

COURSE DETAILS																			
STATUS(COURSE TYPE)	:	EX, LOG, NPM, PRO,TECH & ALL OTHER BRANCHES																	
COURSE TITLE	:	ANTI SUBMARINE WARFARE																	
TIME DURATION	:	Theory	14 periods Total 11Hrs																
LEARNING OUTCOMES	:																		
<p>Trainee will be able to;</p> <ul style="list-style-type: none"> -gain knowledge on Anti-Submarine Warfare, weapons, sensors and platforms used in ASW, Basic knowledge of Submarine and Mine warfare. -perform duties of ASWO. 																			
<table border="1"> <thead> <tr> <th><u>PERIOD</u></th> <th><u>TOPIC</u></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>01-04</td> <td><u>General ASW</u></td> <td> <ul style="list-style-type: none"> a. Aim of ASW. b. Task of ASW. c. Duties and responsibilities of ASWO. d. ASW Weapons, Sensors and platforms. </td> <td></td> </tr> <tr> <td>05-09</td> <td><u>Submarine Warfare</u></td> <td> <ul style="list-style-type: none"> a. History of S/M. b. Role/Employment of Submarine. c. Types of Submarine (Conventional/Nuclear/AIP) d. Advantages / Disadvantages of Conventional Vs Nuclear S/M. e. Construction /Operating States. f. Weapons and Sensors on board Submarine. g. Methods available to detect Submarine. </td> <td></td> </tr> <tr> <td>10-14</td> <td><u>Mine Warfare.</u></td> <td> <ul style="list-style-type: none"> a. What is Sea mine. b. Classification of Sea mine as per position in water and methods of actuation. c. Types of Mine Layers/ Comparison of mine layers d. Mine Counter Measures. e. Mine hunting and Mine sweeping. </td> <td></td> </tr> </tbody> </table>				<u>PERIOD</u>	<u>TOPIC</u>			01-04	<u>General ASW</u>	<ul style="list-style-type: none"> a. Aim of ASW. b. Task of ASW. c. Duties and responsibilities of ASWO. d. ASW Weapons, Sensors and platforms. 		05-09	<u>Submarine Warfare</u>	<ul style="list-style-type: none"> a. History of S/M. b. Role/Employment of Submarine. c. Types of Submarine (Conventional/Nuclear/AIP) d. Advantages / Disadvantages of Conventional Vs Nuclear S/M. e. Construction /Operating States. f. Weapons and Sensors on board Submarine. g. Methods available to detect Submarine. 		10-14	<u>Mine Warfare.</u>	<ul style="list-style-type: none"> a. What is Sea mine. b. Classification of Sea mine as per position in water and methods of actuation. c. Types of Mine Layers/ Comparison of mine layers d. Mine Counter Measures. e. Mine hunting and Mine sweeping. 	
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METHODS OF TRAINING AND LEARNING	:	Lectures, Readings, Listening, presentations, Models, Discussions, Films.																	
ASSESSMENT CRITERIA	:	Semester – end examination	50																
RECOMMENDED READING	:	Docket on General ASW Docket on Mine and Mine warfare. Docket on Submarine Warfare																	

COURSE DETAILS				
STATUS(COURSE TYPE)	:	EX		
COURSE TITLE	:	ANTI SUBMARINE WARFARE		
TIME DURATION	:	Theory	16Hrs	21 Periods
LEARNING OUTCOMES	:	On successful completion of this module, trainee will gain knowledge on the Underwater Acoustics, SONAR, Port defense, and Basic Knowledge of Tactics.		

<u>PERIOD</u>	<u>TOPIC</u>
01-08	Underwater Acoustics. a. Characteristics of sound. b. Factors affecting sound velocity. c. Wilson's equation. d. Snell's Law. e. Basic sound velocity gradients. f. Deep Sea sound velocity profile.
09-12	Basics of SONAR a. Introduction of SONAR b. Basic components of SONAR c. Types of SONAR d. Military and civil usage of SONAR
13-17	Port defense a. Importance of ports b. Port defense, detection methods, SWD&SWD Principles c. Threats & Defense against UW attack d. Operation 'Awakward'
18-21	Introductions to Tactics a. Datum b. SAU c. TDZ&TDA d. TCM e. Types of ASW attacks. f. Introduction of Hunter killer ops

METHODS OF TRAINING AND LEARNING	:	Lectures, Readings, Listening, presentations, Models, Discussions, Films.	
ASSESSMENT CRITERIA	:	Semester – end examination	100%
RECOMMENDED READING	:	Docket on Under water Acoustics and Port defense	