

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

Course Code	:	Machine Shop 1
Course Descriptive Title	:	Hand and Measuring Tools
Course Credits	:	2 units
Lecture Contact Hours per Week	:	1 hour
Laboratory Contact Hours per Week	:	4 hours
Prerequisite	:	None
Reference/s	:	<ol style="list-style-type: none"> 1. Table A-III/1 of the 1978 STCW Code as amended 2. IMO Model Course 7.04 (OIC Nav) 3. Annex A of CMO No. 20, Series of 2015 (Curriculum Mapping for BSMarE) 4. STCW'78 as amended

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	PERFORMANCE	APPROX HOURS
Appropriate use of hand tools, machine tools and measuring instruments for fabrication and repair on board	Safety measures to be taken to ensure safe working environment and for using hand tools, machine tools and measuring instruments	<ul style="list-style-type: none"> - States that a well-organized work shop must be most effective to ensure a safe working environment and for using hand tools, machine tools and measuring instruments - States the importance that all the tools and measuring instrument should be kept in good order and shape to avoid accidents and to ensure safety of life - States that proper use of tools enables successful completion of the tasks - States the importance that a careful attitude is necessary when working on any tasks - States that first-aid box, fire extinguishers, appropriate lighting and ventilation should be in the work shop - Describes the necessary control over the power supply to a machine tool - Describes the basic differences between 'stop' and 'start' buttons - Describes the purpose and siting of 'emergency stop' buttons - Describes the situations where the following should be worn: <ul style="list-style-type: none"> - Safety helmets - Eye protection - Protective footwear - Skin protection - States when hands and arms should be washed with soap and water <p>Describes the care necessary for hands, including for any cuts or abrasions</p>	5 Hours
Appropriate use of hand tools, (cont)	Use of hand tools, machine tools and measuring instruments	<p><u>Measuring Instruments</u></p> <ul style="list-style-type: none"> - Lists measuring instruments usually used for fabrication and repair on board ships, showing measuring instruments such as various types of scales, callipers, protractors, square and straight edge, vernier callipers, depth gauges micrometers, dial indicators, thickness gauges, radius gauges and screw pitch gauges - Explains and demonstrates how to use measuring instruments including their accuracy <p>Explains and demonstrates correct selections of specific measuring instruments in accordance with their purposes of use</p>	10 Hours
		<p>(Supervised Student Activity)</p> <p>Uses various measuring instruments to acquire skills of using them with sample materials provided</p>	15 Hours
		<p><u>Hand tools</u></p> <ul style="list-style-type: none"> - Lists hand tools usually used for fabrication and repair on board ships, showing actual hand tools such as various types of spanners, wrenches, pliers, drivers, nippers, benders, cutters, hacksaws, vices, gear pullers, files, drills, reamers, hammers, tap 	15 Hours

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	PERFORMANCE	APPROX HOURS
		<p>and dies, brushes, anvil, swage block, punches, scrapers, chisels, scissors and chucks</p> <ul style="list-style-type: none"> - Explains and demonstrates how to use hand tools usually used for fabrication and repair - Explains and demonstrates correct selections of specific hand tools in accordance with their purposes of use - Among others, describes the following with regard to thread cutting: <ul style="list-style-type: none"> - The purpose of taper, second and plug taps - What governs the diameter of the hole to be drilled prior to tapping - The difference in use of a die nut and a stock and die - The different techniques used when cutting: <ul style="list-style-type: none"> - Small-diameter threads - Large-diameter and fine threads - Internal threads in open-ended and blind holes and external threads on small-and large-diameter rod <p>Explains and demonstrates safety precautions necessary when using specific hand tools</p>	
Appropriate use of hand tools, (cont)	Use of hand tools, machine tools and measuring instruments (cont)	(Supervised Student Activity) Uses various hand tools to acquire the fundamental skills of using them with sample materials provided	15 Hours
		<p><u>Powered Hand Tools</u></p> <ul style="list-style-type: none"> - Lists powered hand tools usually used for fabrication and repairs on board ships, showing actual powered hand tools such as various types of electrical/air driven grinders, sanders, drills, impact wrenches, portable jig saw, hand shear and nibbler - Explains and demonstrates how to use powered hand tools usually used for fabrication and repair - Explains and demonstrates safety precautions necessary in general when using electric/air driven hand tools - Explains and demonstrates specific difficulties and necessary precautions when using electric/air driven hand tools 	5 Hours
		(Supervised Student Activity) Uses various powered hand tools to acquire the fundamental skills of using them with sample materials provided	15 Hours
		Total No. of Hours	80 Hours

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