is designed to equip students with abilities to manage compass systems, determine and correct magnetic and gyro errors, and ensure reliable navigation, in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:

1.0 Know Compass Systems, Principles and Error Sources;
2.0 Know Compass Error Determination and Verification Methods;
3.0 Know Monitoring Procedures and Operational Control;
4.0 Understand Corrective Actions, Redundancy and Navigational Efficiency.

COMPETENCES:

- Determine and manage compass errors for reliable navigation

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: COMPASS WORK AND COMPASS ERROR MANAGEMENT	**COURSE CODE: NSC 322**	**CONTACT HOURS: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: II	**Pre-requisite:**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
General Objective 1.0: Know Compass Systems, Principles and Error Sources		

THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the operating principles of magnetic and gyro compasses. 1.2 Describe sources of compass error relevant to navigation oversight. 1.3 Distinguish between deviation, variation, and gyro error in navigational practice. 1.4 Evaluate the operational implications of compass errors on safe navigation. 1.5 Demonstrate professional judgement in the oversight and management of compass systems.	• Present the construction and working principles of magnetic and gyro compasses. • Provide examples of common compass errors encountered during ship operations. • Illustrate differences between deviation, variation, and gyro error using diagrams or tables. • Present navigational scenarios showing the effects of compass errors on ship handling and safety. • Organize case studies or simulated exercises requiring management-level judgement in compass system oversight.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Identify compass systems and components. • Test compass to identify errors.	• Demonstration sessions	Compass diagram, Navigation manuals, etc.

		• Conduct review questions and guided exercises to reinforce learning outcomes.				
General Objective 2.0: Know Compass Error Determination and Verification Methods						
5-8	2.1 Explain methods used to obtain magnetic compass error using bearings and azimuths. 2.2 Explain methods of obtaining gyro compass error using terrestrial and celestial references. 2.3 Describe procedures for verifying compass accuracy using multiple independent methods. 2.4 Assess the reliability of compass observations made by Officers of the Watch. 2.5 Demonstrate sound professional judgement in accepting or rejecting compass error results.	• Present standard methods for compass error determination using bearings, azimuths, and reference objects. • Provide worked examples involving terrestrial and celestial references for gyro error assessment. • Illustrate the use of more than one method to verify compass accuracy. • Present observation records from officers of the watch for evaluation. • Organize exercises or scenarios requiring judgement in the acceptance or rejection of compass error results. • Conduct review questions and guided practice to reinforce learning outcomes.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Perform compass error calculations. • Compare results from different methods.	• • Calculation exercises	Azimuth tables, Nautical almanacs, practical manual, etc.
General Objective 3.0: Know Monitoring Procedures and Operational Control						
9-12	3.1 Explain procedures for routine monitoring of compass errors. 3.2 Describe how compass	• Present standard procedures for routine compass error monitoring. • Provide examples of	Laptop computers, smart board, Projector,	• Analyse compass error records. • Identify discrepancies and	• Monitoring exercises • Simulate compass	Compass error logs, Bridge procedures, Practical manual,

	error records and logs are interpreted and maintained. 3.3 Discuss indicators of abnormal compass behaviour or compass drift. 3.4 Explain how compass checks are integrated into routine bridge operations. 3.5 Explain the relationship between compass deviation card and daily compass error calculation 3.6 Discuss situational awareness in compass system oversight.	compass error records, logs and correction sheets. • Introduce typical signs of abnormal compass behaviour or drift. • Illustrate how compass checks form part of normal bridge routines. • Organize case studies or simulated bridge scenarios requiring situational awareness. • Explain the relationship between compass deviation card and daily compass error calculation with regulatory requirements. • Conduct review questions and guided exercises to reinforce learning outcomes.	Writing Materials, White board, Markers, Multi-media resources etc	trends. • Simulate compass swinging.	swinging.	etc .
GENERAL OBJECTIVE 4.0: Understand Corrective Actions, Redundancy and Navigational Efficiency						
13-15	4.1 Explain corrective actions required when compass errors are detected. 4.2 Describe the correct application of compass corrections during navigation. 4.3 Discuss the importance of maintaining redundancy between compass systems and other navigational	• Present common compass errors and appropriate corrective measures. • Provide examples showing correct application of compass corrections on charts and instruments. • Illustrate the use of multiple navigational inputs alongside compass systems. • Organize scenarios involving supervision of	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Carry out scenario simulation exercise to: Justify corrective actions. • Recommend procedural improvements.	• Scenario simulations.	Navigation procedures, SMS documentation.

	inputs. 4.4 Explain supervisory responsibilities in ensuring corrective measures are properly carried out by bridge personnel.	bridge personnel during corrective actions. • Conduct case studies or simulated exercises requiring command-level navigation judgement. • Evaluate readiness to assume command-level responsibilities in navigation. • Conduct review questions and guided exercises to reinforce learning outcomes.				

Course Assessment:

Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: COLLISION REGULATIONS APPLICATION	**COURSE CODE: NSC 323**	**Contact Hours: 4 Hours/Week**
Year: I Semester: II	**Credit Units: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**
GOAL: This course is designed to enable students apply the International Regulations for Preventing Collisions at Sea (COLREGs), including supervision of watchkeeping officers, and collision-risk assessment, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Understand the Interpretation of COLREGs; 2.0 Explain Collision Risk Assessment and Supervisory Oversight; 3.0 Understand Application of COLREGs in Complex and Restricted Conditions; 4.0 Understand Command Decision-Making and Navigational Efficiency.		
COMPETENCES: • Maintain safety of navigation through correct application of COLREGs		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: COLLISION REGULATION APPLICATION	**Course Code: NSC 323**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: II	**Pre-requisite: -**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GENERAL OBJECTIVE 1.0: Understand the Interpretation of COLREGs		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the intent of COLREG at management level. 1.2 Describe steering and sailing rules in complex situations. 1.3 Distinguish between give-way and stand-on obligations under varying conditions. 1.4 Explain common misinterpretations leading to collisions. 1.5 Demonstrate professional judgement in rule interpretation.	• Begin by clearly distinguishing operational-level compliance from management-level interpretation. Students are guided to understand that at management level, COLREGs are applied through risk assessment, intent, and accountability, not reflex action. • Lead a structured interpretation of Rule 2 (Responsibility), emphasizing ordinary practice of seamen, good seamanship, and legal accountability. • Introduce ambiguity and grey areas in	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyse COLREG scenarios. • Identify correct rule application.	• Conduct complex multi-vessel scenarios where several COLREG rules apply simultaneously , forcing students to prioritize and justify actions. • Deliberately introduce borderline situations: late detection, conflicting radar/visual information, restricted visibility transitions, and	Full-mission or desktop bridge simulators, Radar/ARPA simulation tools, Multi-ship encounter scenario libraries COLREG decision-justification checklists, Bridge team role-play scripts (master, OOW, pilot), Table-top COLREG encounter models, Whiteboard-based rule-interaction drills, Video-based pause-and-decide

		COLREGs, such as crossing versus overtaking at close quarters, application of Rule 19 in mixed visibility, and situations where strict rule compliance increases risk. • Challenge students' assumptions by presenting scenarios where correct rule identification still leads to a wrong decision if applied rigidly			non-compliant vessels. • Observe how students assert command, override incorrect advice, and maintain situational control while interpreting rules.	exercises
GENERAL OBJECTIVE 2.0: Explain Collision Risk Assessment and Supervisory Oversight						
5-8	2.1 Evaluate risk of collision using visual and instrument information. 2.2 Supervise Officers of the Watch in collision-avoidance decision-making. 2.3 Assess compliance of watchkeeping actions with COLREGs. 2.4 Identify developing risk situations early. 2.5 Demonstrate sound supervisory judgement.	• Begins by reframing collision risk as a dynamic process, not a single observation. • Students are guided to understand that risk assessment starts long before CPA becomes small. • Explain the elements of collision risk assessment: detection, tracking, relative motion, CPA/TCPA interpretation, visual corroboration, and continuous monitoring. Each element is tied to	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	Perform multi-target simulation scenario to: - Evaluate collision-risk scenarios. - Recommend supervisory interventions.	• Conduct multi-target simulator scenarios, requiring students to prioritize threats and justify which contacts require immediate action. • Verbalize risk assessment, stating bearing trends, CPA/TCPA	Full-mission or desktop bridge simulators, Radar and ARPA simulation tools, Multi-target collision scenario libraries, CPA/TCPA plotting sheets and checklists, Bridge team role-play scripts for supervision, Manual radar plotting exercises, Table-top relative

		COLREG Rules 5, 6, 7, and 8. • Challenge common misconceptions, especially blind reliance on ARPA data, late manoeuvring, and false confidence in "stand-on" status. • Supervisory oversight is introduced as a command responsibility, not micromanagement. • Explain when and how masters or Senior Officers should intervene, cross-check, or take over.			values, visual cues, and confidence level of the data. • Deliberately introduce data inconsistencies (radar clutter, target swap, AIS errors) to test students' ability to question information.	motion models, Video-based collision scenario analysis, etc.
GENERAL OBJECTIVE 3.0: Understand Application of COLREGs in Complex and Restricted Conditions						
9-12	3.1 Discuss COLREGs application in restricted visibility and high-traffic density. 3.2 Evaluate interaction between COLREGs and traffic separation schemes. 3.3 Integrate Radar information into rule-based decisions. 3.4 Assess limitations of equipment and human performance.	• Begin by defining what makes conditions complex and restricted: high traffic density, confined waters, restricted visibility, mixed vessel types, pilotage areas, environmental constraints, and non-compliant traffic. • Evaluate management-level situational awareness challenges rigid thinking by	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Carry out simulation scenarios to : - Analyse complex collision-avoidance situations. - Justify rule-based actions.	• Runs multi-vessel simulator scenarios in confined waters, traffic separation schemes, restricted visibility, or pilotage zones. • Introduce non-standard behavior by other vessels	Full-mission or desktop bridge simulators, Radar/ARPA and AIS simulation tools, Complex encounter scenario libraries, Bridge team role-play scripts, COLREG application checklists, Table-top COLREG

		presenting scenarios where strict literal compliance increases risk, reinforcing the primacy of Rule 2 and good seamanship. • Complexity is increased deliberately: multiple targets, different vessel priorities, VTS influence, and restricted maneuvering space. Students are required to articulate decision hierarchy which risk dominates and why.			late alterations, incorrect signals, or AIS inconsistencies to force adaptation. • Supervisory oversight is practiced. Senior students or instructors intervene as master or pilot, assessing whether the OOW escalates appropriately.	encounter models, Whiteboard-based multi-rule drills, Video-based pause-and-decide exercises, etc.
GENERAL OBJECTIVE 4.0: Understand Command Decision-Making and Navigational Efficiency						
13-15	4.1 Explain command-level collision-avoidance decisions consistent with COLREGs. 4.2 State actions to be taken by Watchkeeping Officers. 4.3 Explain the implementation of corrective instructions where necessary.	• Define command decision-making as a continuous process: situation awareness, risk evaluation, option selection, execution, and review. • Review collision incidents for learning and prevention. • Navigational assurance is introduced as the systematic confirmation that the ship remains safe, on the intended track, and	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Justify command decisions. • Recommend procedural improvements.	• Conduct bridge simulation exercises where students act as master or supervising officers, overseeing navigation rather than conning continuously. • Deliberately introduce subtle degradations:	Table-top bridge management exercises, Whiteboard-based assurance drills, Video-based scenario analysis with decision pauses, Full-mission or desktop bridge simulators Radar/ARPA and ECDIS simulation tools, Passage plans and

		within agreed margins. Lecturers challenge the assumption that "no alarm means no problem.". • Explain the relationship between plan, execution, and monitoring, emphasizing passage planning, contingency planning, and dynamic risk assessment. • Analyze common decision failures: delayed action, over-trust in electronics, reluctance to challenge subordinates, and normalization of deviance. • Accident case studies are examined to show how ships were lost not through lack of knowledge, but through unverified assumptions and absent assurance.			inaccurate fixes, over-reliance on GPS, incomplete passage plans, or ambiguous radar data. • Escalation and intervention are assessed. • Lecturers observe whether students challenge unsafe trends early and take command decisively.	monitoring checklists, Bridge team role-play scripts (master, OOW, pilot)

Course Assessment:
Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CARGO HANDLING AND STOWAGE MANAGEMENT I	**COURSE CODE: NSC 324**	**Contact Hours: 4 Hours/Week**
Year: I Semester: II	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical:2 Hours/Week**
GOAL: This course is designed to ensure competence in cargo handling and stowage, including cargo planning, risk assessment, supervision of cargo operations in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Understand Cargo Characteristics and Management Responsibility; 2.0 Understand Cargo Stowage Planning and Risk Assessment; 3.0 Comprehend Supervision of Cargo Handling and Securing Operations; 4.0 Understand Compliance, Monitoring and Cargo Safety.		
COMPETENCES: • Plan and ensure safe loading, stowage, securing, and care during the voyage and unloading of cargoes.		

PROGRAMME: HIGHER DIPLOMA IN NAUTICAL SCIENCE						
Course Title: CARGO HANDLING AND STOWAGE MANAGEMENT I			**Course Code: NSC 324**		**Contact Hours: 4 Hours/Week**	
			Credit Unit: 4		**Theoretical: 2 Hours/Week**	
Year: I Semester: II			**Pre-requisite: -**		**Practical: 2 Hours/Week**	
COURSE SPECIFICATION: Theoretical and Practical						
General Objective 1.0: Understand cargo characteristics and Management Responsibility						
THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain management-level responsibilities in cargo handling and stowage. 1.2 Describe characteristics of major cargo types and their implications for stowage. 1.3 Identify cargo-related hazards affecting ship safety and stability. 1.4 Explain regulatory and company requirements governing cargo operations. 1.5 Demonstrate professional judgement in cargo planning decisions.	• Define cargo characteristics broadly: physical (weight, density, angle of repose), chemical (flammability, toxicity, reactivity), and environmental sensitivity (temperature, moisture, contamination). • Explain management responsibility. This includes the legal and professional duties of the shipowner, Master, Officers, and terminal operators. • Describe cargo characteristics with ship safety, explaining how cargo affects: stability and trim, structural	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyse cargo characteristics. Identify potential risks.	• Explain cargo identification exercises, using samples, photographs, labels, or documents • Describe stowage and segregation planning exercises, where cargo characteristics dictate placement, separation, and securing methods. • Demonstrate cargo risk assessment drills. Given a	Cargo samples, labels, placards, or high-quality images, Cargo documentation templates (manifests, declarations, MSDS), Stowage and segregation charts Table-top ship models or cargo plan boards, Cargo securing manuals (CSM), Case-scenario cards for risk and responsibility exercises etc.

		stress, • fire and explosion risk, environmental protection. • Explain documentation and communication responsibilities			cargo scenario, identifying hazards, assigning responsibilities, and proposing control measures. • Monitor and report situations like temperature deviation in reefer cargo, water ingress in bulk cargo, leaking drums of dangerous goods.	
General Objective 2.0: Understand Cargo Stowage Planning and Risk Assessment						
5-8	2.1 Describe cargo stowage plans development. 2.2 Assess cargo distribution in relation to ship stability and strength. 2.3 Conduct cargo-related risk assessments. 2.4 Establish control measures for identified risks. 2.5 Demonstrate accuracy and completeness in cargo documentation.	• Explain cargo stowage planning as a systematic process that ensures safety, stability, structural integrity, regulatory compliance, and operational efficiency. • Introduce the principles of safe stowage compatibility, weight distribution, access, ventilation, protection from damage, and securing.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Prepare stowage plans. • Identify unsafe arrangements.	• Guide students through cargo plan preparation exercises, using ship profiles or mock loading plans. • Apply control measures re-stowage, segregation, securing methods,	Ship plans (general arrangement, hold plans, bay plans), Table-top ship and cargo models, Cargo plan templates and loading sequence charts, Risk assessment checklists and forms, Stability software or simplified calculation sheets,

		• Link each principle to specific risks it controls. • Explains risk assessment in cargo operations. This includes hazard identification, risk evaluation, control measures, and monitoring.			ventilation arrangements, or loading sequence changes and justify each decision. • Simulate operational changes, such as weather deterioration, cargo substitution, or port rotation changes.	Securing equipment diagrams and manuals.
General Objective 3.0: Comprehend Supervision of Cargo Handling and Securing Operations						
9-12	3.1 Describe the supervision process of cargo loading and unloading operations. 3.2 Explain correct cargo securing and lashing arrangements. 3.3 Monitor compliance with approved cargo plans. 3.4 Apply leadership and communication during cargo operations. 3.5 Discuss human-element factors in cargo handling and operations.	• Define supervision as active oversight planning, monitoring, intervening, and documenting rather than passive presence. • Explain roles and responsibilities during cargo handling: Shipowner, Master, Officers, Stevedores, Terminal Operators, and Surveyors, etc. • Introduce cargo handling hazards cargo shift, structural damage, personal injury, fire,	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Evaluate securing arrangements. Recommend corrective actions.	• Conduct mock cargo operations, assigning students supervisory roles while others act as stevedores or terminal staff. Supervisors must brief the team, identify hazards, and control the operation. • Introduce progressive	Cargo securing equipment (or training replicas): lashings, twist locks, chains, turnbuckles Lashing and securing plans Table-top ship and cargo models Inspection checklists and supervision logs PPE samples for

		contamination, and environmental pollution and links each hazard to a specific supervisory control. • Explain why lashing plans, securing devices, tensioning, and inspection routines exist, tying them to dynamic forces at sea. • Discuss communication failures, authority gradient, complacency, time pressure, and cultural barriers, showing how poor supervision allows hazards to mature.			complications, weather changes, time pressure, equipment failure, or cargo substitution • communication drills: stop unsafe operations, and document actions taken. • Simulate handover and reporting, requiring supervisors to complete checklists, log entries, and incident reports.	safety briefing drills Scenario cards for supervisory decision exercises
GENERAL OBJECTIVE 4.0: Understand Compliance, Monitoring and Cargo Safety.						
12-15	4.1 Explain cargo-handling procedures, regulations and compliance. 4.2 Monitor cargo conditions during the voyage. 4.3 Identify deviations from cargo plans and assess consequences. 4.4 Discuss the	• Discuss compliance as continuous adherence to international, national, and company requirements not one-time approval. • Explains the regulatory framework governing cargo safety, including SOLAS, MARPOL,	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	Carry out cargo handling scenarios to: - Justify management decisions. - Recommend improvements to cargo procedures.	• Mock compliance inspections, where students review cargo documents, plans, and securing arrangements to identify non-	Cargo documentation templates (manifests, declarations, checklists) Inspection and monitoring checklists,

	implementation of corrective actions where required.	IMSBC Code, IMDG Code, Cargo Securing Manual, and flag-state requirements. The emphasis is on *why* these instruments exist and what risks they control. • Explain how compliance links to monitoring. • Introduce cargo safety assurance systems, explaining inspections, checklists, condition monitoring, reporting, corrective action, and feedback loops. • Use case-based analysis of cargo-related accidents and port state control detentions to identify breakdowns in compliance and monitoring rather than technical ignorance.			compliance or unsafe conditions. • Safety assurance reporting: Students complete inspection records, non-conformance reports, and corrective action logs, reinforcing traceability and accountability. • Introduces progressive risk scenarios, where small deviations escalate if not detected early	Cargo securing equipment or realistic replicas, Table-top ship and cargo models, Condition monitoring records (temperature logs, inspection sheets) Scenario, cards for non-compliance detection, etc.
Course Assessment: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: SHIP STABILITY AND CONSTRUCTION III	**COURSE CODE: NSC 325**	**Contact Hours: 4 Hours/Week**
Year: I Semester: II	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**

Goal: This course is designed to enhance students' understanding of ship stability and construction in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

On the completion of this course, the student should be able to:

1.0 Understand Ship Construction and Structure;
2.0 Understand Stability, Trim and Management Control;
3.0 Understand Longitudinal Stress and Structural Load Management;
4.0 Understand Damage Assessment, Corrective Action and Seaworthiness Assurance.

COMPETENCES:

- Control trim, stability and stress.
- Assess reported defects, damage and take necessary action.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: SHIP STABILITY AND CONSTRUCTION III			Course Code: NSC 325		Contact Hours: 4 Hours/Week	
			Credit Unit: 4		Theoretical: 2 Hours/Week	
Year: I Semester: II			Pre-requisite:		Practical: 2 Hours/Week	
COURSE SPECIFICATION: Theoretical and Practical						
GENERAL OBJECTIVE 1.0: Understand Ship Construction and Structure.						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1 – 4	1.1 Explain ship structural arrangements and strength members at management level. 1.2 Relate ship construction features to seaworthiness and safety. 1.3 Assess the impact of cargo distribution on hull structure. 1.4 Identify common structural defects and their implications. 1.5 Illustrate professional judgement in assessing ship structural integrity.	• Lectures. • Guided discussions.	Laptop computers, smart board, Projector, Writing Materials, White board,	• Run simulation exercises to: - Identify critical structural members. Assess potential structural risks.	• Plan interpretation exercises.	Stability booklets, practical manual, simulators, students logbooks, etc.

GENERAL OBJECTIVE 2.0: Understand Stability, Trim and Management Control						
5-8	2.1 Explain stability conditions using stability data. 2.2 Assess the effects of loading, ballast, and fuel consumption on trim and stability. 2.3 Explain the decisions to correct unsafe conditions. 2.4 Supervise cargo and ballast operations affecting stability. 2.5 Demonstrate sound judgement in maintaining compliance with stability criteria.	• Lectures. • Worked examples. • Evaluate stability conditions using stability data.	Laptop computers, smart board, Projector, Writing Materials, White board, etc.	• Perform stability and trim calculations. • Recommend corrective actions.	• Stability calculation exercises	Stability booklets, Loading manuals, etc.
GENERAL OBJECTIVE 3.0: Understand Longitudinal Stress and Structural Load Management						
9-11	3.1 Explain longitudinal stress, bending moments, and shear forces. 3.2 Evaluate stress conditions during cargo operations and at sea. 3.3 Assess the impact of loading sequences on hull stress. 3.4 Supervise operations to prevent excessive structural loads. 3.5 Explain structural	• Lectures. • Case studies.	Laptop computers, smart board, Projector, Writing Materials, White board,	• Interpret stress data. Identify unsafe loading conditions.	• Stress assessment exercises.	Stress curves, Loading calculators.

	limits.					
GENERAL OBJECTIVE 4.0: Understand Damage Assessment, Corrective Action and Seaworthiness						
12-15	4.1 Assess reported defects and damage to cargo spaces, hatch covers, and ballast tanks. 4.2 Distinguish between intact stability and damage stability 4.3 Discuss the effect of damage on stability and stress. 4.4 Decide on appropriate corrective or contingency actions. 4.5 Explain remedial measures and operational restrictions. 4.6 Discuss master-level responsibility for seaworthiness.	• Scenario-based lectures. • Review sessions. • Explain the effect of damage stability on ship's seaworthiness.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Intact and damage stability booklets	Run simulation exercises to: - Analyse damage and defects. - Determine the effect of damage on stability and stress.	• Guide students to carry out scenario simulations.	Damage reports, Emergency procedures.
Course Assessment: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: EMERGENCY PROCEDURE AND DAMAGE CONTROL	**COURSE CODE: NSC 326**	**Contact Hours: 4Hrs/Week**
Year: I Semester: II	**Credit Unit: 4**	**Theoretical: 2 Hrs/Week**
	Pre-requisite:	**Practical: 2 Hrs/Week**
GOAL: This course is designed to equip students with competence to respond effectively to shipboard emergencies, limit damage, protect life, preserve stability, maintain seaworthiness, comply with procedures, and ensure vessel survival under adverse conditions and coordinated emergency response in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Understand Development of Emergency and Damage-Control Plans; 2.0 Comprehend Crisis Management and Command Responsibility; 3.0 Understand Emergency Response Execution and Team Coordination; 4.0 Understand External Coordination, Review and Command Accountability.		
COMPETENCES: • Develop emergency and damage control plans and handle emergency situations. • Organize and manage emergency response. • Respond to navigational emergencies.		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
Course Title: EMERGENCY PROCEDURE AND DAMAGE CONTROL	**Course Code: NSC 326**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: II	**Pre-requisite: -**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
General Objective 1.0: Understand Development of Emergency and Damage-Control Plans		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Discuss the development of ship-specific emergency and damage-control plans. 1.2 Discuss roles and responsibilities during emergencies. 1.3 Explain the integration of emergency plans into the ship's SMS. 1.4 Demonstrate structured emergency planning competence.	• Students are guided through regulatory foundations SOLAS, MARPOL, STCW, ISM Code, class requirements, and company SMS emphasizing that plans are mandatory, auditable, and legally binding. • Explains the structure of emergency plans, including alarm systems, command hierarchy, emergency teams, communication flow, and escalation procedures. • Damage-control planning is taught by linking ship construction and	SOLAS (emergency preparedness and damage control provisions) STCW Code (emergency planning and leadership competence) MARPOL (environmental protection) ISM Code and company SMS manuals Ship construction and stability texts Class society emergency planning	• Draft emergency response plans. • Identify damage-control priorities. • Prepare contingency plans for response to emergencies.	• Guide students to develop sample emergency and damage-control plans for different ship types using real vessel layouts • Run drill-design exercises, requiring students to plan realistic drills that test communication, team coordination, and response time.	Ship general arrangement plans and damage control plans, Stability data and compartment flooding diagrams, Emergency scenario templates and drill design guides able-top simulation kits and whiteboard layouts, Bridge and emergency team role-play scripts

		stability knowledge to practical response: watertight integrity, flooding control, fire boundaries, and progressive damage.	guidelines Maritime casualty investigation reports			
General Objective 2.0: Comprehend Crisis Management and Command Responsibility						
5-8	2.1 Explain the Master's legal and operational responsibility during emergencies. 2.2 Explain the application of crisis-management principles to shipboard incidents. 2.3 Prioritise safety of life, property and environment. 2.4 Assess emergency situations rapidly and accurately. 2.5 Demonstrate leadership and composure under pressure.	• Begin by defining a crisis as an abnormal situation threatening life, ship, cargo, or environment, requiring immediate command-level decisions beyond routine procedures. • Introduce crisis management principles: prioritization of life, ship, environment; decision-making under uncertainty; delegation; and communication discipline. • Explains the command structure in crisis, including bridge–engine coordination, emergency teams, shore management interface, and external agencies.	STCW Code (leadership, emergency and crisis management competence), SOLAS (emergency preparedness and response), Company Safety Management System (SMS) manuals, Human factors and maritime leadership texts Maritime casualty investigation reports etc.	• Analyse emergency scenarios. • Identify command responsibilities through simulation studies.	• Conduct full-mission crisis simulations (collision, fire, flooding, grounding, blackout), assigning students command and team-lead roles. • Deliberately inject conflicting information and escalating consequences to test adaptability and command presence.	Full-mission bridge and engine-room simulators, Emergency and crisis management scenario libraries, Bridge and emergency team role-play scripts, Crisis communication and decision-making checklists, Audio/video recording for debrief analysis etc.
General Objective 3.0: Understand Emergency Response Execution and Team Coordination						
9-12	3.1 Lead coordinated shipboard emergency responses.	• Begins by clarifying the difference between emergency planning	SOLAS (emergency response and	• Execute response strategies in simulations.	• Conduct full scale emergency	Bridge and engine-room simulators, Emergency

	3.2 Direct damage-control teams effectively. 3.3 Communicate clearly during emergency operations. 3.4 Monitor effectiveness of emergency response. 3.5 Demonstrate command authority and teamwork balance.	and emergency execution. Students are guided to understand that execution requires leadership, communication discipline, and adaptability. • Explain the structure of emergency teams: command team, fire party, damage-control party, medical response, and support roles. Emphasis is placed on clarity of roles and authority. • Integrates human factors under stress, explaining startle effect, panic, fixation, and how teamwork mitigates individual performance degradation	drills), STCW Code (emergency leadership and teamwork competence), ISM Code and company SMS manuals, Human factors and team performance literature, Maritime emergency response case studies, etc.	• Adjust actions based on evolving conditions	simulations or drills, assigning students to command and response team roles. • Deliberately introduce complications equipment failure, personnel injury, conflicting reports—to test coordination and adaptability.	response and crisis management scenario libraries Ship emergency plans and muster lists, Communication devices (simulated VHF/intercom), Team coordination and performance evaluation checklists, etc.
GENERAL OBJECTIVE 4.0: Understand External Coordination, Review and Command Accountability						
13-15	4.1 Discuss emergency Coordinating response with external authorities i.e. Search and Rescue (SAR), port, company. 4.2 Maintain effective communication with stakeholders.	• Explain external coordination as a command responsibility, not a delegation. Students are guided to understand when and how to engage MRCC, VTS, port authorities, flag	SOLAS (distress communication and coordination) STCW Code (command responsibility and leadership	Carryout simulation scenarios to: - Justify command decisions. - Recommend improvements to emergency plans	• Conduct simulated incidents requiring students to coordinate with MRCC, VTS, pilots, port	Bridge simulators with communication modules, VHF/GMDSS communication simulators, Incident reporting templates and

	4.3 Review the outcome of emergency response. 4.4 Identify lessons learned and corrective actions.	state, class, company DPA, and emergency services. • Evaluate readiness for master-level emergency accountability. • Explain communication protocols for distress, urgency, and safety messages, emphasizing clarity, accuracy, and timeliness. • Analyze case studies to show how poor external coordination or evasive reporting worsened outcomes and accountability consequences.	competence), ISM Code (incident reporting and review requirements) NIMASA, flag state, and port authority guidelines, Maritime law and casualty investigation references, Accident investigation reports		authorities, and company management. • Require students to prepare incident reports and debriefs, emphasizing factual accuracy and command decisions.	checklists, Role-play scripts for external authorities and company DPA, Mock investigation and review frameworks
Course Assessment: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CELESTIAL NAVIGATION IV	**COURSE CODE: NSC 327**	**Contact Hours: 4 Hours/Week**
Year: I Semester: II	**Credit Units: 2**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**
GOAL: This course is designed to provide students with competence in celestial navigation, including validation, verification, and oversight of celestial position fixes, enabling them to assess accuracy, maintain redundancy within integrated navigation systems, and implement corrective actions when discrepancies are detected, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: On the completion of this course the student should be able to: 1.0 Understand the role of celestial navigation at management level; 2.0 Understand validation, verification and error analysis of celestial fixes; 3.0 Know the application of integrating celestial navigation with other position - fixing methods; 4.0 Understand corrective actions and navigational assurance.		
COMPETENCES: • Determine position and the accuracy of resultant position fix by any means		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CELESTIAL NAVIGATION IV	**Course Code: NSC 327**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: I Semester: II	**Pre-requisite:**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to provide students with competence in celestial navigation, including validation, verification, and oversight of celestial position fixes, enabling them to assess accuracy, maintain redundancy within integrated navigation systems, and implement corrective actions when discrepancies are detected, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVE 1.0: Understand the role of celestial navigation at management level.		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1 - 4	1.1 Explain the role of celestial navigation within an integrated navigation system. 1.2 Justify the continued relevance of celestial navigation at management level. 1.3 Explain redundancy principles in position fixing. 1.4 Evaluate when celestial navigation should be required or emphasized. 1.5 Demonstrate professional judgement in navigational	• Pinpoint the role of celestial navigation within an integrated system. • Emphasize the relevance of celestial navigation at management level • Discuss when celestial navigation should be used in position fixing.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Demonstrate professional judgement in navigational oversight.	• Give examples of professional judgment in navigational oversight.	Nautical almanacs, Integrated Navigation Manuals, etc.

	oversight.					
GENERAL OBJECTIVE 2.0: Understand validation, verification and error analysis of celestial fixes						
5-8	2.1 Evaluate celestial sights taken by Officers of the Watch. 2.2 Explain sources of error in celestial observations. 2.3 Verify celestial fixes using independent methods. 2.4 Assess reliability of computed positions. 2.5 Demonstrate sound judgement in accepting or rejecting fixes.	• Appraise celestial sights taken by officers of the watch. • Compare and contrast the sources of error in celestial navigation position fixing.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyze celestial calculations. • Identify error trends. • Verify celestial fixes using independent method	• Use examples to demonstrate sound judgement in accepting or rejecting fixes.	Sight Reduction Tables, Error Analysis Charts
GENERAL OBJECTIVE 3.0: Know the application of integrating celestial navigation with other position - fixing methods						
9-12	3.1 Explain the integration of celestial fixes with terrestrial and electronic positions. 3.2 Compare consistency between different position - fixing methods. 3.3 Detect discrepancies and indicate navigational risk. 3.4 Assess overall navigational accuracy.	• Class discussion. Comparative analysis of error sources. • Evaluate management - level situational awareness.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Use different types of position fixing methods. • Identify discrepancies and inconsistencies.	• Use worked examples to support class discussions.	Practical manuals, students' logbook, etc.

GENERAL OBJECTIVE 4.0: Understand corrective actions and navigational assurance						
13-15	4.1 Decide when corrective navigational action is required. 4.2 Explain the implementation of corrective measures. 4.3 Establish procedures for ongoing verification of navigation accuracy. 4.4 Review navigation performance for continuous improvement.	• Class discussion. • Comparative analysis of error sources. • Evaluate readiness for master - level navigational responsibility.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Implement corrective actions. • Recommend improvements.	• Guide class discussions.	Navigation procedures, SMS documentation.
Course Assessment: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% **Total: 100%**						

YEAR II SEMESTER I

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: VOYAGE PLANNING	**Course code: NSC 411**	**Contact Hours: 4 Hours/Week**
Year: II Semester: I	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**

GOAL: This course is designed to enable students achieve competence in voyage planning and navigation in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the completion of this course, the student should be able to:

1.0 Understand voyage planning and Navigation;
2.0 Understand the use of publications for voyage planning;
3.0 Understand how to plan a passage;
4.0 Understand how to write voyage report;
5.0 Understand the keeping of Logs;
6.0 Understand passage planning for all conditions;
7.0 Understand routeing in accordance with the general principles on ship routeing.

Competence:

- Plan a voyage and conduct navigation.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: VOYAGE PLANNING			**Course code: NSC 411**		**Contact Hours: 4 Hours/Week**	
Year: II Semester: I			**Credit Unit: 4**		**Theoretical: 2 Hours/Week**	
			Pre-requisite:		**Practical: 2**	
GOAL: This course is designed to enable students achieve competence in voyage planning and navigation in accordance with STCW Code, Section A-II/2, Table A-II/2.						
COURSE SPECIFICATION: Theoretical and Practical						
GENERAL OBJECTIVE 1.0: Know comprehensive voyage plans						
THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-2	1.1 Explain the need for reviewing last voyage plan. 1.2 State the importance of voyage meetings. 1.3 State the need to develop repairs and Supply List for the voyage. 1.4 Explain the need to assemble all information e.g. Next port, next cargo, agent contact telephone, etc.	• Explain the need to review last voyage report. • State the need to assemble all relevant information.	Recommended textbooks, whiteboard/smart board, computer, lecture notes and cards, etc.			
GENERAL OBJECTIVE 2.0: Understand the use of publications in voyage planning						
3-5	2.1 List all the Nautical Publications necessary for planning the voyage. 2.2 Explain how to extract	• Explain how to extract information from the publication. • Explain how the information is used.	Recommended textbooks, whiteboard/smart board, computer,	• Extract information from Nautical publications.	• Guide students on how to extract information from Nautical publications.	Computer, lecture notes and cards. Radar simulator etc.

	information from the publications. 2.3 Explain how the information is used to plan a voyage.		lecture notes and cards, Radar simulator, etc.			
GENERAL OBJECTIVE 3.0: Understand how to plan a passage						
6-7	3.1 Describe that a voyage in terms of initial port departure, ocean passage and final port approach. 3.2 Explain chart selection process. 3.3 Explain that courses must be laid in advance. 3.4 Explain the use of routeing charts/Navtex for weather information. 3.5 Explain how to track cyclone or tropical revolving storm. 3.2 3.7 Explain basic application of ocean current to planned courses.	• Discuss each leg of the plan in detail.	Routeing charts, Nautical Publications, Navigational charts, Ocean passages of the world, Distance table, Chart catalogue.			
GENERAL OBJECTIVE 4.0: Understand how to write voyage report						
8-9	4.1 Explain the role of voyage reports 4.2 Explain what constitutes voyage reports 4.3 List items required in writing voyage reports.	• Choose a case study and write a voyage report. • Itemize what constitutes a voyage report.	Recommended textbooks, whiteboard/smart board, computer, lecture notes	• Write a voyage report.	• Choose a case study and write a voyage report.	Recommended textbooks, whiteboard/smart board, computer, lecture notesetc.

GENERAL OBJECTIVE 5.0: Understand the keeping of Logs						
10	5.1 Explain the term Log 5.2 Explain the various logbooks required in the deck department. 5.3 Discuss the proper method of making entries. 5.4 Explain how to keep a proper log in accordance with Maritime Shipping Acts (MSA) and other laws and regulations.	• Identify the various Logbooks required in the deck department. • Show the proper way of making Logbook entries.	Recommended textbooks, whiteboard/smart board, computer, lecture note,. Extracts of various Logbooks etc.			
GENERAL OBJECTIVE 6.0: Understand passage planning for all conditions						
11-12	6.1 Describe planning of navigation in restricted water by day, using terrestrial observations such as bearings of lighthouses, beacons and buoys in conjunction with appropriate charts, sailing directions and other publications. 6.2 Describe planning of navigation in restricted waters by night, using the same navigation means as the above objective but with special emphasis on the characteristics, colours and sectors of	• Describe in detail the planning of passage in various conditions • Discuss Planning navigation in ice.	Recommended textbooks, whiteboard/smart board, computer, lecture notes and cards. ECDIS Simulator, Paper charts, Audio visual, etc.	• Plan navigation in restricted waters by night, using the same navigation means as the above objective but with special emphasis on the characteristics, colours and sectors of lights. • Plan navigation in ice.	• Plan of navigation in restricted waters by night, using the same navigation means as the above objective but with special emphasis on the characteristics, colours and sectors of lights. • Plan navigation in ice.	ECDIS Simulator Paper charts, Audio visual etc.

	lights. 6.3 Explain planning of navigation in restricted visibility, with special emphasis on navigation in coastal waters and in areas of heavy traffic, including the use of radar, with its limitations. 6.4 Explain planning of navigation in traffic separation schemes in accordance with routing instructions. 6.5 Determine the change of date on crossing the International Date Line.					
GENERAL OBJECTIVE 7.0: Understand routeing in accordance with the general principles on ship routeing						
13-15	7.1 Explain the use of ocean passages for the world. 7.2 Explain the use of publications such as sailing directions, Notices to Mariners etc. to determine areas of ice and iceberg. 7.3 Discuss the use of Sailing direction and other information sources to determine areas in which	• Explain in detail the use of various publications listed in 7.1 to 7.5 to plan passage. • Give assignment to students on passage planning.	Recommended textbooks, whiteboard/ smart board, computer, lecture notes and cards. Multifunctional classroom simulator, etc	• Practice voyage planning using Sailing directions, • Notices to Mariners and other Nautical Publications. • Select routes based on distance, wind, sea states, current, ice, poor visibility, load lines, crew agreements, etc.	• Demonstrate how to plan a passage using Sailing directions, • Notices to Mariners and other Nautical Publications.	Charts Sailing directions, Notices to Mariners and other Nautical Publications, etc.

	visibility is likely to be reduced. 7.4 Explain choice or selection of a route taking into account distance, wind, sea states, current, ice, poor visibility, the nature of the cargo, load lines, crew agreements, voyage contracts, etc. 7.5 Explain the principle of weather routeing.					

Course Assessment:

Course work:	20%
Test/Assignments:	20%
Examination:	60%
Total:	**100%**

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: NAVIGATIONAL AIDS AND INSTRUMENTS III	**Course Code: NSC 412**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: II Semester: I	**Pre-requisite:**	**Practical: 2 Hours/Week**

GOAL: This course is designed to equip students with competence in the management and supervision on all navigational aids on the bridge, enabling them to setup systems correctly, ensure procedural compliance, evaluate navigational information critically, and make sound collision-avoidance and navigational decisions in all conditions, in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:

1.0 Understand Command Responsibility for Radar, Automatic Radar Plotting Aid (ARPA) and Electronic Chart Display and Information System (ECDIS);
2.0 Understand Radar and ARPA setup, Supervision and Collision Avoidance;
3.0 Understand ECDIS Management, Safety Settings and Audit Trails;
4.0 Know Integrated Decision-Making and Compliance of Navigation system.

COMPETENCES:

- Use Radar, ARPA and ECDIS

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: NAVIGATIONAL AIDS AND INSTRUMENTS III	**Course Code: NSC 412**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: II Semester: I	**Pre-requisite:**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with competence in the management and supervision on all navigational aids on the bridge, enabling them to setup systems correctly, ensure procedural compliance, evaluate navigational information critically, and make sound collision-avoidance and navigational decisions in all conditions, in accordance with STCW Code, Section A-II/2, Table A-II/2		
General Objectives 1.0: Understand Command Responsibility for Radar, Automatic Radar Plotting Aid (ARPA) and Electronic Chart Display and Information System (ECDIS);		

THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the command responsibilities for all navigational aids. 1.2 Interpret IMO and company requirements governing electronic navigation systems. 1.3 Evaluate the role of Navigational aids in collision avoidance. 1.4 Assess risks associated with improper system use or over-reliance. 1.5 Demonstrate	• Explain command responsibilities in the operation of all Navigational aids. • Explain regulatory and companies requirements governing electronics navigation system. • Explain the role of Navigational aids in prevention collision at sea. • Identify the limitations of over-reliance on Navigational aids.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Run simulation exercises to: - Use navigational aids. - Identify right or over-reliance on electronic navigation systems.	• Scenario discussions. • Demonstrate the use of Radar, ARPA and ECDIS. • Divide the students into groups to demonstrate the use of the NAVAIDS.	Simulator bridge resources, IMO extracts, Company bridge procedure

	professional judgement in supervising the use of electronic navigation aids.					
General Objective 2.0: Understand Radar and ARPA setup, Supervision and Collision Avoidance;						
5-8	2.1 Explain correct radar and ARPA settings for various navigational conditions. 2.2 Evaluate radar information for target detection and tracking. 2.3 Assess ARPA outputs for collision risk analysis. 2.4 Identify limitations and errors associated with radar and ARPA. 2.5 Discuss collision-avoidance decisions consistent with COLREGs.	• Lectures. • Worked examples.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Perform simulation scenarios to: - Review radar and ARPA configurations. - Analyse collision situations.	• Demonstrate Simulator-based collision scenarios.	Radar/ ARPA manuals, Collision scenarios Simulator bridge resources.
General Objective 3.0: Understand ECDIS Management, Safety Settings and Audit Trails						
9-12	3.1 Explain ECDIS route planning and monitoring. 3.2 Outline the procedures to update Electronic	• Lectures. • Case studies. • Review audit and playback data.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-	• Check ECDIS updates and settings. • Undertake ECDIS route planning and	• Practical ECDIS management exercises	ECDIS operational guides, Company procedure.

	Navigational Charts (ENC) data and system software. 3.3 Verify ECDIS safety settings and alarms. 3.4 Review ECDIS playback and audit trails for compliance. 3.5 Demonstrate sound judgement in relying or questioning ECDIS information.		media resources etc	monitoring • Perform updating of ECDIS data and system software.		
GENERAL OBJECTIVE 4.0: Know Integrated Decision-Making and Compliance of Navigation system						
13-15	4.1 Discuss the integration of Radar, ARPA, and ECDIS information for command decisions. 4.2 Explain the need for compliance with company's ECDIS and radar procedures. 4.3 Distinguish the discrepancies between electronic and visual navigation	• Scenario-based lectures. Review sessions. • Evaluate readiness for master-level navigational responsibility.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Use simulators to integrate Radar, ARPA and ECDIS information for command decision. • Carry out hands on exercises to identify discrepancies between electronics and visual navigation system.	• Simulator-based command scenarios	Bridge procedure, Accident reports.

	inputs. 4.4 Decide on corrective actions where electronic information is unreliable.					

Course Assessment:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	**100%**

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CARGO HANDLING AND STOWAGE II	**COURSE CODE: NSC 413**	**Contact Hours: 4 Hours/Week**
Year: II Semester: I	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**
GOAL: This course is designed to equip students with competence required in cargo handling, stowage, and monitoring to ensure safety of ship, crew, cargo, and marine environment in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVES: At the end of this course, the student should be able to: 1.0 Carry out the planning and stowage of cargo; 2.0 Understand safe carriage of specialized cargoes and dangerous goods; 3.0 Perform Maintenance of vessel stability and seaworthiness; 4.0 Promote compliance with international maritime regulations.		
COMPETENCES: • Plan and ensure safe loading, stowage, securing and care of cargo during the voyage and unloading. • Safe carriage of dangerous goods		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: CARGO HANDLING AND STOWAGE II	**Course Code: NSC 413**	**Contact Hours: 4 Hours/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: II Semester: I	**Pre-requisite:**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with competence required in cargo handling, stowage, and monitoring to ensure safety of ship, crew, cargo, and marine environment in accordance with STCW Code, Section A-II/2, Table A-II/2.		
General Objective 1.0: Carry out the planning and stowage of cargo		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain comprehensive cargo plans for different ship types, taking into account cargo characteristics, voyage requirements, and port rotation. 1.2 Discuss principles of ship stability, trim, and stress to ensure safe loading, stowage, and discharge of cargo. 1.3 Discuss the selection of appropriate stowage methods and cargo securing arrangements in accordance with the Cargo Securing Manual and relevant codes.	• Deliver structured lectures and guided discussions on cargo planning principles, stowage factors, stability, trim, and stress. • Demonstrate cargo planning techniques using ship plans, loading manuals, stability booklets, and sample cargo plans for different ship types. • Conduct problem-solving sessions and worked examples on cargo distribution, draft calculations, and stress limitations. • Facilitate case studies	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Prepare a detailed cargo plan using ship's plan, loading manuals, and cargo information for a given voyage. • Carry out stability, trim, and stress calculations before and after cargo operations to ensure the vessel remains within safe limits. • Perform correct stowage of different cargo types in simulated holds or onboard training facilities, considering	• Explain practical objectives and safety precautions before commencement of cargo planning and stowage exercises. • Demonstrate preparation of cargo plans using ship's plans, stability booklets, loading manuals, and cargo data. • Guide	Cargo handling equipment and simulators SOLAS, MARPOL, and IMO regulatory manuals Ship logbooks, inspection checklists, and reporting templates Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc

	1.4 Describe the compatibility and segregation requirements of cargoes, including dangerous goods, to prevent contamination and hazards. 1.5 Calculate cargo distribution and load limits to avoid structural damage and comply with load line and draft restrictions. 1.6 Discuss interpretation and application of international regulations and codes relating to cargo handling and stowage, such as SOLAS, IMDG, IMSBC, and CSS Codes. 1.7 Discuss monitoring and adjustment of cargo conditions during the voyage, including ventilation, temperature control, and shifting prevention measures.	and incident analysis of cargo failure, shifting, or improper stowage to highlight best practices and regulatory compliance. • Supervise practical exercises and simulations involving preparation of cargo plans, stowage diagrams, and use of stability software or loading instruments.		stowage factors and cargo compatibility. • Apply appropriate cargo securing methods using lashings, dunnage, and securing equipment in accordance with the Cargo Securing Manual. • Use loading instruments or stability software to verify cargo distribution, drafts, and structural limits. • Identify correct and improper stowage arrangements that could lead to cargo shift, damage, or stability problems. • Document cargo operations accurately by completing cargo plans, stowage diagrams, and relevant checklists.	students through stability, trim, and stress calculations using worked examples and loading instruments or software. • Supervise hands-on stowage and cargo securing exercises in simulated holds or onboard training platforms. • Demonstrate correct use of cargo securing equipment such as lashings, dunnage, chains, and turnbuckles. • Monitor and assess students' practical	

					performance, correcting errors in stowage, securing, and documentation. • Lead post-practical review and discussion sessions to evaluate outcomes, highlight common mistakes, and reinforce best practices.	
GENERAL OBJECTIVE 2.0: Understand safe carriage of specialized cargoes and dangerous goods						
5-8	2.1 Explain dangerous goods and specialised cargo. 2.2 Classify specialised and dangerous goods in accordance with the IMDG Code, IMSBC Code, IBC Code, and relevant international standards. 2.3 Identify correct segregation, stowage, and compatibility requirements for dangerous goods to	• Introduce students to the principle of buoyancy using demonstrations or models. • Explain how ships float and maintain equilibrium with practical examples. • Demonstrate basic stability concepts, including key terms, using diagrams or ship models. • Relate buoyancy and	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc.	• Demonstrate correct identification and labelling of dangerous goods using IMDG Code classes, placards, and marks. • Carry out proper segregation and stowage of dangerous cargoes onboard or in simulated cargo spaces in	• Monitor identification and labelling of dangerous goods using IMDG Code classes, placards, and marks. • Supervise proper segregation and stowage of dangerous cargoes	Cargo handling equipment and simulators SOLAS, MARPOL, and IMO regulatory manuals Ship logbooks, inspection checklists, and reporting templates Laptop computers, smart board, Projector, Writing

	prevent fire, explosion, pollution, and contamination. 2.4 Summarize planning and execution of safe loading and discharge operations for specialised cargoes such as bulk solids, tank cargoes, heavy lifts, reefers, and containers. 2.5 Discuss the implementation of appropriate cargo securing and monitoring measures for specialised cargoes to prevent shifting, leakage, or damage during the voyage. 2.6 Explain the interpretation of safety data sheets (SDS) and cargo documentation to determine hazards, handling precautions, and emergency response actions. 2.7 Discuss the application of emergency procedures and contingency measures in case of incidents involving dangerous or	stability to ship safety and seaworthiness through case studies or videos.		accordance with IMDG and IMSBC requirements. • Apply safe handling procedures during loading and discharge operations for specialised cargoes, including the use of appropriate personal protective equipment (PPE). • Demonstrate correct cargo securing techniques for specialised cargoes using lashings, dunnage, and securing equipment to prevent movement at sea. • Use cargo documentation and Safety Data Sheets (SDS) to identify hazards, handling precautions, and emergency response actions. • Simulate emergency	onboard or in simulated cargo spaces in accordance with IMDG and IMSBC requirements. • Carry out safe handling procedures during loading and discharge operations for specialised cargoes, including the use of appropriate personal protective equipment (PPE). • Demonstrate correct cargo securing techniques for specialised cargoes using lashings, dunnage, and securing equipment to prevent movement at	Materials, White board, Markers, Multi-media resources etc

	specialised cargoes, including fire, spillage, or gas release. 2.8 Ensure compliance with international conventions and shipboard manuals related to dangerous cargo carriage, including SOLAS, MARPOL, IMDG Code, and the Shipboard Emergency Plan.			response procedures for incidents involving dangerous cargoes such as spillage, fire, gas emission, or leakage. • Monitor cargo condition during carriage by checking ventilation, temperature, moisture and securing arrangements and taking corrective actions where necessary.	sea. • Carryout cargo documentation and Safety Data Sheets (SDS) to identify hazards, handling precautions, and emergency response actions. • Explain emergency response procedures for incidents involving dangerous cargoes such as spillage, fire, gas emission, or leakage. • Monitor cargo condition during carriage by checking ventilation, temperature, and securing	

					arrangements and taking corrective actions where necessary.	
GENERAL OBJECTIVE 3.0: Perform Maintenance of vessel stability and seaworthiness						
9-12	3.1 Explain the principles of ship stability including GM, GZ curves, free surface effect, and angle of loll. 3.2 Explain the concept of stability, trim, and draft calculations to ensure the vessel remains within safe operating limits during all stages of cargo operations. 3.3 Assess longitudinal and transverse strength by calculating shear forces and bending moments and comparing them with allowable limits. 3.4 Explain the use of stability booklets and loading instruments to verify compliance with statutory and operational stability requirements.	• Deliver lectures and demonstrations on principles of ship stability, trim, stress, and seaworthiness using diagrams, models, and stability booklets. • Guide students through stability and strength calculations, including GM, GZ curves, shear force, and bending moment assessments. • Demonstrate the use of stability instruments and software for monitoring vessel condition and verifying compliance with statutory limits. • Supervise practical exercises on loading, ballasting, and cargo distribution to maintain stability and structural integrity. • Facilitate case studies	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Perform stability calculations for a given loading condition, including GM, GZ curve analysis, and free surface effect assessment. • Carry out trim and draft calculations to ensure the vessel meets operational and safety limits. • Use stability instruments or software to monitor and verify the vessel's stability and compliance with statutory requirements. • Identify unsafe loading or ballast conditions that could compromise vessel stability or structural integrity. • Implement	• Perform stability calculations for a given loading condition, including GM, GZ curve analysis, and free surface effect assessment. • Carry out trim and draft calculations to ensure the vessel meets operational and safety limits. • Assess longitudinal and transverse strength by calculating bending moments and shear forces for different loading	Cargo handling equipment and simulators SOLAS, MARPOL, and IMO regulatory manuals Ship logbooks, inspection checklists, and reporting templates Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc

	3.5 Identify conditions that may compromise seaworthiness, such as improper cargo distribution, overloading, or free surface effects. 3.6 Discuss the implementation of corrective actions to restore or maintain stability and structural integrity, including ballast adjustments and cargo redistribution. 3.7 Discuss the importance of monitoring vessel condition during voyage to ensure continued compliance with stability, strength, and seaworthiness requirements.	and problem-solving sessions involving scenarios of compromised stability, overloading, or structural stress. • Conduct post-practical reviews and discussions to evaluate student performance, highlight errors, and reinforce best practices in maintaining seaworthiness.		corrective measures such as ballast adjustment or cargo redistribution to restore stability and ensure seaworthiness. • Document and report practical findings accurately, including stability calculations, cargo distribution plans, and corrective actions taken.	conditions. • Use stability instruments or software to monitor and verify the vessel's stability and compliance with statutory requirements. • Identify unsafe loading or ballast conditions that could compromise vessel stability or structural integrity. • Document and report practical findings accurately, including stability calculations, cargo distribution plans, and corrective actions taken.	
GENERAL OBJECTIVE 4.0: Promote compliance with international maritime regulations						
13-15	4.1 Explain international maritime conventions	• State the key international maritime	Laptop Computers,	• Apply international regulations during	• Demonstrate cargo	Cargo handling equipment and

	and regulations relevant to cargo handling and stowage. 4.2 Identify regulatory requirements for the safe handling, stowage, and securing of different types of cargo. 4.3 Interpret rules and guidelines for compliance with SOLAS, MARPOL, and other relevant maritime conventions. 4.4 Discuss the procedures and practices on board for adherence to international maritime regulations 4.5 Explain the consequences of non-compliance with international cargo handling and stowage regulations.	regulations and conventions applicable to cargo handling and stowage. • Present regulatory requirements for different cargo types using examples and case studies. • Demonstrate interpretation of SOLAS, MARPOL, and other conventions for compliance purposes. • Facilitate discussions and evaluations of on-board procedures against regulatory standards. • Provide examples of non-compliance and its consequences for understanding regulatory importance.	Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	cargo handling, stowage, and securing operations. • Demonstrate compliance with SOLAS, MARPOL, and other maritime regulations in simulated cargo operations. • Inspect cargo stowage and securing arrangements for regulatory compliance. • Correctly report breaches or non-compliance issues in cargo handling and stowage operations. • Evaluate practical operations and recommend improvements to ensure compliance with international standards.	handling, stowage, and securing operations in compliance with international regulations. • Supervise students during practical exercises ensuring correct application of SOLAS, MARPOL, and other regulations. • Present scenarios requiring inspection and verification of cargo stowage and securing arrangements. • Guide students in reporting breaches or non-compliance issues during	simulators SOLAS, MARPOL, and IMO regulatory manuals Ship logbooks, inspection checklists, and reporting templates Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc

					practical drills. • Facilitate evaluation and discussion sessions to recommend improvements for regulatory compliance. • Organize role-play and simulation exercises to reinforce proper regulatory practices in cargo operations.	

Course Assessment:
Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: MARITIME LAW AND REGULATORY COMPLIANCE I	**COURSE CODE: NSC 414**	**Contact Hours: 3 Hours/Week**
Year: II Semester: I	**Credit Unit: 3**	**Theoretical: 3 Hours/Week**
	Pre-requisite:	**Practical: 0**

GOAL: This course introduces students to competence in maritime law and regulatory compliance, enabling them to identify applicable international conventions, understand the legal responsibilities and liabilities of masters and chief mates, and monitor compliance with legislative requirements relating to safety of life and property at sea, security, and protection of the marine environment, in accordance with STCW Code, Section A-II/2 , Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:

1.0 Understand International and National Maritime Legal Framework and Command Responsibility;
2.0 Know the United Nations Convention on the Law of the Sea (UNCLOS ‘82);
3.0 Comprehend Flag-State, Port-State Control and Compliance Oversight;
4.0 Understand Legal Liability, Documentation and Incident Implications;
5.0 Know Compliance Monitoring, Enforcement and Command Decision-Making.

COMPETENCES:

- Monitor and control compliance with legislative requirements and measures to ensure safety of life and property at sea, security and protection of the marine environment

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: MARITIME LAW AND REGULATORY COMPLIANCE 1	**Course Code: NSC 414**	**Contact Hours: 3 Hours/Week**
	Credit Unit: 3	**Theoretical: 3 Hours/Week**
Year: II Semester: I	**Pre-requisite:**	**Practical: 0**
COURSE SPECIFICATION: Theoretical		
GOAL: This course is designed to impart students with competence in maritime law and regulatory compliance, enabling them to identify applicable international conventions, understand the legal responsibilities and liabilities of masters and chief mates, and monitor compliance with legislative requirements relating to safety of life and property at sea, security, and protection of the marine environment, in accordance with STCW Code, Section A-II/2 , Table A-II/2.		
General Objective 1.0: Understand International and National Maritime Legal Framework and Command Responsibility		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the Legal Framework of Maritime Law. 1.2 Identify major international maritime conventions affecting ship operations. 1.3 Explain the scope and objectives of key safety, security and environmental conventions. 1.4 Explain the relationship between international law, flag-state and national legislation. 1.5 Describe the legal responsibilities of	• Describe the structure of the IMO and its relationship with national maritime laws. • Explain the meanings of Convention, Code, Protocol, amendment, recommendation, resolution, and guideline. • Identify key IMO Conventions relating to safety, pollution, recognized organization, survey and certification, and ILO maritime labour Convention, and explain	Reference textbooks. PSC inspection template. Compliance checklists template.			

	Masters and Chief Mates. 1.6 Demonstrate professional judgement in interpreting legal obligations.	the scope and objectives of each. • Discuss how international law and national law apply, and highlight command responsibility in each case.				
GENERAL OBJECTIVE 2.0: Know the United Nations Convention on the Law of the Sea (UNCLOS '82)						
5-7	2.1 Define the legal status of UNCLOS '82. 2.2 Explain the development of the Law of the sea. 2.3 Explain the innovating features of UNCLOS '82. 2.4 Define: territorial sea, internal water, high sea, EEZ and the contiguous zone. 2.5 State the rights and duties of coastal states. 2.6 Explain the criminal jurisdiction of coastal states regarding crimes committed on board ships. 2.7 Explain the provisions within the Convention on international straits. 2.8 Explain the provisions of UNCLOS on the High Seas. 2.9 Explain the UNCLOS	• State the date of entry into force of UNCLOS '82. • State the application of UNCLOS '82. • Explain the development of the law of the sea. • Compare UNCLOS provisions with national maritime laws to highlight harmonization and differences • List innovation feature of UNCLOS'82. • Define the territorial sea, internal water, high sea, EEZ and contiguous zone. • State the rights and duties of a coastal state in: The territorial, EEZ Internal waters • Explain the criminal jurisdiction of coastal states regarding crimes committed on board	Reference textbooks. PSC inspection template. Compliance checklists template.			

	provisions dealing with the protection of the marine environment.	ships: within their territorial waters, outside their, territorial waters, and outside but passing through its territorial waters. • Explain the provisions regarding international straits. • Explain the provisions regarding the protection of the marine environment.				
GENERAL OBJECTIVE 3.0: Comprehend Flag-State, Port-State Control and Compliance Oversight						
8-10	3.1 Explain flag-state responsibilities and enforcement mechanisms. 3.2 Describe port-state control (PSC) procedures and inspections. 3.3 Identify common deficiencies and non-conformities. 3.4 Monitor shipboard compliance with statutory requirements. 3.5 Demonstrate due diligence during compliance oversight.	• Explain the differences among the concepts of Flag-State jurisdiction, Port-State Control, and Compliance Oversight (monitoring adherence to international conventions like SOLAS, MARPOL, STCW etc). • Describe different PSC jurisdictions. • Use IMO guidelines to explain PSC inspection procedures and flag-state responsibilities. • Compare how different countries enforce PSC and flag-state obligations.	Reference textbooks. PSC inspection template. Compliance checklists template.			
GENERAL OBJECTIVE 4.0: Understand Legal Liability, Documentation and Incident Implications						

11-12	4.1 Explain civil and criminal liabilities of Senior Deck Officers. 4.2 Discuss the assessment of legal implications of accidents, pollution, and non-compliance. 4.3 Explain how to ensure proper statutory documentation and records are kept. 4.4 Identify legal consequences of poor documentation. 4.5 Demonstrate sound judgement in legally sensitive situations.	• Introduce the concept of legal liability in maritime operations (civil, criminal, administrative). • Explain the role of documentation (logbooks, incident reports, certificates, compliance records) in incident investigation. • Clarify incident implications (legal, financial, reputational, and safety consequences). • Compare how liability is handled under international conventions (UNCLOS, MARPOL, SOLAS) versus national laws.	Reference Textbooks. Accident investigation summaries Sample of ship certificates portfolio.			
GENERAL OBJECTIVE 5.0: Know Compliance Monitoring, Enforcement and Command Decision-Making						
13-15	5.1 Describe the procedures for monitoring legislative compliance on board ships. 5.2 Explain how to supervise corrective actions following non-conformities. 5.3 Identify how to integrate legal requirements into operational decision-making.	• Explain the meaning of compliance monitoring, enforcement, and command decision-making. • Demonstrate how company safety management systems help to mitigate legal liabilities. • Explain how Masters and Chief Mates balance	Reference textbooks. Sample extracts from company SMS Compliance procedures			

	5.4 Explain command-level legal responsibility. 5.5 Discuss the knowledge of Merchant Shipping Act (MSA 2007).	legal obligations with operational realities. • Explain how to liaise effectively with relevant authorities and company management in times of legal crisis and how to supervise the closure of identified non-compliance. • Discuss how command decisions affect legal outcomes.				
Course Assessment: Course work: 20% Test/Assignments: 20% Examination: 60% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: RESEARCH METHODOLOGY	**COURSE CODE: NSC 415**	**Contact Hours: 2 Hours/Week**
Year: II Semester: I	**Credit Unit: 2**	**Theoretical: 1 Hour/Week**
	Pre-requisite:	**Practical: 1 Hour/Week**

Goal: This course is designed to equip students with knowledge to undertake scientific research methods, ethical considerations, data collection, analysis, and reporting, thereby enabling them to independently identify research problems, conduct the research, and report the results in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the students should be able to:

1.0 Understand scientific research approaches and ethical considerations;
2.0 Know how to identify and formulate research problems;
3.0 Understand the design of a research study;
4.0 Understand how to conduct comprehensive literature reviews;
5.0 Understand sampling and sampling techniques used in research;
6.0 Know the techniques of data collection and statistical analysis used in research;
7.0 Understand how to prepare and defend research proposals and reports.

COMPETENCES:

- Ability to plan and conduct research studies.
- Prepare research proposal and reports

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: RESEARCH METHODOLOGY	**COURSE CODE: NSC 415**	**Contact Hours: 2 Hours/Week**
	Credit Unit: 2	**Theoretical: 1 Hour/Week**
Year: II Semester: I	**Pre-requisite:**	**Practical: 1 Hour/Week**
COURSE SPECIFICATION: Theoretical and Practical		
Goal: This course is designed to equip students with knowledge to undertake scientific research methods, ethical considerations, data collection, analysis, and reporting, thereby enabling them to independently identify research problems, conduct the research, and report the results in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVE 1.0: Understand scientific research approaches and ethical considerations.		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1–2	1.1 Define research and state its types. 1.2 Explain the philosophy of scientific research in Nautical Science. 1.2 Discuss qualitative, quantitative, and mixed research approaches. 1.3 Explain research ethics in maritime and shipboard studies. 1.4 Define the term 'Plagiarism' 1.5 Explain the danger of Plagiarism and how to avoid it. 1.6 List software to detect Plagiarism 1.7 Explain ethical use of	• Lecture, discussion, case studies on research philosophy, approaches, and ethics.	Research methods textbooks, NBTE curriculum, maritime journals.	• Apply ethical considerations to hypothetical shipboard research scenarios.	• Facilitate group discussions, evaluate case studies, role-play ethical dilemmas.	Case study handouts, multimedia examples, multi-media resources-based research resources.

	Artificial Intelligence (AI) in research studies					
GENERAL OBJECTIVE 2.0: Know how to identify and formulate research problems.						
3–4	2.1 Analyze contemporary research problems in navigation, ship operations and related field. 2.2 Formulate clear, researchable problem statements. 2.3 Develop research questions and objectives.	• Lecture on problem identification, brainstorming sessions, examples from current maritime issues.	Research journals, NBTE curriculum references, maritime incident reports.	• Identify researchable problems. • Formulate problem statements from case studies.	• Supervise group exercises, provide feedback on problem statements. • Guide formulation of research questions.	Case studies, sample research problems, access to maritime databases.
GENERAL OBJECTIVE 3.0: Understand the design of a research study.						
5–6	3.1 Define research design 3.2 Explain experimental, survey, and case study designs. 3.3 Formulate testable hypotheses. 3.4 Define and operationalize variables.	• Lecture on research designs, demonstration of hypothesis formulation, explanation of variable operationalization.	Research methods textbooks, journal examples, statistical guides.	Design a small-scale research study including hypotheses and variables.	Guide students in creating mock research designs, evaluate study proposals.	Worksheets, software for study design, sample research frameworks.
GENERAL OBJECTIVE 4.0: Understand how to conduct comprehensive literature reviews and apply sampling techniques.						
7–8	4.1 Define literature review. 4.2 Explain the purpose and the process of the literature review. 4.3 Conduct systematic literature reviews. 4.4 Write a good literature review section of a research paper.	• Lecture on literature search methods, APA referencing	Research databases (ScienceDirect, JSTOR), APA 7 style manual, and references.	• Conduct a literature search, prepare annotated bibliographies. • Use citation and referencing styles (e.g. APA 7) appropriately.	• Supervise literature review exercises and provide APA citation practice.	Computers with multi-media resources, referencing software (e.g., EndNote, Zotero),

	4.5 Discuss the use of citation and referencing styles (e.g. APA 7) appropriately.					
GENERAL OBJECTIVE 5.0: Understand sampling and sampling techniques used in research.						
9-10	5.1 Define population, study sample and representativeness. 5.2 Explain the sampling technique used in research. 5.3 Apply probability and non-probability sampling techniques.	• Lecture on sampling methods.	Research databases (ScienceDirect, JSTOR), APA 7 style manual, and references etc.	• Determine samples from a given population.	• Evaluate sampling plans.	Sample data sets.
GENERAL OBJECTIVE 6.0: Know techniques of data collection and statistical analysis used in research.						
11–12	6.1 Explain the sources of Data. 6.2 Explain the design of research instruments (questionnaires, Interview, checklists, etc). 6.3 Discuss the application of descriptive and inferential statistics in analyzing research data. 6.4 Describe various methods of Data collection. 6.5 Explain how data is processed using software packages. 6.6 Summarize the significance of	• Lecture and demonstrations on instrument design, statistical analysis using software (SPSS, Excel).	Statistics textbooks, SPSS Software and manuals, and maritime datasets etc.	• Design research instruments (questionnaires, checklists). • Collect mock data. • Perform statistical analysis on a mock data. • Interpret results of a statistical analysis.	• Facilitate data collection exercises, supervise statistical computations, interpret outputs with students.	Computers with SPSS/Excel, sample questionnaires, datasets etc.

	interpretation of research data.					
GENERAL OBJECTIVE 7.0: Understand how to prepare and defend research proposals and reports.						
13–15	7.1 Explain the general principles of research reporting. 7.2 Prepare a complete research proposal. 7.3 Write a research report. 7.4 Discuss how to present and defend research findings.	Lecture on proposal writing and reporting, model presentations, peer review sessions.	Proposal writing guides, standards, and research report templates etc.	• Prepare a research proposal and report; • Deliver a defense presentation. • Use Artificial Intelligence (AI) application to prepare engaging presentation.	• Guide students through proposal drafting, evaluate reports, and facilitate mock defense sessions.	Sample proposals and reports, presentation equipment, and evaluation rubrics etc.
Course Assessment: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE.		
COURSE TITTLE: SHIPPING MANAGEMENT I	**COURSE CODE: NSC 416**	**Contact Hours: 2 Hours/Week**
Year: II Semester: I	**Credit Unit: 2**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 0**
GOAL: This course introduces the students to a career pathway that enables them to progress to other maritime-related professional certification, leadership roles at sea, and strategic positions ashore in maritime administration, port management, and consultancy, while also pursuing further academic studies in maritime and logistics to strengthen expertise and career advancement.		
GENERAL OBJECTIVES: At the end of this course, the student should be able: 1.0 Comprehend the concept of Maritime Economics; 2.0 Understand the commercial and trade components in shipping; 3.0 Understand the concept of Port Management and Administration; 4.0 Understand the concept of Maritime Administration (MARAD).		
COMPETENCES: • Ability to pursue further maritime-related certifications, assume leadership roles at sea, take on strategic shore-based positions in administration, management and consultancy, and also engage in further academic studies to enhance expertise and career growth.		

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITTLE: SHIPPING MANAGEMENT I	Course Code: NSC 416	Contact Hours: 2 Hours/Week
	Credit Unit: 2	Theoretical: 2 Hours/Week
Year: II Semester: I	Pre-requisite:	Practical: 0
COURSE SPECIFICATION: Theoretical		
General Objective 1.0: Understand the concept of Maritime Economics		

THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the term Maritime Economics and its concept. 1.2 Describe the shipping market. 1.3 Describe the impact of globalization on maritime economics. 1.4 Discuss the influence of Intermodal Transportation System on the Maritime Industry. 1.5 Discuss the concept of Sustainability and Green Shipping. 1.6 Discuss cultural consideration and ethical responsibility in the maritime industry. 1.7 Discuss the factors the efficiency and costs	• Explain the concept of Maritime Economics. • Explain the shipping market (e.g. Freight market, sale and purchase market etc.) and the cyclical nature of shipping economics. • Describe the impact of Globalization on maritime economics and discuss the role of shipping in supply chains and international commerce. • Discuss the influence of Intermodal Transportation System on the Maritime Industry (e.g. efficiency in cargo	Textbooks, Whiteboard and markers, Writing materials, Audiovisuals, Power point Presentations, etc. .			

	affect marine transportation.	movement, global supply chain integration, cost reduction, expansion of trade, environmental impact, port development and modernization etc.) • Discuss contemporary and strategic maritime issues relating to global decarbonization, emission control, energy efficiency, and alternative fuels. • Discuss how the management of cultural diversity in the maritime industry impacts on ethical decision-making, corporate social responsibility.				
General Objective 2.0: Understand the commercial and trade components in shipping						
5-8	2.1 Describe the relationship between shipping operations and global trade. 2.2 Discuss Global Trade Agreements and its implication on shipping. 2.3 Explain shipping operation and cost. 2.4 Discuss the commercial and trade components in	• Describe the patterns of World Trade with particular focus on major shipping routes, and choke points (Suez Canal, Panama Canal, Malacca Strait). Discuss the Commodities and Shipping Demand system (Oil, gas, coal,	Textbooks Whiteboard and markers Writing materials Audiovisuals Power point Presentations			

	shipping. 2.5 Discuss risks and marine insurance economics.	grain, manufactured goods etc.). • Discuss Global Trade Agreements such as WTO rules, free trade agreements, and regional trade blocs (EU, ASEAN etc.). • Describe the concept of Voyage Economics (voyage estimation, cost calculation, and profitability analysis), Operating Costs (crew wages, bunker costs, maintenance, insurance, port charges), and Capital Costs (Ship financing, depreciation, and investment decisions. • Discuss Chartering and Contracts, Charterparty clauses and economic implications, Freight Rates, Pricing and Cargo Economics (Bulk vs liner shipping, containerization, specialized cargoes. • Discuss marine insurance economics and the economic consequences of				

		accidents, piracy, and pollution. Explain Cost-sharing principles in maritime law (General Average and Salvage).				
General Objective 3.0: Understand the concept of Port Management and Administration						
9-12	3.1 Explain the Port System. 3.2 Discuss key elements of a Port. 3.3 Describe Port infrastructure and development. 3.4 Describe the structure of port authorities and terminal operators. 3.5 Discuss Port operations and services. 3.6 Explain Port logistics and Intermodal Transportation Connections. 3.7 Discuss the impact of International Conventions on Ports administration. 3.8 Discuss the effect of port economics on voyage economics. 3.9 Discuss emergency response and port contingency planning. 3.10 Describe the public and private port	• Start with the definition of Port. • Discuss key elements of a Port such as: Physical Infrastructure (docks, piers, terminals, warehouses), Services (cargo handling, passenger facilities, bunkering, ship repair, and storage), Administrative Role (customs, immigration, and regulatory compliance for international trade), and Economic Function (acts as a hub for commerce, connecting maritime routes with other modes of transport). • Identify types of ports (seaports, dry ports, river ports,	Textbooks Whiteboard and markers Writing materials Audiovisuals Power point Presentations			

	management models.	container ports, commercial port, industrial port, bulk terminal, passenger terminal, fishing terminal), and the role of ports in global trade and supply chains. • Identify global port hubs, trans-shipment, and competitive positioning. • Discuss National Port Legislation (Nigerian Ports Authority Act and related laws). • Discuss National Port Legislation, towage, mooring, bunkering, and cargo handling (bulk, container, liquid cargo). • Describe the integration of port systems with other modes of transportation (road, rail, air, pipeline, and inland waterways. • Describe how international conventions such as FAL, SOLAS, MARPOL, Customs				

		and Trade Regulations (Import/export procedures, documentation, and compliance), ISPS etc, apply to port administration. • Describe how Port Economics (port charges, tariffs, and revenue models) affect voyage economics (voyage cost, chartering etc).				
General Objective 4.0: Understand concept of Maritime Administration (MARAD)						
13-15	4.1 Define Maritime Administration (MARAD). 4.2 Describe the scope, and importance of Maritime Administration 4.3 Describe the structure of Maritime Administration in Nigeria 4.4 Discuss the role of Maritime Administration in global shipping.	• Give the definition of Maritime Administration. • Discuss the scope such as Regulatory Oversight - Implementation of international conventions (SOLAS, MARPOL, STCW, MLC) and Enforcement of national maritime laws); Flag state responsibility; maritime safety and security; maritime labour services; training and	Textbooks, Whiteboard and markers, Writing materials, Audiovisuals, Power point Presentations, etc.			

		certification; environmental protection oversight; shipping development etc. • Describe the structure of the MARAD in Nigeria. • Discuss the importance of MARAD (global integration, economic growth, technical development, environmental protection, emergency response and safety at sea, legal compliance and governance, security and sociopolitical stability etc.). • Discuss the role that MARAD plays in the global shipping industry (Maritime Policy Development. the backbone of international shipping governance. It ensures that ships, ports, and seafarers operate safely, securely, and in compliance with				

		international standards).				

Course Assessment:
Course work: 20%
Test/Assignments: 20%
Examination: 60%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: COMPUTER APPLICATIONS IN NAVIGATION SYSTEMS II	**COURSE CODE: NSC 417**	**Contact Hours: 4 Hours/Week**
Year: II Semester: I	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**

GOAL: This course is designed to equip students with competence to use computer applications in supporting navigation systems in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

On completion of this course, students should be able to:

1.0 Understand Digital Navigation Systems and Management Responsibilities;
2.0 Know Electronic Navigation Records and System Documentation;
3.0 Understand Computer-Based Decision-Support Tools;
4.0 Understand Digital Oversight, Compliance and Navigational system.

COMPETENCES:

- Maintain safe navigation through the use of information from navigation equipment and systems.
- Use computer to aid command decision making.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: COMPUTER APPLICATIONS IN NAVIGATION II			**Course Code: NSC 417**		**Contact Hours: 4 Hours/Week**	
			Credit Unit: 4		**Theoretical: 2 Hours/Week**	
Year: I1 Semester: I			**Pre-requisite:**		**Practical: 2 Hours/Week**	
COURSE SPECIFICATION: Theoretical and Practical						
GENERAL OBJECTIVE 1.0: Understand Digital Navigation Systems and Management Responsibilities						
THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1 – 4	1.1 Explain the role of computer applications in modern navigation systems. 1.2 Identify management-level responsibilities for digital navigation data. 1.3 Explain the relationship between electronic systems and navigational safety. 1.4 Evaluate risks associated with poor digital data management. 1.5 Demonstrate professional judgement in overseeing computer-based navigation support	• Discuss computer application role in navigation system. • Explain management level responsibilities for digital navigation data. • Distinguish the relationship between electronic system and navigational safety. • Explain the role of professional judgement in overseeing computer-based navigation support.	White board Smart board Projector Laptop Desktop Navigation system manuals Generic Company digital procedures	• Identify digital navigation records. • Identify system oversight requirements.	• Demonstration sessions. • Introduce students to digital navigation data/records. • Use online resources.	Smart board Project Computers White board Computer laboratory.

GENERAL OBJECTIVE 2.0: Know Electronic Navigation Records and System Documentation						
5 - 8	2.1 Describe electronic management of navigation records and files. 2.2 Discuss integrity and accuracy of digital navigation data. 2.3 Outline the updating importance of and backup of electronic records. 2.4 Exemplify compliance with company and statutory documentation requirements.	• Explain how to manage electronic navigation records and files. Implement integrity and accuracy of digital navigation data. • Supervise updating and backup of electronic records. • Monitor compliance with company and statutory documentation requirements. • Evaluate students' attention to detail in digital record management. Exemplify attention to detail in digital record management.	White board Smart board Projector Laptop Desktop	• Organize digital navigation records. • Verify completeness and accuracy of data. • Visualize the navigation data using software packages. • Interpret navigation data and draw inference from them.	• Practical computer exercises	Smart board Project Computers White board Computer laboratory Electronic log formats Generic Company SMS
GENERAL OBJECTIVE 3.0: Understand Computer-Based Decision-Support Tools						
9-12	3.1 Explain the use of computer-based decision-support tools for navigation 3.2 Explain information generation by navigation systems. 3.3 Identify limitations and potential errors of computer outputs. 3.4 Integrate digital information with	• Discuss the use of computer-based decision-support tools for navigation. • Explain the information generated by navigation systems. • Identify the limitations and potential errors of computer output. • Compare digital information with	Decision-support software examples White board Smart board Projector Laptop Desktop	• Interpret system outputs. • Identify inconsistencies or anomalies.	• System-based exercises	Smart board Project Computers White board Computer laboratory

	traditional navigation inputs. 3.5 Discuss the danger of over reliance on electronic data.	traditional navigation. • Use Case studies to evaluate the impact of relying on electronic data.				
GENERAL OBJECTIVE 4.0: Understand Digital Oversight, Compliance and Navigational system.						
13-15	4.1 Establish procedures for safe management of digital navigation systems. 4.2 Explain the monitoring compliance with electronic navigation procedures. 4.3 Identify system or data-management failures. 4.4 Explain how respond to respond system or data-management failures 4.5 Discuss corrective actions and procedural improvements.	• Explain procedures for safe management of navigation system. • Evaluate compliance procedures with electronic navigation. • Enumerate reasons for system or data management failure. • Exemplify readiness for management-level digital navigation oversight.	Company procedures, Audit checklists White board Smart board Projector Laptop Desktop	• Run scenario base simulation studies to: - Justify oversight decisions. - Recommend system-management improvements.	• Scenario-based exercises	Smart board Project Computers White board Computer laboratory

Course Assessment:

Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

YEAR II SEMESTER II

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: TERRESTRIAL AND COASTAL NAVIGATION II	**COURSE CODE: NSC 421**	**Contact Hours: 4 Hours/Week**
Year: II Semester: II	**Credit Unit: 4**	**Theoretical: 2 Hours/Week**
	Pre-requisite:	**Practical: 2 Hours/Week**

GOAL: This course is designed to equip students with competence in terrestrial and coastal navigation, including supervision of navigation conducted by officers of the watch in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:

1.0 Understand Coastal Navigation Principles;
2.0 Understand Position fix verification and Deviation Monitoring;
3.0 Understand Navigational Risk Assessment in Coastal and Confined Waters;
4.0 Know Corrective Actions, oversight and Navigational Assurance.

COMPETENCES:

- Determine position and the accuracy of resultant position fix by any means

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: TERRESTRIAL AND COASTAL NAVIGATION II	**Course Code: NSC 421**	**Contact Hours: 4 Hrs/Week**
	Credit Unit: 4	**Theoretical: 2 Hours/Week**
Year: II Semester: II	**Pre-requisite: -**	**Practical: 2 Hours/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GENERAL OBJECTIVE 1.0: Understand Mmanagement-Level Coastal Navigation Principles		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain management-level responsibilities for coastal navigation. 1.2 Evaluate terrestrial navigation techniques used by officers of the watch. 1.3 Explain the importance of redundancy in position fixing. 1.4 Discuss risks associated with confined waters. 1.5 Demonstrate professional judgement in navigation oversight.	• Exemplify coastal navigation at management level. • Explain coastal navigation principles in complex environments: proximity to hazards, variable depths, traffic density, tidal influence, currents, restricted waters, and environmental constraints. Each factor is tied to increased managerial responsibility. • Discuss regulatory and procedural oversight, explaining how COLREGs, VTS requirements, pilotage interfaces, and company navigation	STCW Code (Management-level navigation competence sections) Nautical charts (paper and ECDIS extracts) Admiralty Sailing Directions (Pilots) Tide tables and tidal stream atlases Company navigation and passage planning policies Accident investigation reports on coastal	Run simulation exercises to: - Analyse navigation practices. - Identify potential weaknesses.	• Conduct management level passage planning exercises, where students design coastal passages including route selection, safety contours, no-go areas, tidal windows, and contingency plans. • Introduce dynamic coastal scenarios changing weather, tidal miscalculation,	Paper charts and chart correction tools, ECDIS or ECDIS simulation software. Passage planning templates and checklists. Tidal calculation tables and software. Radar and position-fixing aids (simulated or real). Scenario cards for coastal navigation decision-making etc

		policies affect coastal navigation decisions.	groundings		traffic congestion, equipment degradation and require students to adjust plans and issue revised instructions.	
GENERAL OBJECTIVE 2.0: Understand Position fix verification and Deviation Monitoring						
5-8	2.1 Explain terrestrial position fixes using multiple methods. 2.2 Discuss the evaluation of bearings, distances, and transits accuracy. 2.3 Explain detection of deviations from the approved passage plan. 2.4 Assess the significance of navigational discrepancies. 2.5 Describe sound judgement in accepting or rejecting fixes.	• Explain position fix verification as confirmation through independent means, not repeated use of the same sensor. • Explain sources of navigational position data visual, radar, GPS/ECDIS, celestial, dead reckoning and highlights their individual error characteristics. • Introduces cross-checking principles: redundancy, independence, plausibility, and trend analysis. • Integrate management-level oversight, showing how fixing intervals, alarm	STCW Code (Navigation and management-level competence sections) Nautical charts and ECDIS documentation, Navigation textbooks on position fixing and error theory, Accident investigation reports on groundings, Whiteboard and fix-verification diagrams, etc.	• Conduct position verification exercises. • Identify deviations.	• Conduct multi-source fixing exercises, requiring students to obtain and compare fixes from different methods and justify which is most reliable. • Guide students through deviation monitoring drills, plotting track, measuring cross-track error, and deciding when	Paper charts, plotting tools, and parallel rulers, ECDIS or ECDIS simulation software, Radar plotting equipment, GPS position data (real or simulated), Deviation monitoring templates and logs, Scenario cards with built-in fixing inconsistencies.

		settings, safety contours, and deviation thresholds are policy decisions, not casual preferences. • Analyze case studies of groundings and near-misses where position verification failed or deviation was ignored, focusing on normalization of deviation and over-reliance on single systems.			deviation requires intervention. • Identify alarm management scenarios, where excessive alarms distract and inadequate alarms create limited compliance.	
GENERAL OBJECTIVE 3.0: Understand Navigational Risk Assessment in Coastal and Confined Waters						
9-12	3.1 Describe hazards in coastal and confined waters. 3.2 Discuss navigational risk assessments. 3.3 Explain evaluation of traffic density, environmental, and human-element risks. 3.4 Establish risk control measures and contingencies. 3.5 Demonstrate management-level situational awareness.	• Define navigational risk in coastal and confined waters grounding, collision, allision, squat, bank effect, traffic congestion, tidal error, and loss of under-keel clearance. • Introduce the risk assessment process: hazard identification, risk analysis, control measures, and continuous monitoring. Each step is linked directly to navigational decisions, not paperwork exercises.	STCW Code (Management-level navigation and risk competence sections), Nautical charts (paper and ECDIS extracts), Sailing Directions (Admiralty Pilots), Tide Tables and tidal stream atlases, Accident investigation reports (coastal	Use simulators to: - Complete coastal risk assessments. - Propose mitigation measures.	• Guide students through coastal passage risk assessments, requiring identification of hazards along a planned route and ranking them by severity and likelihood. • Explain dynamic risk changes, weather shifts, traffic surges, equipment	Paper charts with plotting tools. ECDIS or ECDIS simulation software, Coastal passage planning templates, Risk assessment matrices and checklists, Tidal calculation tools and software, Scenario cards for confined-water risk evaluation, etc.

		• Demonstrate how charted dangers, depths, traffic separation schemes, pilotage zones, and environmental constraints create layered risk profiles. • Integrate human and organizational risk factors like fatigue, communication breakdown, authority gradient, time pressure, and over-reliance on automation showing how they amplify technical hazards. • Describe grounding and collision case studies in confined waters, focusing on missed risk cues and weak risk controls rather than simple rule violations.	groundings and collisions), Risk assessment frameworks and templates, etc.		degradation, or tidal miscalculation and require students to reassess and modify risk controls in real time.	
GENERAL OBJECTIVE 4.0: Know Corrective Actions, oversight and Navigational Assurance						
13-15	4.1 Discuss the implementation of corrective actions for navigational deviations. 4.2 Explain the supervision of navigation adjustments safely.	• Explaining corrective action in navigation: timely intervention that restores safe margins when deviation or non-compliance is detected. • Explains oversight as active monitoring of	STCW Code (Management-level navigation and oversight competence sections) Company	Run simulation exercises to: - Justify corrective actions. - Recommend improvements.	• Simulate deviation scenarios, such as off-track drift, delayed fixes, unreliable sensors, or	Bridge or radar simulators (full mission or desktop), Paper charts and plotting tools, ECDIS or ECDIS simulation software, Deviation logs and

	4.3 Discuss the significance of compliance with passage plans and regulations. 4.4 Explain post-voyage navigation review.	navigation performance watchkeeping, passage execution, equipment uses, and human behavior rather than passive supervision. • Introduces navigational assurance, explaining it as the confidence that navigation remains safe through planning, execution, monitoring, correction, and review. The concept is framed as a system, not a single decision.	navigation policies and standing order, Bridge Resource Management (BRM) manuals, Accident investigation reports (groundings and collisions) Navigational assurance flow diagrams		poor lookout performance. • Conduct oversight drills, where students monitor a watchkeeper's performance and decide when and how to intervene without destabilizing bridge teamwork.	corrective action templates, Scenario cards for intervention decision-making

Course Assessment:

Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: METEOROLOGY AND OCEANOGRAPHY II	**COURSE CODE: NSC 422**	**Contact Hours: 3 Hours/Week**
Year: II Semester: II	**Credit Unit: 3**	**Theoretical: 2 Hours/Week**
	Pre-requisite: NSC 314	**Practical: 1 Hour/Week**

GOAL: This course is designed to equip students with competence in meteorology and oceanography, enabling them to interpret advanced forecasts, calculate and apply tidal and current data, assess environmental risks, and make sound navigational decisions during normal and heavy-weather conditions, in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:

1.0 Understand Meteorological Systems and Forecast Interpretation;
2.0 Know Tides, Currents and Oceanographic Calculations;
3.0 Understand Heavy Weather Navigation and Environmental Risk Management;
4.0 Understand Voyage Planning Integration, Monitoring and Review.

COMPETENCES:

- Forecast weather and oceanographic conditions.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: METEOROLOGY AND OCEANOGRAPHY II	**Course Code: NSC 422**	**Contact Hours: 3 Hours/Week**
	Credit Unit: 3	**Theoretical: 2 Hours/Week**
Year: II Semester: II	**Pre-requisite: NSC 314**	**Practical: 1 Hour/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GOAL: This course is designed to equip students with competence in meteorology and oceanography, enabling them to interpret advanced forecasts, calculate and apply tidal and current data, assess environmental risks, and make sound navigational decisions during normal and heavy-weather conditions, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVE 1.0: Understand Meteorological Systems and Forecast Interpretation		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain atmospheric processes affecting marine weather. 1.2 Explain the interpretation of synoptic charts and professional marine forecasts. 1.3 Discuss the evaluation forecast reliability and uncertainty. 1.4 Assess weather-related risks to navigation and safety. 1.5 Demonstrate professional judgement in forecast	• Lectures. • Guided discussions. • Describe the general distribution of sea surface temperature over the oceans. • List the areas and season in which a high increase of sea fog can be expected. • Describe in general terms formation and types of cloud relevant to mariners. • Define air mass and its source region. • Describe the	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyse weather charts. • Identify hazardous weather indicators. • Use AI applications to forecast weather.	• Chart interpretation exercises	Synoptic charts Forecast bulletins

	interpretation.	weather experienced during the passage of a cold and warm fronts. • Identify the symbols used to denote warm and cold front on weather map. • Define warm and cold front. • Explain the codes on synoptic chart. • Describe analysis of a synoptic chart. • Estimate areas of expected precipitation fog. Icing. • Forecast weather for an area with synoptic chart. • Explain risks such as course deviation, increase leeway, cargo shift, slamming and pounding, excessive rolling and pounding, cargo damages, collision, grounding, radar cluster, reduced visibility, deck				

		icing and loss of stability etc. • Explain procedures in handling weather related risks.				
GENERAL OBJECTIVE 2.0: Know Tides, Currents and Oceanographic Calculations						
5-8	2.1 Explain tidal theory and ocean current systems. 2.2 Explain the calculation tidal heights and times accurately. 2.3 Explain the application of current data to passage planning and pilotage. 2.4 Assess the impact of tides and currents on ship handling. 2.5 Demonstrate precision in oceanographic calculations.	• Lectures. Worked examples. • Explain the lunar and solar effects, gravitational and centrifugal forces, equilibrium theory, dynamic theory. • Explain neap and spring tides, semi-diurnal, diurnal, mixed. • Calculate height and rise of tides at a given time. • Explain ocean current, coastal current, wind-driving current. • Explain effects such as set and drift, course and speed, position fixing. • Use Admiralty sailing direction, ocean current charts, pilot charts, ECDIS and other publication.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Perform tidal and current calculations. • Apply results to navigation scenarios.	• Calculation exercises	Tide tables, Current atlases, etc.
GENERAL OBJECTIVE 3.0: Understand Heavy Weather Navigation and Environmental Risk Management						

9-13	3.1 Explain the assessment of risks associated with heavy weather and sea states. 3.2 Decide on weather avoidance or route modification strategies. 3.3 Discuss the evaluation of ship performance and limitations in adverse conditions. 3.4 Integrate meteorological data into command decisions. 3.5 Demonstrate sound judgement in heavy-weather management.	• Case studies. Scenario analysis. • Explain the formation of waves. • Define the speed, length, period, height, significant height, duration and fetch of a wave. • Distinguish between waves and swell. • Explain the formation of sea ice. • State the types of sea ice i.e. fast ice, floe ice, pack ice, iceberg etc. • Explain the formation of ice accretion. • Explain the dangers pose by ice accretion. • Explain weather routing using synoptic and prognostic charts, forecast and routing services. • Explain seasonal route planning, in-voyage weather avoidance, course alteration, alteration of speed, etc. • Explain ship related factors such as size, stability, draft and	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Analyse heavy-weather scenarios. • Recommend mitigation actions.	• Scenario-based exercises	Heavy-weather manuals, Accident reports. Simulator bridge resources.

		freeboard, machinery conditions, cargo types in decision making. • Explain the use of technology such as ECDIS, Weather routing software, satellite weather update, AIS and radar data in weather management.				
GENERAL OBJECTIVE 4.0: Understand Voyage Planning Integration, Monitoring and Review						
14-15	4.1 Explain the integration process of meteorological and oceanographic data into voyage plans. 4.2 Discuss the monitoring of environmental conditions during voyage execution. 4.3 Explain the implementation of corrective actions based on changing conditions. 4.4 Explain the review process of environmental decision-making outcomes.	• Review sessions. Scenario-based lectures. • Evaluate readiness for master-level environmental decision-making. • Justify environmental decisions. Recommend planning improvements. • Review environmental decision-making outcomes.	Laptop Computers, Smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc	• Integrate meteorological and oceanographic data into voyage plans. • Monitor environmental conditions during voyage execution. • Implement corrective actions based on changing conditions.	• Integrated planning exercises	Voyage plans, Environmental logs, etc.
Course Assessment: Course work: 10%						

Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	**100%**

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: MARITIME LAW AND REGULATORY COMPLIANCE II	**COURSE CODE: NSC 423**	**Contact Hours: 3 Hours/Week**
Year: II Semester: II	**Credit Unit: 3**	**Theoretical: 3 Hours/Week**
	Pre-requisite:	**Practical: 0**

GOAL: This course is to equip students with competence in maritime law and regulatory compliance, enabling them to apply applicable international conventions, understand the legal responsibilities and liabilities of Masters and Chief Mates, and monitor compliance with legislative requirements relating to safety of life and property at sea, security, and protection of the marine environment, in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able to:

1.0 Understand Law of Carriage of goods by Sea;
2.0 Understand the relevant international treaty instruments dealing with marine salvage;
3.0 Comprehend the relevant international instrument dealing with limitation of liability for maritime claims, general average and marine insurance;
4.0 Understand the rule of classification societies, certificates and documents required to be carried by ships;
5.0 Comprehend National Maritime Legislation and Compliance Oversight.

COMPETENCES:

- Monitor and control compliance with legislative requirements and measures to ensure safety of life and property at sea, security and the protection of the marine environment.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: MARITIME LAW AND REGULATORY COMPLIANCE II	**Course Code: NSC 423**	**Contact Hours:3 Hours/Week**
	Credit Unit: 3	**Theoretical: 3 Hours/Week**
Year: II Semester: II	**Pre-requisite:**	**Practical:**
COURSE SPECIFICATION: Theoretical		
GOAL: This course is to equip the students with competence in maritime law and regulatory compliance, enabling them to apply applicable international conventions, understand the legal responsibilities and liabilities of Masters and Chief Mates, and monitor compliance with legislative requirements relating to safety of life and property at sea, security, and protection of the marine environment, in accordance with STCW Code, Section A-II/2, Table A-II/2.		
GENERAL OBJECTIVE 1.0 : Understand Law of Carriage of goods by Sea		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-3	1.1 Explain the concept of Law of Carriage of goods by Sea and describe its scope. 1.2 Identify Types of Carriage Contracts. 1.3 Explain Legal Instruments and Frameworks of Law of Carriage of Goods by Sea. 1.4 Explain Rights, Duties and Liabilities of Carriers, Shippers and Servants. 1.5 Discuss dispute resolution relating to carriage of goods by sea.	• Introduce the students international trade and its importance. • Explain how countries incorporate international conventions into domestic law. • Discuss types of Carriage Contracts; Charterparty agreements (voyage, time, demise/bareboat), Contracts of affreightment and Bills of lading.	Reference textbooks, Samples of Bills of Lading, Sea Waybills and Delivery Orders, and electronic copies of various conventions and rules, etc.			

		• Discuss International Conventions with particular focus on the Hague Rules (1924), Hague-Visby Rules (1968), Hamburg Rules (1978), Rotterdam Rules (2008) and Brussel convention. • Discuss Contemporary Issues in carriage of goods by sea such as; Electronic Bills of Lading and Digitalization, Impact of Multimodal Transport, Environmental and Safety Regulations, etc. • Explain various dispute resolution mechanisms; Arbitration and litigation in carriage disputes, Jurisdiction and choice of law clauses, and forum shopping.				
GENERAL OBJECTIVE 2.0: Understand the relevant international treaty instruments dealing with marine salvage						

4-6	2.1 Explain the international convention for the unification of certain rules of law relating to assistance and salvage at sea (Assistance and Salvage 1910). 2.2 Discuss the International Convention on Salvage (1989). 2.3 Discuss the Lloyds standard form of salvage Agreement (LOF).	• Introduce the students to history and evolution of salvage law, from traditional maritime practices to international Convention for the unification of certain rules of law relating to assistance and salvage at sea (Assistance and Salvage 1910), to the 1989 Salvage Convention. • Compare the 1989 Salvage Convention with earlier salvage laws (e.g., Brussels Convention 1910). • Explain key treaty provisions such as: rights of salvors, duties of shipowners, environmental salvage, and compensation principles. • Discuss how international treaties guided	Assistance and Salvage, 1910. Lloyds standard form of salvage agreement (LOF). Reference Textbooks. Projectors and multi-media resources, etc.			

		liability, compensation, and environmental protection. • Highlight how UNCLOS and IMO conventions complement salvage law. • Discuss the Lloyds Open Form (LOF) standard form of salvage agreement.				
GENERAL OBJECTIVE 3.0: Comprehend the relevant international instrument dealing with limitation of liability for maritime claims, general average and marine insurance						
7-9	3.1 Explain the provisions of the convention on limitation of liability for Maritime claims (LLMC 1976) 3.2 State General Average Act. 3.3 Explain the provision of the York-Antwerp rules, 1974 as regard general average. 3.4 Explain voyage policies, time policies and floating policies. 3.5 Explain why a deviation clause will often permit the assured to extend his cover at a premium to be arranged as long as	• Explain the provision of the convection on limitation of liability for Maritime claims (LLMC 1976). • Define general average Act and explain the provisions of the York-Antwerp rules. • Explain voyage policies, time policies, floating policies. • Explain why a deviation clause will often permit	Reference Textbooks. Projectors and Multi-media resources.			

	the insurer is given prompt notice of the deviation ("Held covered" Clause). 3.6 Explain the function of the P and I Club. 3.7 Discuss Marine Insurance Act (MIA) 1906 and concept of marine insurance 3.8 Discuss the crucial provisions as relating to liability, risk management, operational decision-making at sea etc. 3.9 Discuss the relationship between marine insurance and command responsibility.	the assured to extend his cover at a premium to be arranged as long as the insurer is given prompt notice of the deviation ("Held covered" clause). • Explain the P & I Club and state their function. • Defines marine insurance, marine insurance contracts, insurance policies, and certificates of insurance. • Identify types of marine insurance. • Introduce the students to the Marine Insurance Act (MIA) 1906 and explain it relationship with the Marine Insurance Act, Cap M2, Laws of the Federation of Nigeria 2004. • Explain the difference among the MIA 1906,				

		Institute Cargo Clauses (A, B, C), and Institute Hull Clauses. • Use the MIA 1906 to explain the principles and doctrines of indemnity, insurable interest, utmost good faith (uberrimae fidei), subrogation, disclosure obligations, and policy requirements. • Discuss contemporary issues in marine insurance such as digitalization of marine insurance, environmental liabilities, cyber risks etc. • Discuss the criticality of the responsibilities of Chief Mates and Masters as regarding marine insurance.				
GENERAL OBJECTIVE 4.0: Understand the rule of classification societies, certificates and documents required to be carried by ships.						

10-12	4.1 Explain civil and criminal liabilities of senior deck officers. 4.2 Explain the reasons for classifying a ship with a classification society. 4.3 Examine the functions of classification societies in equipment manufacture. 4.4 List various types of surveys undertaken by classification societies. 4.5 List various certificates required to be carried as provided by international conventions and state their periods of validity. 4.6 List arrival documents and documentation procedures.	• Explain the reasons for classifying a ship with a classification society. • Examine the functions of classification societies in equipment manufacture and operation. • List the various types of surveys undertaken by classification societies. • List the various certificates required to be carried as provided by international convention and state their periods of validity. • Discuss arrival documents and documentation procedures.	Sample of various Classification rules. Projectors, writing materials, Multi-media resources.			
GENERAL OBJECTIVE 5.0: Comprehend National Maritime Legislation and Compliance Oversight						
13-15	5.1 Discuss historical development of Maritime Law in Nigeria.	• Discuss the colonial influences and evolution of	Reference textbooks Extracts from National			

	5.2 Explain national maritime regulatory frameworks. 5.3 Discuss the application of the Merchant Shipping Regulations, Cabotage and maritime administration Regulations (NIMASA Act, Cabotage Act). 5.4 Explain Compliance Oversight of Flag-State, Port-State Control, Cabotage Compliance Monitoring, Safety and Security Oversight and Maritime Labour. 5.5 Discuss how national laws impact ship operation. 5.6 Discuss the balance between national sovereignty and international obligations 5.7 Demonstrate command-level regulatory accountability.	maritime legislation Explain the transition to modern legal frameworks and its alignments with international conventions. • Explain Nigeria's Core Legal Framework particularly; the Merchant Shipping Act (MSA) and its provisions on ship registration, safety, and crew welfare, NIMASA Act (2007) focusing on Establishment, powers, and functions of NIMASA, Cabotage Act (2003) focusing on Regulation of coastal trade and promotion of indigenous shipping, Nigerian Ports Authority Act focusing on Port operations,	legislation such as; Merchant Shipping Act, 2007, Nigerian Maritime Administration and Safety Agency (NIMASA) Act, 2007, Coastal and Inland Shipping (Cabotage) Act, 2003, National Oil Spill Detection and Response Agency (NOSDRA) Act, 2006, etc.			

		management, and oversight, and Oil Pollution Act and Environmental Regulations focusing on Liability and penalties for pollution incidents. • Enumerate the mechanisms that ensure compliance, safety, and accountability during various ship operations in Nigerian waters. • Discuss the balance between national sovereignty and international obligations.				

Course Assessment:
Course work: 20%
Test/Assignments: 20%
Examination: 60%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: ADVANCED SAFETY TRAINING	**COURSE CODE: NSC 424**	**Contact Hours: 3 Hours/week**
Year: II Semester: II	**Credit Unit: 3**	**Theoretical: 2 Hours/week**
	Pre-requisite:	**Practical: 1 Hour/Week**

GOAL: This course is designed to equip students with consolidate management-level leadership competence on safety management, medical care, fire emergency and security on board in accordance with STCW Code, Section A-III/2, Table A-III/2.

GENERAL OBJECTIVES:

On completion of this course, students should be able to:

1.0 Understand the application of Leadership in Medical Emergency and Care on Board;
2.0 Comprehend the application of International Safety Management (ISM) Code;
3.0 Understand the application of International Ship and Port Facility Security (ISPS) Code Compliance;
4.0 Comprehend the application of Fire Emergency Management;
5.0 Know the application of principles of Bridge Resource Management (BRM).

COMPETENCES:

- Maintain safety and security of the ship, crew, passengers, and operational readiness of lifesaving appliances, fire-fighting equipment, and other shipboard safety systems, including medical equipment.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: ADVANCED SAFETY TRAINING	**Course Code: NSC 424**	**Contact Hours: 3 Hours/Week**
	Credit Unit: 3	**Theoretical: 2 Hours/Week**
Year: II Semester: II	**Pre-requisite:**	**Practical: 1 Hour/Week**
COURSE SPECIFICATION: Theoretical and Practical		
GENERAL OBJECTIVE 1.0: Understand the application of Leadership in Medical Emergency and Care on Board		

THEORETICAL CONTENT				**PRACTICAL CONTENT**		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1– 3	1.1 Explain the master's 155 responsibility for medical care on board. 1.2 Assess medical emergencies and prioritize treatment. 1.3 Explain medical response and coordinate with shore-based medical services. 1.4 Discuss medical care procedures in accordance with Ship Captain's Medical Guide. 1.5 Explain leadership and calm decision-making during medical emergencies. 1.6 Discuss immediate	• Discuss master's 155 responsibility for medical care on board. Analyze medical emergencies and take appropriate decisions. • Implement medical response plan and coordinate shore-based medical services. • Plan medical care procedures in accordance with international guidelines. Exemplify leadership and calm disposition in decision-making during medical emergencies.	International Medical guides for ships Ship Captain's Medical Guide Emergency protocols guide. White board Smart board Projector Laptops	• Demonstrate medical emergency response procedures. • Organise medical response and coordinate with shore-based medical services. • Apply medical care procedures in accordance with Ship Captain's Medical Guide. Implement decision-making in simulated cases. • Demonstrate leadership and calm decision-making during medical emergencies.	• Practical demonstrations • Scenario drills	Classroom Simulator-based laboratory

	first aid treatment in the event of accident or illness on board. 1.7 Discuss the procedure to apply medical care to the sick and injured while on board. 1.8 Describe coordinated schemes for medical assistance to ships.			• Apply immediate first aid in the event of accident or illness on board. • Provide medical care to the sick and injured while they remain on board. • Participate in Coordinated schemes for medical assistance to ships.		
GENERAL OBJECTIVE 2.0: Comprehend the application of International Safety Management (ISM) Code						
4-6	2.1 Explain the principles and objectives of the ISM Code. 2.2 Discuss implementation and monitoring shipboard Safety Management Systems. 2.3 Discuss supervision of compliance with safety procedures and checklists. 2.4 Highlight the procedure to identify non-conformities and initiate corrective actions. 2.5 Demonstrate	• Discuss the principles and objectives of the ISM Code. Illustrate and monitor shipboard Safety Management Systems. Analyze compliance with safety procedures and checklists. • Examine non-conformities and initiate corrective actions. • Exemplify accountability for safety performance. • Review SMS documentation. • Identify procedural gaps relating to ship operation.	ISM Code extracts • Company SMS manuals White board Smart board Projector Laptops			

	accountability for safety performance. 2.6 Emphasize the importance of safety drills in enhancing shipboard safety.	• Implement and monitor shipboard Safety Management Systems. • Supervise compliance with safety procedures and checklists. • Identify non-conformities and initiate corrective actions. • Demonstrate safety drills to enhance shipboard safety.				
GENERAL OBJECTIVE 3.0: Understand the application of International Ship and Port Facility Security (ISPS) Code Compliance.						
7-9	3.1 Explain the principles and objectives of the ISPS Code. 3.2 Discuss the implementation and monitoring of shipboard security plan. 3.3 Supervise compliance with shipboard security procedures and checklists. 3.4 Identify non-conformities and initiate corrective actions. 3.5 Demonstrate compliance with	• Discuss the principles and objectives of the ISPS Code. • Explain ship security levels and ISPS requirements. • Illustrate and monitor shipboard security. Monitor compliance with shipboard security procedures and checklists. • Identify non-conformities and initiate corrective actions. • Review of company security plan documentation. • Identify security gaps.	ISPS Code Company security plan Shipboard Security Assessment White board Smart board Projector Laptops			

	shipboard security plan. 3.6 Maintain and supervise the implementation of a ship security plan. 3.7 Assess security risk, threat and vulnerability. 3.8 Undertake Regular inspections of the ship to ensure that appropriate security measures are implemented and maintained. 3.9 Discuss the need for Security equipment and systems to be properly maintained, tested, calibrated and ready for immediate use. 3.10 Discuss the merit of security awareness and vigilance.					
GENERAL OBJECTIVE 4.0: Comprehend the application of Fire Emergency Management						
10-12	4.1 Manage shipboard fire emergencies at command level. 4.2 Discuss the	• Report and manage shipboard fire emergencies at command level.	White board Smart board Projector Laptops	• Apply fire-fighting command procedures. • Demonstrate	• Emergency drills. • Practical demonstration	Fire control plans

	coordination of firefighting teams and resources. 4.3 Explain leadership skills to be demonstrated under high-risk emergency conditions. 4.4 Explain Fireffighting Operations and ccontrol onboard ships 4.5 Discuss the organization and training of fire parties. 4.6 Discuss the process of inspecting and servicing of fire-detection and fire-extinguishing systems and equipment 4.7 Discuss the importance of incident investigation and compilation of reports involving fire.	• Integrate and Coordinate firefighting teams and resources. • Exemplify and command leadership under high-risk emergency conditions.		security response actions. • Demonstrate management of shipboard fire emergencies at command level. • Coordinate firefighting teams and resources. • Control Fire fighting Operations onboard ships • Organize and train fire parties. • Inspect fire-detection and fire-extinguishing systems and equipment. • Perform servicing of fire-detection and fire-extinguishing systems and equipment. • Carry out incident investigation and reports compilation.	s	
GENERAL OBJECTIVE 5.0: Know the application of principles of Bridge Resource Management (BRM)						

13-15	5.1 Discuss the application of BRM principles at command level. 5.2 Manage bridge team during routine and emergency operations. 5.3 Discuss the integration of safety, security and navigation decisions into bridge team management. 5.4 Evaluate human-element risks in bridge management and mitigate errors.	• Implement BRM principles at command level. • Organize bridge teams during routine and emergency operations. • Discuss the implementation of safety, security, and navigation decisions into bridge team management. • Examine human-element risks and mitigate errors. Evaluate readiness for management-level safety leadership.	BRM manuals Incident reports White board Smart board Projector Laptops, etc	• Participate in Simulator-based scenarios • Lead bridge teams in simulations. •	• Participate in Simulator-based scenarios	Bridge Simulator White board Smart board computer

Course Assessment:

Course work: 10%
Test/Assignments: 10%
Practical: 40%
Examination: 40%
Total: 100%

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: SHIPPING MANAGEMENT II	**COURSE CODE: NSC 425**	**Contact Hours: 2 hours/week**
Year: II Semester: II	**Credit Unit: 2**	**Theoretical: 2 hours/week**
	Pre-requisite: SHIPPING MANAGEMENT I	**Practical: 0**

GOAL: This course is designed to equip students with knowledge to progress to other maritime-related professional certification, leadership roles at sea, and strategic positions ashore in maritime administration, port management, and consultancy, while also pursuing further academic studies in maritime and logistics to strengthen expertise and career advancement in accordance with STCW Code, Section A-II/2, Table A-II/2.

GENERAL OBJECTIVES:

At the end of this course, the student should be able:

1.0 Understand the concept of Logistics and Supply Chain Management;
2.0 Understand the fundamentals of Shipping Management;
3.0 Understand the application of the Safety Management System and Integrated Management System in Shipping Management;
4.0 Understand the concept of Maritime Consultancy.

COMPETENCES:

- Ability to pursue further maritime-related certifications, assume leadership roles at sea, take on strategic shore-based positions in administration, management and consultancy, and also engage in further academic studies to enhance expertise and career growth.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE						
COURSE TITLE: SHIPPING MANAGEMENT II		Course Code: NSC 425		Contact Hours: 2 hours/week		
		Credit Unit: 2		Theoretical: 2 hours/week		
Year: II Semester: II		Pre-requisite: SHIPPING MANAGEMENT I		Practical: 0		
COURSE SPECIFICATION: Theoretical and Practical						
GENERAL OBJECTIVE 1.0: Understand the concept of Logistics and Supply Chain Management						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-4	1.1 Explain the fundamentals of logistics and supply chains. 1.2 Discuss the commercial and trade components of logistics and supply chain. 1.3 Explain the global supply chain structures and maritime logistics systems. 1.4 Discuss the role of transportation and distribution systems in logistics and supply chain management. 1.5 Discuss the relationship between Logistics and Port Operations.	• Give the definition, scope, and importance of logistics. • Give the definition, scope, and importance of supply chain. • Explain the role of logistics in global commerce. • State the components of supply chain: suppliers, manufacturers, distributors, customers, shippers, carriers, freight forwarders, port authorities etc. • Explain the global	Textbooks, Whiteboard and markers, Writing materials, Audiovisuals, Power point Presentations, etc.			

	1.6 Explain the importance of warehousing and inventory management in supply chain management. 1.7 Discuss the influence of technology and digitalization on logistics and supply chain management. 1.8 Discuss ship scheduling. 1.9 State the advantages and disadvantages of ship scheduling.	supply chain structures as a vast network linking suppliers, manufacturers, distributors, carriers, and consumers worldwide, while maritime logistics systems form the backbone of these networks by enabling the efficient movement of goods across oceans through ports, shipping routes, and intermodal connections. • Discuss the role of port operations, warehousing, inventory management, technology and digitalisation in logistics and supply chain management. • Explain the concept of ship scheduling and discuss its advantages (efficiency in Operations, profitability, reduced				

		congestion, predictability and Planning, safety and compliance etc.), and disadvantages (complexity, unpredictable delays, high cost etc.).				
GENERAL OBJECTIVE 2.0: Understand the fundamentals of Shipping Management						
5-8	2.1 Explain the concept of shipping management. 2.2 Discuss the scope of shipping management. 2.3 Discuss freight rate negotiation and contract terms in commercial shipping. 2.4 Explain the fundamentals of ship financing and investment. 2.5 Explain different financing models and investment strategies in shipping. 2.6 Discuss the importance of evaluating risks, returns, and market cycles in maritime investment. 2.7 Discuss ship valuation and cost structures. 2.8 Discuss the application of voyage planning principles to achieve operational efficiency,	• Give the definition of shipping management. • Explain the scope of shipping management; commercial, technical, and regulatory aspects of shipping management. • Explain financing models in shipping such as: Bank loans and syndicated lending; leasing structures (bareboat, time charter financing); equity financing and joint ventures; public offerings and capital markets. • Explain investment strategies such as: long-term vs. short-	Textbooks, Whiteboard and markers, Writing materials, Audiovisuals, Power point Presentations, etc.			

	cost effectiveness, and commercial success.	term investment approaches; portfolio diversification in shipping assets; risk-return analysis in maritime investments etc. • Explain the methods of ship valuation and cost structure (operating costs and capital costs). • Discuss how to apply voyage planning principles to achieve optimum operational efficiency and cost effectiveness.				
GENERAL OBJECTIVE 3.0: Understand the application of the Safety Management System and Integrated Management System in Shipping Management						
9-12	3.1 Explain the International Safety Management (ISM) Code and its regulatory mandate on all commercial vessels. 3.2 Explain the Safety Management System (SMS) and its development from the ISM Code. 3.3 Discuss the objectives of the SMS. 3.4 Discuss how the development and implementation of	• Explain the goal and objectives of the ISM Code as regards ensuring the overall safe ship operation and prevention of marine pollution. • Explain the Safety Management System (SMS) with its evolution and main objectives. • Describe how the SMS is a structured safety framework	Textbooks, ISM Code, Manual ISO standards, Whiteboard and markers, Writing materials, Audiovisuals, Power point Presentations, etc.			

	documented SMS enhance Shipping management. 3.5 Explain the International Organization for Standardization (ISO) 3.6 Discuss the role of International Organization for Standardization in shipping. 3.7 State the various ISO standards widely used in the maritime and allied industries. 3.8 Explain Integrated Management System (IMS). 3.9 Explain the objectives of Integrated Management System (IMS). 3.10 Describe how the combination of multiple management frameworks enhances shipping management. 3.11 Explain the ISM/IMS Audits and its regulatory importance in shipping management. 3.12 Explain the need for continuous improvement in the implementation of SMS and IMS.	that requires documented procedures for navigation, cargo handling, maintenance, and emergency response. • Describe how shipping management must integrate these procedures into daily operations, ensuring consistency across fleets. • Describe the ISO as a non-governmental international organization that develops and publishes standards to ensure quality, safety, efficiency, and interoperability across industries. State that ISO sets standards to harmonize practices across industries, including shipping, logistics, supply chain management and others. • Discuss ISO standards that are				

		widely applied in maritime and allied industries. Give examples such as: ISO 9001 (Quality Management Systems), ISO 14001 (Environmental Management Systems), ISO 45001 (Occupational Health & Safety), ISO 27001 (Information security management systems), ISO 28000 (Security Management for Supply Chains), ISO 22000 (Food safety management systems), ISO container standards (Define dimensions and specifications for shipping containers) etc. • Describe Integrated Management System (IMS) as the combination of multiple management frameworks (such as Quality, Environmental, Health & Safety, and				

		Information Security) into a single, unified system. Its objectives are designed to streamline processes, reduce duplication, and improve overall organizational performance. • Describe how the combination of multiple management frameworks enhances shipping management. Give example such as the combination of the ISM Code with various other ISO standards. • Explain various Audit regimes and its regulatory importance in shipping management • Explain the need for continuous improvement in the implementation of Safety Management System and Integrated Management System.				
GENERAL OBJECTIVE 4.0: Understand the concept of Maritime Consultancy						

13-15	4.1 Explain the Maritime Consultancy. 4.2 Discuss various types of Maritime Consultancy, 4.3 Explain the philosophy of transition from operational command to advisory capacity. 4.4 Describe the scope of consultancy in shipping, ports, and logistics. 4.5 Explain maritime Project Consultancy. 4.6 Discuss the importance of KYC (Know Your Customer) and KYCC (Know Your Customer's Customer) in Maritime Consultancy.	• Describe Maritime Consultancy. • Discuss various examples of Maritime Consultancy. • Discuss the philosophy behind the transition from Execution (operational command at sea as shipmaster or chief mate) to Guidance (advisory roles ashore, where their sea experience becomes a foundation for guiding policy, strategy, and management). • Explain the scope of maritime consultancy spanning across operational, regulatory, commercial, and strategic domains. • Discuss maritime Project Consultancy such as ship acquisition, retrofitting, modernization and terminal project (new build, maintenance and modernization). • Explain KYC (Know	Textbooks, Whiteboard and markers, Writing materials, Audiovisuals, Power point Presentations, etc.			

		Your Customer) which involves verifying the identity, legitimacy, and financial standing of direct clients (shipowners, charterers, port operators, logistics firms). • Explain KYCC (Know Your Customer's Customer) which extends to doing due diligence to the end-users or counterparties of a client's services (e.g., cargo owners, freight forwarders, trading companies).				
Course Assessment: Course work: 20% Test/Assignments: 20% Examination: 60% **Total: 100%**						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: INDUSTRIAL AND MARITIME LABOUR RELATIONS	**COURSE CODE: NSC 426**	**Contact Hours: 2 Hours/Week**
Year: II Semester: II	**Credit Unit: 2**	**Theoretical: 2 Hours/Week**
	Pre-requisite: None	**Practical: 0**

GOAL: The course is designed to equip students with the knowledge and skills to manage industrial and maritime labour relations, apply disciplinary and grievance procedures lawfully, promote crew welfare and morale, resolve conflicts professionally, and ensure compliance with MLC 2006, company policies, and STCW Code, Section A-II/2 competence standards.

GENERAL OBJECTIVES:

By the end of this course, the students should be able to:

1.0 Understand the principles of industrial and maritime labour relations as they apply to shipboard management and crew administration;
2.0 Understand the employment relationship between Masters, Seafarers, Ship Owners, and Ship Managers, including rights, duties, and obligations;
3.0 Understand the requirements of the Maritime Labour Convention (MLC) 2006 and ensure compliance with standards on employment conditions, accommodation, health protection, and crew welfare;
4.0 Know shipboard disciplinary and grievance procedures lawfully, fairly, and in accordance with company policy and maritime regulations;
5.0 Understand how to resolve labour disputes and interpersonal conflicts professionally using appropriate leadership and conflict-management techniques;
6.0 Understand how to promote crew welfare, morale, well-being, and effective multicultural team performance onboard;
7.0 Understand how to demonstrate readiness for command-level personnel management in line with STCW Code Table A-II/2 competence standards.

COMPETENCES:

- Ability to apply leadership and managerial skills in conflict and dispute resolution in the maritime industry.

PROGRAMME: HIGHER NATIONAL DIPLOMA IN NAUTICAL SCIENCE		
COURSE TITLE: INDUSTRIAL AND MARITIME LABOUR RELATIONS	COURSE CODE: NSC 426	Contact Hours: 2 Hours/Week
	Credit Unit: 2	Theoretical: 2 Hours/Week
Year: II Semester: II	Pre-requisite: None	Practical: 0

COURSE SPECIFICATION: Theoretical

General Objective 1.0: Understand the principles of industrial and maritime labour relations as they apply to shipboard management and crew administration

THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**	**Specific Learning Outcome**	**Teacher's Activities**	**Resources**
1-2	1.1 Explain industrial relations in the maritime industry. 1.2 Describe maritime labour relations and its application to the stakeholders. 1.3 Explain the importance of labour relations to shipboard efficiency. 1.4 Relate stakeholders' roles to shipboard management. 1.5 Discuss the effects of good and poor labour relations onboard ships. 1.6 Identify labour relations issues onboard (stevedores, chandlers, agents etc) 1.7 Discuss resolution of disputes identified in 1.6	• Explain concepts, discuss maritime examples, relate to shipboard administration. • Guide discussions and case analysis.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources, Textbooks, ILO/IMO documents, slides			

General Objective 2.0: Understand the employment relationship between seafarers, shipowners, and ship managers, including rights, duties and obligations.

3-4	2.1 Explain seafarers' contracts of employment. 2.2 Identify rights and obligations of seafarers. 2.3 Explain responsibilities of shipowners, operators and managers. 2.4 Discuss Seafarers' Employment Agreement. 2.5 Discuss the application of rights and obligations to onboard situations. 2.6 Explain employer compliance responsibilities.	• Explain employment relationships and legal obligations. • Evaluate employer compliance responsibilities. • Demonstrate document analysis and guide case work.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources Sample SEAs, MLC text			
General Objective 3.0: Understand the requirements of the Maritime Labour Convention (MLC) 2006 and ensure compliance with standards on employment conditions, accommodation, health protection, and crew welfare.						
5-7	3.1 Explain objectives and structure of MLC 2006 3.2 Describe employment and accommodation standards. 3.3 Explain health protection and welfare provisions. 3.4 Identify MLC compliance areas onboard. 3.5 Discuss the inspection of accommodation	• Explain MLC framework and compliance areas. • Demonstrate inspections and assessments.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources MLC checklist, inspection forms MLC 2006 text, slides			

	against MLC standards. 3.6 Assess shipboard welfare facilities.					
General Objective 4.0: Know shipboard disciplinary and grievance procedures in accordance with company policy and maritime regulations.						
8-10	4.1 Explain shipboard disciplinary procedures. 4.2 Describe the processes of handling crew complain. 4.3 Explain principles of fairness and legality. 4.4 Discuss the application of disciplinary steps to scenarios. 4.5 Discuss fairness in disciplinary actions.	• Explain procedures and legal principles. • Evaluate fairness in disciplinary actions. • Conduct role-plays and guided exercises.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources Case scenarios, sample forms Company manuals, flowcharts, etc.			
General Objective 5.0: Understand how to resolve labour disputes and interpersonal conflicts professionally using appropriate leadership and conflict-management techniques.						
11-12	5.1 Explain the causes of shipboard conflicts. 5.2 Describe conflict-management techniques. 5.3 Explain leadership roles in dispute resolution. 5.4 Identify conflict sources onboard. 5.5 Discuss mediation and negotiation techniques.	• Lecture and discuss leadership approaches. • Facilitate simulations and role-plays.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources etc			
General Objective 6.0: Know how to promote crew welfare, morale, well-being, and effective multicultural team performance						

onboard						
13	6.1 Explain factors affecting crew morale. 6.2 Describe multicultural team challenges. 6.3 Explain strategies for promoting crew welfare. 6.4 Assess morale-related issues onboard. 6.5 Discuss the management of multicultural interactions. 6.6 Explain crew welfare plan.	• Explain welfare and team management principles. • Guide group activities and planning tasks	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources Case studies, templates IMO guides, videos etc,		.	
General Objective 7.0: Understand command-level personnel management in line with STCW Code Table A-II/2 competence standards.						
14-15	7.1 Explain STCW A-II/2 personnel management requirements. 7.2 Describe command-level personnel management responsibilities (leadership, management, and decision-making skills) 7.3 Explain professional conduct expected of Masters. 7.4 Relate STCW standards to shipboard practice. 7.5 Apply command-level	• Explain STCW competence and command duties. • Conduct simulations and performance assessments.	Laptop computers, smart board, Projector, Writing Materials, White board, Markers, Multi-media resources STCW Code, manuals Bridge scenarios, rubrics, etc.			

	decision-making skills.					

Course Assessment:
Course work: 20%
Test/Assignments: 20%
Examination: 60%
Total: 100%

LIST OF MINIMUM RESOURCES/PHYSICAL FACILITIES

A. SEAMANSHIP WORKSHOP

S/N	DESCRIPTION OF ITEMS	QUANTITY REQUIRED
1.	Gravity Davit	1
2.	10 Man Life Raft	1
3.	Ropes:– Fibre Wire	4 rolls 2 rolls
4.	Derrick Model	1
5.	Set of Rules of The Road (Light and Shape)	1
6.	Buoyage Model	1
7.	GMDSS Equipment	1
8.	Vices	10
9.	Safety Helmet	10
10.	Thimbles	5
11.	Marline Spikes	10
12.	Fid – (Wooden Spike)	10
13.	Wooden Stage	2
14.	Bosun Chair	2
15.	Rope Lizards	5
16.	Gantlines	5
17.	Pilot Ladder	1
18.	Jacob's Ladder	1
19.	4 H.P Electric Hoist Unit	1
20.	½ Tonne Electric Winch	1
21.	Crane Model (Crane Simulator)	1
22.	Windlass Model	1
23.	Hatchcover Model	1
24.	½ Tonne Chain Block	1
25.	Set of International Code, Model Flag and Stand	1

B. BOATYARD

S/N	DESCRIPTION OF ITEMS	QUANTITY REQUIRED
1	Glass Fiber Boat	1
2	Set of Oars/Crutches	1
3	Training Craft	1
4	Lifeboat Davit	1
5	Survival Crafts	2

C. CHARTROOM AND METEOROLOGICAL LABORATORY

S/N	DESCRIPTION OF ITEMS	QUANTITY REQUIRED
1	Parallel Rules	30
2	Chart Dividers	30
3	Transparent Stations Pointers (Star Finder)	2
4	Chart Magnifier	1
5	Sextants	5
6	Wet Compass Card	1
7	Navigational Charts	30
8	Instructional Charts	30
9	Tide Table	30
10	Thermometers	6
11	Sea Temperature Bucket	1
12	Chronometer	1
13	Magnetic Compass and Binnacle with Azimuth Mirror	1
14	Cup Anemometer	1
15	Digital Anemometer	1
16	Laboratory Thermometer	6
17	Min. and Max. Thermometers	2

18	Barometer	1
19	Stevensen Screen	1
20	Facsimile Receiver	1
21	Star Charts and Finders	5

D. RADAR/ARPA SIMULATOR LABORATORY

S/N	DESCRIPTION OF ITEMS	QUANTITY REQUIRED
1	Global Positioning System (GPS)	1
2	Automatic Radar Plotting Aids (ARPA) (Simulator)	1
3	Global Maritime Distress and Safety System (GMDSS)	1
4	Electronic Chart Display and Information System (ECDIS)	1
5	Radar	1

E. STABILITY/CARGO ROOM LABORATORY

S/N	DESCRIPTION OF ITEMS	QUANTITY REQUIRED
1	Stability Tank	1
2	Stability Model	1
3	Working Model of Traditional Derrick Gear in Various Rigs (Simulator)	1
4	Working Model of Velle Ship Derrick (Simulator)	1
5	Working Model of Thompson Crane (Simulator)	1
6	Working Model of Hellen Derrick (Simulator)	1
7	Working Model of Stulken Derrick (Simulator)	1
8	Schematic Model of Crude Oil Tanker, Cargo, Tank and Pump room (Simulator)	1
9	Schematic Model of Product Tankers, Cargo, Tank and Pump room (Simulator)	1
10	Schematic Model of Cargo Hold and Ship's Engine Room Showing Piping System (Simulator)	1

F. NAVIGATIONAL AIDS LABORATORY

S/N	DESCRIPTION OF ITEMS	QUANTITY REQUIRED
1	Magnetic Compass & Binnacle with Azimuth Mirror	1
2	True Motion Radar Set with Reflection Plotter (40cm Display) Simulator	2
3	Automatic Radar (ARPA) Simulator	1
4	Gyro Compass with Bearing and Azimuth Mirror	1
5	Radio telephone Receiver/Transmitter for Practice in R/T Procedure	1

LIST OF WORKSHOP PARTICIPANTS

S/N	NAMES	CONTACT ADDRESS	EMAIL ADDRESS
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