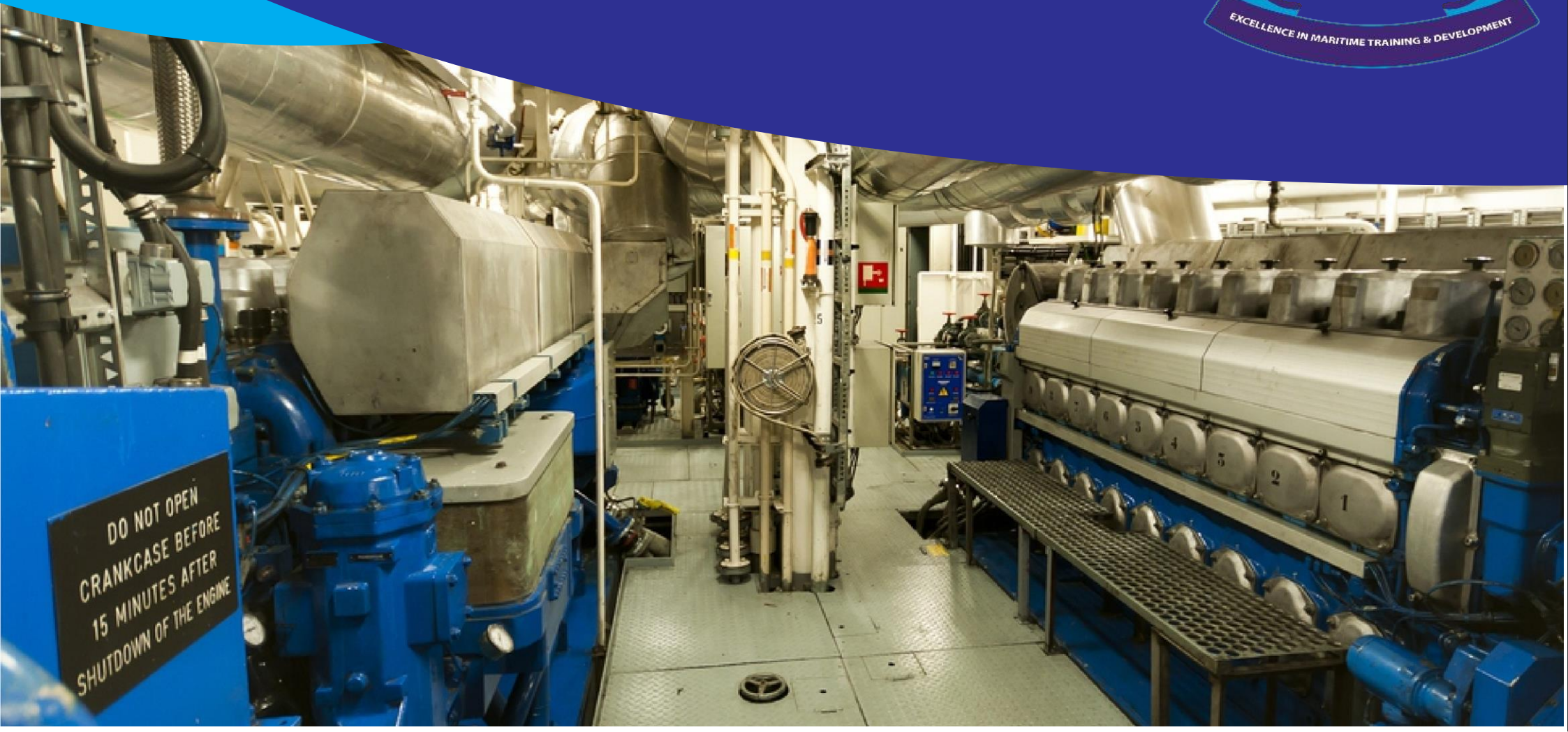
BANDARI MARITIME ACADEMY

DIPLOMA IN MARINE ENGINEERING MODULE 1

Workshop Skills Training Record Book



Vision Statement

World Class Centre for Maritime Education and Training

Mission Statement

To Provide Competent Maritime Human Resource for Sustainable Blue Economy

Core Values

The Values guiding the culture and conduct of the Academy in the discharge of its mandate include: -

a. **Excellence:**
The Academy is committed to delivering quality and exceptional services. The Academy strives to achieve constant adaptation, innovation and vigilance to deliver on its mandate;

b. **Public Participation:**
The Academy embraces the contribution of the public, partners and customers towards realization of its mandate. This is achieved through collaborations, partnerships and stakeholders' engagements.

c. **Good Governance:**
The Academy has established structures to effectively and efficiently manage its affairs and resources. The structures facilitate effective decision making process to enable the Academy deliver on its mandate. In addition, the Academy embraces the culture of integrity, transparency, accountability, equity and fairness.

d. **Sustainable development:**
The Academy shall continue to deliver on its mandate, having regard to efficiency and environmental integrity and being mindful of future generations.

e. **National Ethos:**
The Academy is guided by the seventeen (17) national values and principles of governance in accordance with Articles 10 and 232 of the Constitution of Kenya.

f. **Team work:**
The Academy inculcates the culture of working together and motivating each other so as to maximize every member's contribution to the team. The Academy takes full cognizance of everyone's ideas and expertise towards fulfilment of a common goal.

Introduction

This module unit is compulsory for all attachees undertaking technical training programs and is intended to equip the attachee with knowledge, skills and attitude to enable him/her to perform duties in a real working environment. The rationale of the module unit is to:

a) enhance the practical and communication skills/competences of attachees
b) strengthen industrial/academy partnership
c) provide a nation-wide mechanism to address key skill demand
d) provide employers the opportunity to give back to society
e) enhance training levels in acquired skills and competences
f) provide a mechanism for the academy to respond to identified areas of national key skill needs
g) develop the manual skills of attachees associated with scientific and technological operations
h) develop the attachees' personality and understanding of individuals and groups in work situations
i) provide the attachee with background information and experience in career choice

Competence

The attachee should have the ability to:

a) work effectively under supervision
b) apply knowledge and skills to solve real time problems
c) develop team work and organizational competences

General Objectives

By the end of the Industrial attachment period, the attachee should be able to:

a) comprehend the constraints of working life and functional relationships within and between organizations
b) recognize the importance of human relationships and work attitudes
c) develop procedural knowledge towards work processes
d) apply theoretical concepts and school based skills to practice
e) develop work attitudes like curiousness, self-confidence, maturity and self-reliance
f) obtain knowledge of potential careers and develop new areas of interest

The Industrial attachment scheme will enable the academy to:

a) establish link with industry for technical development, particularly in the area of product innovation, design and construction
b) know skill gaps and improve quality of training
c) obtain materials for teaching and case studies
d) have a balance assessment of attachees

The industrial attachment scheme will enable employers to:

a) understand future skills availability
b) improve the training delivered at the academy for industrial relevance

c) influence the training of future generation of employees

Suggested roles of the academy, industry and attachees

It is the responsibility of the academy to:

a) identify attachees who are qualified to go on attachment
b) conduct an industrial attachment orientation and induction to attachees
c) identify opportunities from the industry and match them with the number of attachees qualified to go on attachment
d) prepare a code of conduct to be observed by attaches
e) provide log books to attaches

It is the responsibility of the industry to:

a) appoint an industry supervisor/mentor for the attachee
b) carry out formal introduction/induction to the workplace by the industry supervisor/mentor
c) design a weekly program of work for the attachee to carry out whilst on attachment
d) develop clear and well communicated expectations of the work program
e) expose attachee to relevant activities and training opportunities
f) supervise and assess progress of the attachee
g) complete and release the log book of the attached attachee

It is the responsibility of the attached attachee to:

a) read and observe the code of conduct applicable to the work place
b) report to the academy any problems encountered
c) fill the logbook daily to be completed and endorsed by both the industry and the academy supervisor
d) prepare a report at the end of the attachment period and submit to the academy.

Instructions for the attachee on how to fill the logbook

a) Each day, you should note in your logbook the work you have carried out. There are spaces for the dates and space where you should enter the numbers of the items in your industrial attachment training programme completed or partly completed during the period of your report.
b) You may make sketches, any other exposure apart from the ones in the syllabus and additional comments to illustrate work carried out if you wish to, in the space provided at the back of each page.
c) It is expected that your course instructor, supervisor or foreman will wish to see your logbook after you have recorded your weekly activities. You are advised to take the logbook to them to see and initial report in the space provided.
d) Remember, this logbook is your property, and if you look after it, keep it clean, and complete it carefully and conscientiously it will form a valuable record of your training and may well assist you to obtaining employment in years to come.

(A) Attaché's Personal Details:

Last Name: ……..……Other Names……,…….Gender:……..……

Other Names: ……..… Gender: ……..……

Identity Card No. …… Date of Birth: Date: …… Month: ……..…. Year: ……..

Course: …… Level: …… Year/ Module: ……

Home Address: ……..…… Telephone: ……

Next of Kin (Name): …….. Relationship: ……

Postal Address: ……. Postal Code: …… Tel. No: ……

(B) Training Institution:

Name of Head of Academy: ……

Department: ……

School: ……..……

Head of School: ……..……..……Signature: ……..……Date: ……

(C) Details of Attachment Place:

Name of Organization: ……..……..…..……..……

Postal Address: ……..…..…… Postal Code: ….……

Tel: .....Mobile..... Email address…….……

Industrial Attachment Supervisor(Name): ……..……

Position/ Designation: ……Signature: ……..…Date: ..……

PERIOD	COMPETENCES	TASK COMPLETED? (YES /NO)	ATTACHEES REMARKS -Was the activity carried out? -Was it completed on time? -How difficult was it? - What are the learning experiences? - Challenges encountered?	SUPERVISOR'S REMARKS - How did the attachee perform? - What was his/her attitude towards work? - Did attachee receive assistance to perform well?	SUPERVISORS SIGNATURE
2WEEKS	SHIP CONSTRUCTION				
	Ship Dimensions and Form				
	- Identify the different type of ships in service				
	- Sketching the general arrangement of the different types of ships				
	- Interpreting dimensions and information from a ship's drawing				
	- Primary structural				

	members of a ship				
	- Parts and components of a ship				
	Materials and their Properties				
	- Identify the common types of materials used in ship construction				
	- Interpretation of ship construction materials data				
	- Materials testing techniques				
	- Perform tests on the different types of material				
	Ship Stresses				
	- Perform experiment to determine variation of stress effects on				

	a beam under different loads				
	- Identify constructional features which compensate for stresses				
	Hull Structures				
	- Identify structural arrangement of an actual ship				
	- Interpret a ship hull scantling drawing				
	- Sketching of ship hull structural arrangement				
	Bow and Stern Structures				
	- Structural features of a ship bow and stern				
	- Arrangement of ship bow and stern from a scantling drawing				
	- Sketching of structural				

	arrangement of a ship bow and stern				
	Fittings				
	- Identifying fitting onboard ship				
	- Interpreting ship drawing representing arrangement of fittings				
	- Sketching ship fittings				
	Rudders andPropellers				
	- Identify the different types of rudder and their features				
	- Sketching different types of rudders				
	- Identifying different type of propeller and their feature				
	- Sketching the arrangement of propeller power				

	transmission system				
	- Interpreting rudder structural drawing				
	Load lines and Draught Marks				
	- Drawing of load line mark to scale				
	- Reading and interpreting draught marks on a ship				
	- Determining applicable load line using charts of zone, areas and seasonal period				
	Ship Building				
	- Sketching dry dock and launching methods				
	Elementary ShipYard Practice				
	- Sketching a typical				

	shipyard layout				
	- Identifying and sketching steel sections				
	- Demonstrating elementary ship yard practices				
3WEEKS	WORKSHOP TECHNOLOGY AND PRACTICE				
	Marking Out and MeasuringTools				
	- Accuracy in measuring tools and equipment				
	- Use of measuring tools and equipment				
	- Precision of measuring tools and equipment				
	- Setting out a work piece				
	- Marking out work piece				
	Engineering Materials				
	- Identifying engineering materials				
	- Carrying out Tensile test				

	- Determining mechanical properties of materials				
	- Selecting appropriate material for any given task				
	- Carrying out metal forming processes				
	Bench work andFitting				
	- Identifying hand tools				
	- Select appropriate hand tools				
	- Demonstrate correct use of hand tools				
	- Carry out bench work and fitting project				
	- Demonstrate safety in the workshop				

	- Caring and maintaining of workshop tools				
	Machine shop operations				
	- Grinding machine components and operation				
	- Drilling machine components and operation				
	- Center lathe machine components and operation				
	- Shaping machine components and operation				
	- Milling machine components and operation				
	Material joining processes				
	- Types of welding processes				

	- Types of welding equipment				
	- Filler metal				
	- Procedure of welding				
	- Common weld defects				
	- Inspection of welded joints				
	- Types of soldering processes				
	- Adhesive bonding				
	Finishing processes and corrosion prevention				
	- Causes of corrosion and their prevention				
	- Types of paints				
	- Surface preparation				
	- Painting sequence				
	- Types of varnishes				
	- Finishing processes				

	Carpentry and Joinery				
	- Materials used in carpentry and joinery				
	- Tools and equipment				
	- Wood working processes				
	- Wood finishing materials				
	- Application of carpentry				
2WEEKS	**MARINE ELECTRICAL TECHNOLOGY I**				
	Electrical Materials				
	- Applications of electrical materials				
	- Sheathing of marine cables				
	Electrical Tools				
	- Tools used in electrical and electronics trade				
	- Care and maintenance of tools				

	- Safe use of electrical and electronic tools				
	Electrical Measuring Instruments				
	- Construction of electrical measuring instruments				
	- Principle of Operation				
	- Extension of meter range				
	Electricity				
	- The Wheatstone Bridge				
	- Application of A.C. and D.C. power in a ship				
	- Methods of preventing hazards caused by electrostatic electricity				
	- Typical arrangement of electrical circuit				

	- Comparison between A.C and D.C				
	- parallel and series circuit equation				
	Alternating Current				
	- Plotting an AC wave				
	- Identify the features of AC wave form				
	- Sketch a line diagram of a three face supply from an alternator				
	Lighting				
	- Construction and operation of electrical variation in lamps				
	- Suitable applications forvarious lamps				
	- Lighting installation				

	- Factors to consider when selecting a suitable lamp				
	Batteries				
	- Primary cells and secondary cells				
	- Construction of batteries used on board ship				
	- Charging/disc harging of a battery				
	- Main and emergency services for batteries				
	- Elements of battery maintenance				
	Electronic components				
	- Construction of various electronic components				
	- Operation of various electronic components				
	Electronic circuits				

	- Parts of an electronic circuit				
	- Forms and types of solder				
	- Tools and materials used when soldering				
	- The types of flux for soldering				
	- Tests and fault diagnoses in electronic circuits				
	Thyristors				
	- Types of thyristors				
	- Applications of thyristors				
	Digital Electronics				
	- Logic gates				
	- Logic circuits -				
	Integrated Circuit and Large ScaleIntegrated Circuit				
	- Structure and the operation				

	of various types of ICs and LSIC				
	- Functions of various types ofICs and LSICs in circuits				
3 WEEKS	**GENERAL MARINE ENGINEERING KNOWLEDGE I**				
	Air Compressors andAssociated Systems				
	- Maintenance of air compressor accessories				
	- Functional arrangement of air distribution systems				
	- Uses of compressed air onboard ship				
	- Emergency compressedair supply system				
	Marine Pumps				
	- Observe safety precautions while working on pumps and piping systems				

	- Diagnosing common pump faults				
	- Maintain various types of pumps				
	- Pump operation				
	- Pump shaft sealing arrangement				
	- Method of pump shaft alignment				
	- Effect of misaligned pump shafts				
	- Eductors and ejectors				
	Fluid Flow and Piping Systems				
	- Fluid flow behavior in shipboard pumping system				
	- Constructional arrangement and operation of ballast system				
	- Fresh water systems				

	- Arrangement of cooling sea water system				
	- Hydraulic pumping system				
	- Safety features				
	Fuel Technology				
	- Combustion in boilerand engines				
	- Fuel purification and treatment				
	- Environmental effect of products of fuel combustion				
	- Bunkering process				
	Deck Machinery				
	- Construction features of deck machinery				
	- Operation of deckmachinery				

	- Deck Maintenance practice				
	- Protection fromcorrosion				
	Vibrations				
	- Effects of vibration				
	- Vibration damping				
	Engineering Watch Keeping				
	- Common terms used in the engine room				
	- Engine room watchkeeping procedures				
	- Engine room alarms				
2 WEEKS	**MOTOR ENGINEERING KNOWLEDGE I**				
	Internal Combustion Engines				
	- Comparing features of				

	spark ignition and compression ignition engine				
	- Compare valve timing and cam profile of a two stroke and a four stroke engine				
	Engine Components				
	- Construction and functions of internal combustion engine components				
	- Compression ignitionengine assembly				
	- Service and maintenance				
	Marine Diesel Engines				
	- Slow speed - two stroke marine diesel engine				
	- Shipboard applications				

	- Medium-speed and high- speed (four-stroke) diesel engines				
	- Assembling and testing of marine diesel engine				
	- Identify and sketch different types of marine diesel engine Configurations				
	Engine power transmission				
	- Components associatedwith engine power transmission				
	- Power take off/in				
	- Diesel electric transmission engine				
	- Standard procedures for inspection, maintenance and repair of power transmission system				
	Engine Systems				

	- Fuel oil system				
	- Fuel injection system				
	- Lubrication oil system				
	- Engine cooling systems				
	- Air starting system				
	Engine Repairs and Maintenance				
	- Engine repair and maintenance requirements				
	- Engine measurements				
	- engine overhaul, repairand maintenance				
	- Cylinder re-boring, honing and deglazing process				
	- Crankshaft grinding				
	- Locking and sealingdevices				

ADDITIONAL REMARKS

Students Name: …..……..……. Signature: …….……...……. ……. Date: …….

Supervisor's Name: …… Signature: ……...Date: …….

Telephone: +254 111 773 811
+254 100 404 438

Website: www.bma.ac.ke

Email: bandarimaritime@gmail.com
info@bma.co.ke