

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

Course Code	:	Machine Shop 2
Course Descriptive Title	:	Machining 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	Use of hand tools, machine tools and measuring instruments	<p><i>Machine Tools</i></p> <p><u>Drilling machines</u></p> <ul style="list-style-type: none"> - Lists the uses of a drilling machine - Explains how a work piece is held in place, emphasizing dangerous practice and the particular problem when drilling thin plate - Describes the procedure for inserting and removing drills with parallel and with tapered shanks - Describes the care necessary to avoid accidents when using a drilling machine 	10 Hours
		<p>Supervised Student Activity</p> <ul style="list-style-type: none"> - Uses drilling machines to acquire the fundamental skills of using them with sample materials provided 	10 Hours
		<p><u>Grinding machine</u></p> <ul style="list-style-type: none"> - Explains the purpose of a grinding machine - Explains how to use a grinding machine - Demonstrates an awareness of the dangers which exist when using a grinding machine - Describes the procedure to ensure safety when using a grinding machine 	5 Hours
		<p>Supervised Student Activity</p> <ul style="list-style-type: none"> - Uses grinding machine to acquire the fundamental skills of using it with sample materials provided 	10 Hours
Appropriate use of hand tools, machine tools and measuring instruments for fabrication and repair on board (cont)	Use of hand tools, machine tools and measuring instruments (cont)	<p><u>Centre Lathe</u></p> <ul style="list-style-type: none"> - Explains the primary purpose of a centre lathe, its construction and functions - Explains the roles of each part, performing their functions of chucks, centres, face plates, material removal, thread cutting and taper turning - On a given diagram or machine, identifies the main features of a modern lathe - On a given diagram or machine, indicates the features and dimensions which govern the capacity of a lathe - Demonstrates an awareness of the dangers which exist when using a lathe 	20 Hours

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	PERFORMANCE	APPROX HOURS
		<u>Cutting tools</u> <ul style="list-style-type: none"> - Explains various cutting tools in terms of materials - Explains various cutting tools in terms of figures - Explains various cutting tools in terms of functions 	
Appropriate use of hand tools, machine tools and measuring instruments for fabrication and repair on board (cont)	Use of hand tools, machine tools and measuring instruments (cont)	Supervised Student Activity <ul style="list-style-type: none"> - Uses a centre lathe to acquire the fundamental skills of using it with sample materials provided 	15 Hours
	Use of various types of sealants and packings	Supervised Student Activity <ul style="list-style-type: none"> - Uses various sealants and packings to acquire skills of using them with sample materials provided 	3 Hours
	Characteristics and limitations of processes used for fabrication and repair	Process <ul style="list-style-type: none"> - Explains the purpose of heat treatment - Describes the following heat treatment processes and the types of steel to which they might be applied: <ul style="list-style-type: none"> • annealing • normalizing • hardening • tempering 	5 Hours
	Properties and parameters considered in the fabrication and repair of systems and components	<u>Pipework</u> <ul style="list-style-type: none"> - Determines minimum bend radius with regard to pipe diameter, thickness, material and process to be used - Selects pipe filters/strainers in piping systems - Observes safety precautions - Bends pipes, using both cold and hot techniques - Removes bulk filler and residue - Checks for ovality, thinning and other defects - Anneals, normalizes or stress-relieves as necessary 	5 Hours
		<u>Total No. of Hours</u>	83 Hours

* discrepancy between course specifications and course map total hour is intended for assessment