

Part D

Instructor's Guide

Instruction: The Instructor's Guide (IG) also known as a lesson plan is developed by the instructor which serves as a road map of what the trainees need to learn and how it will be done effectively. The format below shall be used to ensure uniformity. However, the MTI is required to specify teaching and learning activities, and develop appropriate Instructional Materials suitable for the learning outcome/s.

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Ensure Safe Working Practices		
			Knowledge, Understanding and Proficiency: Safe Working Practices		
			Topics: Course Introduction 7. Safe Working Practices		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Written Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
1 hour	Introduction	Course Introduction <ul style="list-style-type: none"> Requirements in Regulation III/2 and Section A-III/2-F3; competences and KUPs in Tables A-III/2 – F3; Objectives of the course; and Course requirements Intended learning Outcome Introduction to leadership skills that a management level officer should possess 	<ul style="list-style-type: none"> Class orientation/ briefing Lecture/Discussion or other teaching methods suitable for theoretical aspect Presentation of the ILOs or other activities to motivate the trainees 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used

<p>2 hours and 50 minutes</p>	<p>Core Elements</p>	<p>1. Safe Working Practices</p> <ul style="list-style-type: none"> • Safe working practices including risk assessment, use of checklist, permit to work, and best practices in ship's maintenance and repair and the Code of Safe Working Practices 	<p>The MTI is required to specify suitable activities for the delivery of topic</p>	<p>The MTI is required to specify suitable learning activities</p>	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices
<p>10 minutes</p>	<p>Conclusion</p>	<p>Safe Working Practices</p>	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	<p>Visual Presentation</p>

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Manage Safe and Effective Maintenance and Repair Procedures		
			Knowledge, Understanding and Proficiency: Marine Engineering Practice		
			Topic: 8. Marine Engineering Practice		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Written Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
15 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
2 hours and 30 minutes	Core Elements	2. Marine Engineering Practice <ul style="list-style-type: none"> • Best management practices in planning and carrying out maintenance and repair activities for the following in accordance with technical, legislative, safety and procedural specifications: <ul style="list-style-type: none"> • main propulsion system, • steam system • generator and distribution system • auxiliary machineries • statutory and class verifications 	The MTI is required to specify suitable activities for the delivery of the topics	The MTI is required to specify suitable learning activities	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices

Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
15 minutes	Conclusion	Marine Engineering Practice	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	Visual Presentation

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Manage Safe and Effective Maintenance and Repair Procedures		
			Knowledge, Understanding and Proficiency: Planning maintenance, including statutory and class verifications		
			Topic: 9. Planning maintenance, including statutory and class verifications		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Practical Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
5 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation of the Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
50 hours	Core Elements	Practical Exercise 1 Plan maintenance activities, including statutory and class verifications of main propulsion, steam system, generator and distribution system, and auxiliary machineries	Practical Exercise 1 The MTI is required to specify suitable activities for the conduct of the practical exercise on planning maintenance activities, including statutory and class verifications of main propulsion, steam system, generator and distribution system, and auxiliary machineries in accordance with ship's Planned Maintenance System (PMS) and safe working practices through a given	Practical Exercises 1 Participating in the practical exercises in planning maintenance activities, including statutory and class verifications of main propulsion, steam system, generator and distribution system, and auxiliary machineries in accordance with ship's Planned Maintenance	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices • Sample PMS • Exercise Sheet A4.1

Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
			scenario	System (PMS) and safe working practices in a given scenario	
5 minutes	Conclusion	Planning maintenance, including statutory and class verifications	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment • Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	Visual Presentation

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Manage Safe and Effective Maintenance and Repair Procedures		
			Knowledge, Understanding and Proficiency: Planning Repairs		
			Topic: 10. Planning Repairs		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Practical Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
5 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation of the Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
50 minutes	Core Elements	<p>Practical Exercises 2</p> <p>Plan repair activities of main propulsion, steam system, generator and distribution system, and auxiliary machineries, including statutory and class verifications</p>	<p>Practical Exercise 2</p> <p>The MTI is required to specify suitable activities for the conduct of the practical exercise on planning repair activities of the following in accordance with safe working practices in a given scenario:</p> <ul style="list-style-type: none"> - main propulsion - steam system - generator and distribution system - auxiliary machineries - statutory and class verifications 	<p>Practical Exercises 2</p> <p>Participating in the practical exercises in planning repair activities of the following in accordance with safe working practices in a given scenario</p>	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices • Exercise Sheet A4.2

5 minutes	Conclusion	Planning Repairs	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	Visual Presentation
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Course: Management Level Course for Marine Engineer Officers (Function 3)	Competence: Manage Safe and Effective Maintenance and Repair Procedures
	Knowledge, Understanding and Proficiency: Manage Safe and Effective Maintenance and Repair Procedures
	Topic: 11. Manage Safe and Effective Maintenance and Repair Procedures
No. of Trainees: Twenty-Four (24)	Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s
Class Layout: Layout suitable for the theoretical part	Formative Assessment: Practical Test

Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
15 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
7 hours and 30 minutes	Core Elements	<p>Practical Exercises 3 and 4</p> <p>A4.3 Manage safe and effective maintenance and repair procedures of main propulsion, steam system, generator and distribution system, and auxiliary machineries</p> <p>A4.4 Monitor the adherence to safe working practices of any particular engine room maintenance or repair activity</p>	<p>Practical Exercises 3 and 4</p> <p>The MTI is required to specify suitable activities for the conduct of the practical exercise:</p> <ul style="list-style-type: none"> • managing safe and effective maintenance and repair procedures of the following in accordance with operational manual and technical specifications in a given scenario 	<p>Practical Exercises 3 and 4</p> <p>Participating in the practical exercises:</p> <ul style="list-style-type: none"> • managing safe and effective maintenance and repair procedures • monitoring the adherence to safe working practices of any particular engine 	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices • Permit to Work • Exercise Sheet A4.3 and A4.4 • Operational manual and technical specifications

Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
			<ul style="list-style-type: none"> - main propulsion system, - steam system - generator and distribution system - auxiliary machineries statutory and class verifications • monitoring the adherence to safe working practices of any particular engine room maintenance or repair activity in accordance with legislative requirements, codes of practice, permit to work, and environmental concerns in a given scenario 	<p>room maintenance or repair activity</p>	<ul style="list-style-type: none"> • Small cylinder liner, piston, connecting rod and pistons • Steam Trap • Circuit Breaker • Centrifugal or gear pump
<p>15 minutes</p>	<p>Conclusion</p>	<p>Manage Safe and Effective Maintenance and Repair Procedures</p>	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	<p>Visual Presentation</p>

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Detect and Identify the Cause of Machinery Malfunctions and Correct Faults		
			Knowledge, Understanding, and Proficiency: Detection of machinery malfunction, location of faults and action to prevent damage		
			Topic: 12. Detection of Machinery Malfunctions, Location of Faults and Action to Prevent Damage		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Written and Practical Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
10 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation of the Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
2 hours 40 minutes	Core Elements	<p>6. Detection of Machinery Malfunctions, Location of Faults and Action to Prevent Damage</p> <ul style="list-style-type: none"> • methods of comparing actual operating conditions against normal operating conditions in accordance with recommended practices and procedures 	The MTI is required to specify suitable activities for the delivery of the topics	The MTI is required to specify suitable learning activities	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used

3 hours		<p>Practical Exercises 5 and 6</p> <p>A4.5 Detect machinery malfunctions by comparing the actual operating condition against the normal operating condition and other methods to locate faults</p> <p>A4.6 Decide on appropriate actions to take to correct faults and prevent damage</p>	<p>Practical Exercises 5 and 6</p> <p>The MTI is required to specify suitable activities for the conduct of the practical exercise in:</p> <ul style="list-style-type: none"> - detecting machinery malfunctions by comparing the actual operating condition against the normal operating condition and other methods to locate faults, in accordance with recommended practices and procedures in a given scenario - deciding on appropriate actions to take to correct faults and prevent damage in accordance with best practices and established procedures based on the malfunctions detected and faults located 	<p>Practical Exercises 5 and 6</p> <p>Participating in the practical exercises on:</p> <ul style="list-style-type: none"> - detecting machinery malfunctions by comparing the actual operating condition against the normal operating condition and other methods to locate faults - deciding on appropriate actions to take to correct faults and prevent damage 	<ul style="list-style-type: none"> • Exercise Sheet A4.5 and A4.6 • ERS
10 minutes	Conclusion	<p>Detection of Machinery Malfunctions, Location of Faults and Action to Prevent Damage</p>	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	<p>Visual Presentation</p>

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Detect and Identify the Cause of Machinery Malfunctions and Correct Faults		
			Knowledge, Understanding and Proficiency: Inspection and Adjustment of Equipment		
			Topic: 7. Inspection and Adjustment of Equipment		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Written and Practical Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
10 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation of the Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
2 hours 40 minutes	Core Elements	7. Inspection and Adjustment of Equipment <ul style="list-style-type: none"> • Procedures for inspection and adjustment of equipment as per manufacturer's manual 	The MTI is required to specify suitable activities for the delivery of topic	The MTI is required to specify suitable learning activities	<ul style="list-style-type: none"> • Visual presentation • Code of Safe Working Practices • Equipment manufacturer's manual

2 hours		<p>Practical Exercises 7 and 8</p> <p>A4.7 Supervise the inspection of the equipment</p> <p>A4.8 Decide the necessary adjustment of the equipment</p>	<p>Practical Exercises 7 and 8</p> <p>The MTI is required to specify suitable activities for the conduct of the practical exercise on:</p> <ul style="list-style-type: none"> - supervising the inspection of the equipment in accordance with recommended operating specifications and limitations in a given scenario - deciding the necessary adjustment of the equipment in accordance with recommended operating specifications and limitations in a given scenario 	<p>Practical Exercises 7 and 8</p> <p>Participating in the practical exercises in:</p> <ul style="list-style-type: none"> - supervising the inspection of the equipment - deciding the necessary adjustment of the equipment 	<ul style="list-style-type: none"> • Exercise Sheet A4.7 and A4.8 • Piston/liner
10 minutes	Conclusion	Inspection and Adjustment of Equipment	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	Visual Presentation

Course: Management Level Course for Marine Engineer Officers (Function 3)			Competence: Non-destructive Examination		
			Knowledge, Understanding and Proficiency: Non-destructive Examination		
			Topic: 7. Non-destructive Examination		
No. of Trainees: Twenty-Four (24)			Learning Outcome/s: At the end of the session, the trainees should be able to: Refer to Part C Course Syllabus for the Intended Learning Outcome/s		
Class Layout: Layout suitable for the theoretical part			Formative Assessment: Written and Practical Test		
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
10 minutes	Introduction	<ul style="list-style-type: none"> • Presentation of competence/KUPs • Intended Learning Outcome 	<ul style="list-style-type: none"> • Review of previous topics • Presentation of the Intended Learning Outcome/s 	Listening, note taking, inquiring, answering questions, interactive discussion	Visual presentation
Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
2 hours and 40 minutes 1 hour	Core Elements	8. Non-destructive Examination <ul style="list-style-type: none"> • Different methods of non-destructive examination of machineries and equipment 	The MTI is required to specify suitable activities for the delivery of the topic	The MTI is required to specify suitable learning activities	<ul style="list-style-type: none"> • Visual presentation

Time	Phase	Content	Instructor-led Activity	Trainee's Learning Activity	Instructional Materials Used
		<p>Practical Exercise 9 Decide on the appropriate maintenance and repair of machineries and equipment</p>	<p>Practical Exercise 9 The MTI is required to specify suitable activities for the conduct of the practical exercise on deciding on the appropriate maintenance and repair of machineries and equipment based on the results of non-destructive examination</p>	<p>Practical Exercise 9 Participating in the practical exercises in deciding on the appropriate maintenance and repair of machineries and equipment based on the results of non-destructive examination</p>	<ul style="list-style-type: none"> • Code of Safe Working Practices • Exercise Sheet A4.9 • Dye Penetrant Testing Equipment • Piston/liner
<p>10 minutes</p>	<p>Conclusion</p>	<p>Non-destructive Examination</p>	<ul style="list-style-type: none"> • Make generalization and abstraction of the lesson • Assess the learning which may come from any of the following: <ul style="list-style-type: none"> - Formative test - Oral Examination - Assignment - Other activities to check the retention of learning 	<ul style="list-style-type: none"> • Participating, sharing insights and learning gained • Answering/asking questions 	<p>Visual Presentation</p>