

**ANNEX B OF CMO NO. 20, SERIES OF 2015
BACHELOR OF SCIENCE IN MARINE ENGINEERING
COURSE SPECIFICATIONS**

Course Code	:	Draw
Course Descriptive Title	:	Maritime Drawing and Diagrams
Course Credits	:	1 unit
Lecture Contact Hours per Week	:	0 hours
Laboratory Contact Hours per Week	:	3 hours
○ Prerequisite	:	None
Reference/s	:	<ul style="list-style-type: none"> ○ Table A-III/1 Function: Maintenance and Repair ○ STCW'78 as amended ○ IMO Model course 7.04 ○ Annex A of CMO No. 20, Series of 2015 (Curriculum Mapping for BSMarE)

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	PERFORMANCE	APPROX HOURS
Maintenance and repair of shipboard machinery and equipment	Interpretation of machinery drawings and handbooks	1. Types of Drawing <ul style="list-style-type: none"> - Explains the purpose of a general arrangement - Explains the purpose of assembly drawings - Explains the purpose of component drawings - Explains the use of collective single-part drawings - Explains the use of pictorial drawings - Lists the standard/routine information and references commonly given on drawings 	2 Hours
Maintenance and repair of shipboard machinery and equipment (Cont)	Interpretation of machinery drawings and handbooks (Cont)	2. Linework <ul style="list-style-type: none"> - Relates examples of lines to applications and vice-versa - Draws tangents as required in practice - Demonstrates what is meant by: <ul style="list-style-type: none"> - First-angle projection - Third-angle projection and sketches the correct symbol for both cases - Using given examples, completes first-and third-angle projections with: <ul style="list-style-type: none"> - Missing lines - Missing views - Simple plotted curves - Prepare a sketch given simple components and provides sufficient dimensions for their manufacture - Completes orthographic projections of solids - Completes sectional views in orthographic projection - Draws a third-angle projection with hidden detail - Explains the use of auxiliary projection 	4 Hours
Maintenance and repair of shipboard machinery and equipment (Cont)	Interpretation of machinery drawings and handbooks (Cont)	3. Pictorial Projection <ul style="list-style-type: none"> - Draws isometric projections of simple solids - Draws oblique projections of simple solids 	4 Hours
Maintenance and repair of shipboard machinery and equipment (Cont)	Interpretation of machinery drawings and handbooks (Cont)	4. Development <ul style="list-style-type: none"> - Draws the development of a 90° intersection of circular trunking - Draws the development of a cone - Draws the development of a square pyramid - Draws the development of a square-to-round transition piece 	4 Hours

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	PERFORMANCE	APPROX HOURS
		5. Dimensioning <ul style="list-style-type: none"> - Dimensions a simple component, applying all correct standards - Explains the advantage of datum dimensioning 	5 Hours
Maintenance and repair of shipboard machinery and equipment (Cont)	Interpretation of machinery drawings and handbooks (Cont)	6. Geometrical Tolerances <ul style="list-style-type: none"> - Explains briefly what is meant by geometrical tolerance - Relates symbols for geometrical tolerance to the intended characteristics - Using given reference material, applies tolerance data to engineering drawings, to include examples of: <ul style="list-style-type: none"> - Straightness - Flatness - Roundness - Cylindricity - Concentricity - Squareness - Parallelism - Angularity - Position - 	2 Hours
Maintenance and repair of shipboard machinery and equipment (Cont)	Interpretation of machinery drawings and handbooks (Cont)	7. Limits and Fits <ul style="list-style-type: none"> - Explains the need for limits and fits - Given various ways of indicating limits of size, explains their meaning - Explains the meaning of: <ul style="list-style-type: none"> - Tolerance - Actual size - Basic size - Nominal size - Explains hole basis fits - Explains shaft basis fit - Explains, using examples: <ul style="list-style-type: none"> - Clearance fits - Transition fits - Interference fits - Describes, using examples, the cumulative effect of tolerances - Explains what is meant by selective assembly - Lists the factors which influence the selection of tolerances 	2 Hours
Maintenance and	Interpretation of	8. Engineering Drawing Practice	15 Hours

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	PERFORMANCE	APPROX HOURS
repair of shipboard machinery and equipment (Cont)	machinery drawings and handbooks (Cont)	<ul style="list-style-type: none"> - Makes engineering drawings employing the following: <ul style="list-style-type: none"> - Sections in two parallel planes - Revolved sections - Thin sections - Part sections - Half sections - Hidden detail - Machinery symbols - Surface finish - Angular dimensions - Arrow heads - Auxiliary dimensions - Centre lines - Pitch-circle diameters - Threads - Thick chain-lines - Enlarged views - Hatching - Leader lines - Using reference material, applies abbreviations to drawings - Applies conventional representation of the following features: <ul style="list-style-type: none"> - External and internal threads - Squares on shafts - Serrated and splined shafts - Holes on a linear and on a circular pitch - Bearings - Interrupted views - Tension and compression springs 	
		<ul style="list-style-type: none"> -Use of Manuals -Interpretation of blocks, logic systems and flow diagrams applicable to marine machinery and systems. -Interpretation of general arrangements, systems and detailed plans of ship's structures machinery and equipments. 	6 hours
		Total No. of Hours	44 Hours

* the discrepancy between course map and course specification total number of hours is intended for assessment