

OBJECTIVE

This course is designed to provide the participants with an understanding of the fundamentals of boiler design, its operation and maintenance. Topics will include basic boiler styles, operating characteristics and to recognize maintenance requirements and procedures for boilers and auxiliary equipment; recognize boiler operation steps and checks and safety requirements.

On completion of this module, participants should:

- Understand the principles and practice of boiler operations.
- Understand fault detection and diagnostic techniques and their practical implementation.
- Understand the procedures of the boiler system specification and set-up, the selection of parameters to be monitored, the location of monitoring points and the frequency of monitoring.
- Be able to identify a range of common faults in terms of the symptoms exhibited, the cause of those symptoms and the techniques used to detect, distinguish between and diagnose the associated faults.

COURSE OUTLINE

- 1.0 Maintenance Of Auxiliary Equipment
 - Maintenance Req. For Control Of Water Level
 - Gauge Glass Replacement
 - Feed-Water Regulator Maintenance
 - Valve Maintenance
 - Steam Injector Maintenance
- 2.0 Steam Trap Maintenance
- 3.0 Fan Maintenance
- 4.0 Handhole And Manhole Gasket Maintenance
- 5.0 Hydrostatic Tests
- 6.0 Boiler Tubes
 - Composition Of Boiler Tubes
 - Renewing Tubes
 - Removing Tubes
 - Cleaning Tubes
 - Composition Of Boiler Tubes

6.0 Boiler Tubes (Cont.)

- Preparing Tube Ends
- Fitting Tubes
- Expanding Tubes
- Belling Tubes
- Renewing Welded Tubes
- Plugging Boiler Tubes

7.0 Repairing Boiler Refractories

8.0 Boiler Operations

9.0 Pre-watch Assumption Checks

10.0 Reoperating Checks

11.0 Lining Up Systems

12.0 Operating Procedures

- 12.1 Normal Operation
- 12.2 Blowdown
- 12.3 Boiler Makeup
- 12.4 Soot Removal
- 12.5 Instrument Readings

13.0 Operating Checks

14.0 Securing Procedures

15.0 Boiler Emergencies

16.0 Boiler Operating Logs

17.0 Safety, Safe, Unsafe, LOTO

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER.

COURSE DURATION

- 2 Days.

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- RM 1,890.00.

BOILER OPERATIONS AND MAINTENANCE – THEORY AND PRACTICAL



ORGANIZED BY



BACKGROUND

A two program providing an overview of basic packaged boiler theory and safety. Topics covered include boiler construction, fluid paths, major components, thermodynamics, instrumentation, feed water control and principles of operation.

COURSE OBJECTIVES

- Obtain a better understanding of basic boiler theory, including design and operating principles.
- Using the supplied notes, participate in discussions including boiler construction, components, flow paths and thermodynamics.
- Learn to save money and time through safe, efficient, boiler room operations

Course content

1. Basic Package Boiler Description

- Firetube Boiler
- Watertube Boiler
- Boiler Construction
- Advantages/Disadvantages

2. Combustion

- Fuel, Heat, Oxygen
- Products of Combustion

3. Boiler Fluid Flow Paths

- Water, Fuel, Combustion Air

4. Thermodynamics

- Water Reactions
- Heat Transfer

5. Boiler Components

- Forced Draft Fan
- Forced Draft Damper
- Firetubes
- Turning Box (Arch)
- Fuel Supply Regulator
- Main Fuel Valves
- Fuel Butterfly Valve
- Feedwater Control Valve
- Miscellaneous Valves

6. Instrumentation & Control

- Pressure, Temperature
- Flow, Level
- Feedwater Control
- Burner Controls
- Flame Safety Control

7. Principles of Boiler Operation

- Boiler Prerequisites
- Boiler Start-up
- Boiler Normal Operation
- Boiler Shutdown

8. Boiler Safety

- Safety Resources
- Safety Rules

9. Boiler Chemistry

- Chemical Maintenance
- Open Loop Steam Boiler Chemicals
- Scaling Control/Production
- Basic Tests

WHO SHOULD ATTEND

Supervisors, and Technicians and others who wish to sit for the Steam Boiler Driver Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER

PROGRAM FEES

- RM 1,890.00.

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

SAFETY OF BOILER OPERATION



**10
CEP**

ORGANIZED BY



BACKGROUND

The boiler is one of the items of equipment in a plant which continuously keeps on running during sailing and in port. As it is running continuously, it has to be inspected and cleaned to check the condition of all internal working parts at regular intervals.

The scope of inspections is to clean the boiler's internal surfaces and to check for corrosion and scale formation in the boiler. All the important checks are carried out and it will be made sure that the boiler will safely work without any problems until the next inspection. At the end of the training, participants must be able to;

- Complete cleaning and survey preparation
- Economizer repairs and manufacturing.
- Pressure gauge calibration.
- Maintenance of water level indicators and protective devices.
- Safety valves adjustment under steam to blow off at the required pressures.
- The oil fuel burning system examination.
- Testing of remote control gear for fuel shut off valves.
- Repairing/renewing worn or damaged boiler tubes.
- Overhauling of boiler valves.
- Insulations and fire brick renewals.
- New fitting equipment and accessories supply.

COURSE CONTENT

TOPIC 1:

Introduction

TOPIC 2:

Reasons For Inspection

TOPIC 3:

Causes Of Deterioration

TOPIC 4:

Safety Precautions, Preparatory Work And Cleaning

COURSE CONTENT

TOPIC 5:

Method Of Inspection

TOPIC 6:

Limitations Of Thickness

TOPIC 7:

Method of Inspection for foundations, settings and other appurtenances

TOPIC 8:

Stacks

TOPIC 9:

Method of Repairs

TOPIC 10:

Records And Reports

WHO SHOULD ATTEND

Supervisors, and Technicians

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- RM 1,890.00.

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BOILER OVERHAUL, SERVICE TECHNIQUE AND PROCEDURE – THEORY AND PRACTICAL



**10
CEP**

ORGANIZED BY



BACKGROUND

This specially tailored course is designed to guide and prepare participants in order to commissioning a boiler. This course is based on 70% hands-on and 30% theory. *Boiler commissioning is an essential part of installing a new boiler system. It involves a series of checks to ensure the unit works correctly and safely. This process helps verify that the boiler is installed according to the manufacturer's specifications.*

The program has been designed carefully to meet the requirements of the boiler house. Participants will receive certificate of attendance on completion of the program. The course will be conducted in B. Malaysia and English since the oral will be conducted in both of the languages.

Key Steps in Boiler Commissioning:

- Inspection: Engineers examine all parts to confirm proper installation.
- Testing: They test the controls and safety devices to ensure they function properly.
- Calibration: Adjustments are made to optimise performance and efficiency.

It is important due to;

- Safety: Ensures all safety features work, reducing the risk of accidents or gas leaks.
- Efficiency: Proper commissioning improves energy efficiency, lowering fuel costs and emissions.
- Warranty: Many manufacturers require commissioning for warranty validation. It protects the investment and ensures support for any future issues.

COURSE CONTENT

1. Pre Commissioning Activity
2. Commissioning Activities
 - d. Hydrotest Of Piping
 - e. Flushing Of Piping
 - f. Trials Of Auxiliaries

2. Commissioning Activities
 - d. Refractory Dry Out
 - e. Alkali Boil Out
 - f. Steam Blowing
 - g. Safety Valve Setting
 - h. Specific Commissioning Procedures
3. Load Trial
4. Tuning And Performance Monitoring
5. Customer Training

WHO SHOULD ATTEND

Supervisors, and Technicians and others who wish to sit for the Steam Boiler Driver Grade 1 and 2 Examination conducted by the Department of Occupational Safety and Health (DOSH).

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- RM 1,890.00.

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

BOILER COMMISSIONING ACTIVITIES, TECHNIQUE AND PROCEDURE – THEORY AND PRACTICAL



**10
CEP**

ORGANIZED BY



INTRODUCTION

This course is designed to covers typical applications of various types of pumps. Describes the factors affecting pump selection. Explains the operating principles of centrifugal, propeller, and turbine, rotary, reciprocating, and metering pumps. Includes special-purpose pumps, diaphragm pumps, and others designed to handle corrosive and abrasive substances. It covers the pump maintenance, packing gland, seal, and bearing replacement.

OBJECTIVES

Upon successful completion of this course the Maintenance Technician/Engineer should be able to:

- Properly disassemble, and inspect a variety of different types of pumps.
- Effectively examine and describe the type(s) of repair(s) required.
- Describe the proper repair procedures to ensure safe and economic post repair operation of the equipment.
- Effectively troubleshoot future problems as they might occur in similar equipment.
- Understand the importance of proper bearing installation and lubrication in rotating equipment.
- Have a better understanding and appreciation for the importance of proper pump alignment, and various alignment techniques and procedures.
- Conduct post repair pump performance and acceptance

COURSE OUTLINE

Lesson 1, Pump Development and Application.

Topics: Development of pumps; Pumping systems; Water, chemical, waste, high-viscosity, and solids pumping systems

Lesson 2, Basic Pump Hydraulics.

Topics: Terminology; Calculating total head, horsepower, and available vs required NPSH; Pump performance; Head capacity; Efficiency; Horsepower curves; Pump selection

Lesson 3, End-Suction Centrifugal Pumps

Topics: Operation; Part definitions; Casing materials; End-suction casing configurations; Impeller types; Wearing rings; Shafts, bearings, and sleeves.

Lesson 4, Propeller and Turbine Pumps.

Topics: Line-shaft, can, and submersible turbines; Flow patterns; Axial- and mixed-flow propeller pumps; Turbine pump construction and applications.

Lesson 5, Rotary Pumps.

Topics: External-gear, internal-gear, lobe, screw, vane, rotary piston, and flexible-member pumps; Rotary pump installation.

Lesson 6, Reciprocating Pumps.

Topics: Reciprocating pump applications, parts, classification, and operation; Horizontal and vertical plunger pumps; Air-driven pump operation.

Lesson 7, Metering Pumps.

Topics: Uses and classes of metering pumps; Plunger, piston, diaphragm, air-operated, and rotary metering pumps.

Lesson 8, Special-Purpose Pumps.

Topics: Handling difficult materials; Chemical, magnetic-drive, canned-motor, slurry, pulp-handling, trash, sewage, diaphragm, and vortex pumps.

Lesson 9, Packings and Seals.

Topics: Sealing requirements; Stuffing boxes; Packing materials and recommendations; Installing packing; Mechanical, cartridge, balanced, and special seals.

Lesson 10, Pump Maintenance.

Topics: Pump bearings, lubrication, and seals; Pump installation and maintenance; Centrifugal, turbine, rotary, and reciprocating pump maintenance.

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER.

COURSE DURATION

- 3 Days.

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- RM 1,890.00.

PUMP OPERATION & MAINTENANCE COURSE



ORGANIZED BY



OBJECTIVES

This course covers how to identify components and correct procedures, describe functions and purpose, and troubleshoot as it relates to the identification, function, construction, operation and maintenance of the various types of valves in general use in piping systems. It includes detailed coverage of the general appearance, construction, and function of gate, globe and check valves; general coverage of plug, diaphragm, pinch, butterfly, three-way-flow, safety, pressure-regulating, control, multi-port, and other less common valves; and general coverage of valve operation, installation; and maintenance.

At the completion of this course, the student will be able to:

- Identify the function, construction, operation, and maintenance of various valves in piping systems
- Detail the appearance, construction, and function of gate, globe, and check valves
- Describe the use of plug, diaphragm, pinch, butterfly, three-way-flow, safety, and other valves
- List the operation, installation, and maintenance concerns of valves
- Demonstrate this knowledge on a fill-in-the blank final exam

COURSE CONTENTS

TOPIC 1:

Introduction of valve types

TOPIC 2:

Operating principle of manual valves, control valve, ON-OFF valve

TOPIC 3:

Identify components and accessories

TOPIC 4:

Understand the function of every components and accessories

TOPIC 5:

Flow characteristic and application

TOPIC 6:

Valves maintenance

TOPIC 7:

Site acceptance test procedures

TOPIC 8:

API specification 598: Valve inspection & testing – 10th Edition ISO 5208 Industrial

TOPIC 9:

Valves – Pressure testing of metallic valves test equipment

TOPIC 10:

Practical – Open valve & identify soft and hard parts

TOPIC 11:

Practical – Valve leak test & hydrostatic shell test

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER.

COURSE DURATION

- 2 Days.

PROGRAM FEES

- RM 1,890.00.

VALVE OPERATION & MAINTENANCE COURSE



ORGANIZED BY



OBJECTIVES

This course will focus on the steps and procedures necessary to create the most effective preventive and predictive maintenance techniques and analysis possible within cost constraints. Controlling your assets as opposed to your assets controlling you is one of the key goals of a solid maintenance strategy. This course can help you begin the process of not only preventing equipment failures, but also creating a system of predicting when they are going to occur.

Course content :-

- Introduction
 - Definition of Preventive Maintenance
 - The History of Preventive Maintenance
 - Total Maintenance Management
- Breakdown Maintenance
 - Introduction
 - Why Breakdown Maintenance?
- Getting Out of Breakdown Mode
 - Breaking the Habit - Steps 1 to 5
 - The End Results
 - What Role Can Production Play?
- Lubrication
 - Introduction
 - Lubrication Program
 - Lubricant Condition
 - Lubricant Contamination
 - Lubricant Identification
 - Correct Lubrication
- Practical Case Study
- Preventive Maintenance
 - Goals of Preventive Maintenance
 - Functions of Preventive Maintenance
 - Activities of Preventive Maintenance
 - Preventive Maintenance's Place in Maintenance
 - Cost Reduction
 - Preventive Maintenance Methods

- Establish a P.M. Program
 - Write and Publish a Policy Statement
 - Define the Equipment
 - Training of PPM Personnel Procedures
 - Get the Program Underway
- Preventive Maintenance Inspections
 - Preventive Maintenance Inspections
 - Major Functions of Preventive Maintenance
 - The Operator's Role in CLAIR
 - Standards and Checklists
 - P.M. Inspections and Planning and Scheduling
 - Working Out the P.M. Schedule
 - Schedule Using Surveillance Routes
 - P.M. Performance Measurements
- Predictive Maintenance
- Breakdown and Preventive/Predictive Maintenance
 - Preventive Maintenance Overlap
 - Predictive Maintenance Overlap
 - What is Predictive Maintenance?
 - Primary Objectives
 - Reviewing Monitoring Techniques
 - Machine Condition Monitoring
 - Advantages of Predictive Maintenance
 - 12 Essential Steps in Building a Predictive Maintenance Program
- Practical Case Study

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER.

COURSE DURATION

- 2 Days.

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- RM 1,890.00.

BOILER PREVENTIVE & PREDICTIVE MAINTENANCE COURSE



ORGANIZED BY



BACKGROUND

The course is aimed at workers, supervisors and safety representatives, in any sector where chemicals are used. The introductory courses will give learners a quick, free and invaluable introductory guide to identifying and managing hazardous chemicals in the workplace.

The short interactive course provides a general overview of chemical safety in the workplace, including a broad outline of the types of chemical substances found in workplaces. Course objectives include developing a chemical inventory, understanding information on the labels and safety data sheets and identifying hazardous chemicals. The course also provides an overview of chemical risk assessment, information on exposure and how to implement a hierarchy of control.

At the end of this course learners should be able to:

- identify all hazardous chemicals in the workplace
- recognise the difference between hazardous/ non-hazardous chemicals
- identify ways hazardous chemicals can enter the body
- develop a chemical inventory
- find information on chemicals through the use of labels and Safety Data Sheets
- examine risk and determine possible risk reduction measures using the hierarchy of control.

COURSE OUTLINE

MODUL 1: FOR WORKER

- Module 1: Introduction to Chemical Safety in the Workplace
- Module 2: Chemical Hazards and Exposures
- Module 3: Control Approaches and Emergency Responses
- Module 4: Hazard Communication
- Module 5: Your Participation in Chemical Safety

COURSE OUTLINE

MODUL 2: FOR MANAGEMENT

- Module 1: Introduction to Chemical Safety Management
- Module 2: Your Responsibilities in Chemical Safety Management
- Module 3: Strengthen Worker Engagement in Chemical Safety Management
- Facility-Specific Chemical Safety Training Development Toolkit

WHO SHOULD ATTEND

Health and Safety Managers, OHS Officers, Human Resources Managers, Facility Managers, Compliance Officers

DATE OF COMMENCING AND VENUE;

- TO BE CONFIRMED LATER.

COURSE DURATION

- 2 Days.

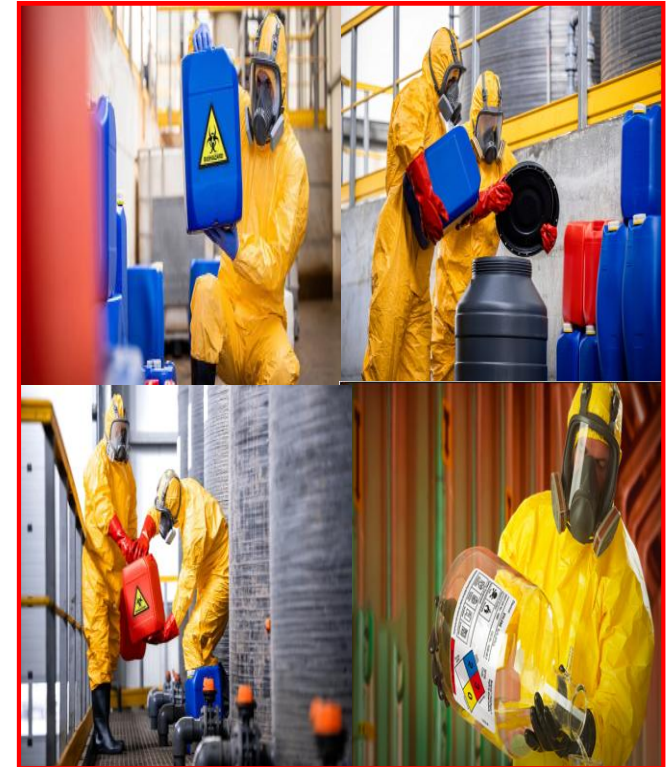
PROGRAM FEES

- RM 1,890.00.

LECTURER

- Qualified and vastly experienced Instructor.
- Refer profile of lecturers attached.

CHEMICAL HAZARD MANAGEMENT COURSE



ORGANIZED BY



BACKGROUND

This Occupational Safety Health Training is targeted specifically at those who work in various industry and it covers essential topics like OSH legislation, safe work practice, building fire safety, machine safety, indoor air quality, ergonomics, safe lifting techniques, box cutter safety, materials handling, and much more. It's ideal for showing new employees the right and wrong way of getting started, but it's also an excellent refresher for existing workers who have been a little lazy in some areas of workplace safety. This training is conveniently conducted in English and Bahasa Malaysia language.

This training will provide the participants with a basic understanding of the main risks in manufacturing and some of the steps that can safeguard the Occupational Safety and health of employees, contractors and visitors. The programme contains information on the health and safety responsibilities of those involved in manufacturing according to Malaysia Law (Occupational Safety & Health 1994 or OSHA 1994) and also the latest Occupational Safety and Health (Amendment) Act 2022.

COURSE OUTLINE

Module 1: Occupational Health Services (OHS)

- Objectives of OHS
- Work Organisation
- Surveillance
 - Workplace
 - Health
- Counselling
- Workplace Health Promotion
- Work Ability and Rehabilitation
- First Aid/Accident Management
- Occupational Health and Primary Health

Module 2: Management of Occupational Health Services (OHS)

- Planning and Management of OHS
- Ethics
- Education and Training of OHS Personnel
- Competencies
- Multidisciplinary Team Working in Occupational Health
- Financing of OHS
- Quality Management

Module 3: Occupational Safety and Health Management System

- Main Elements
- Policy
- Organizing

- Planning and implementation
- Evaluation
- Action for improvement

Module 4: Hazard Identification and Assessment

- Collect Existing Information About Workplace Hazards
- Inspect the Workplace for Safety Hazards
- Identify Health Hazards
- Conduct Incident Investigations
- Identify Hazards with Emergency and Nonroutine Situations
- Characterize the Nature, Identify, & Prioritize the Hazards

Module 5: Hazard Prevention and Control

- Identify Control Options
- Select Controls
- Develop and Update a Hazard Control Plan
- Select Controls to Protect Workers
- Implement Selected Controls in the Workplace
- Follow Up to Confirm that Controls are Effective

Module 6: Education and Training

- Provide Program Awareness Training
- Train Employers, Managers, and Supervisors
- Train Workers on:
 - Their Specific Roles
 - Hazard Identification and Controls

Module 7: Program Evaluation and Improvement

- Monitor Performance and Progress
- Verify that the Program is Implemented and is Operating
- Correct Program Shortcomings and Identify Opportunities

Module 8: Occupational Health and Safety Legislations

- Main Objectives, Factories Act
- Workmen's Compensation Act, Employees' Act
- Inadequacy of OHS Legislation

WHO SHOULD ATTEND

Health and Safety Managers, OHS Officers, Human Resources Managers, Facility Managers, Compliance Officers

COURSE DURATION

- 2 Days.

PROGRAM FEES

- RM 1,890.00.

LECTURER

- Qualified and vastly experienced Instructor.

OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT COURSE



**10
CEP**

ORGANIZED BY



OBJECTIVES:

The hands-on course encompasses the design, general operation and maintenance characteristics of a steam turbine. The course teaches the overall design and operation concepts incorporating basic operation and maintenance problems for steam turbines.

An emphasis is placed on providing practical information with minimal theory and is aimed at engineers and operational personnel who need a broad-based introduction to practical operation and design considerations of steam turbines. Discussion throughout the course of plant problems with the instructor and amongst the course attendees is encouraged so as to maximize the course experience.

Upon successful completion of this course the participant should be able to understand the:

- Basic steam turbine operating cycle
- Overview of steam turbine major components and equipment arrangements and how these relate to overall operation and performance
- Fundamentals of steam turbine control and protection: start-up, speed, load, shutdown and temperature
- Operating parameters and control / protection features of the various turbine support systems such as the lubricating oil, hydraulic
- Define the items that must be considered when performing steam turbine operation.
- Describe the types of defects that are found in steam turbine generator components during inspections.
- Identify causes for the defect.
- List the possible corrective actions concerning the defect.
- Describe the criteria used to determine the best corrective action.
- Describe the items that must be addressed during maintenance planning.
- Describe the various methods used to properly align steam turbine generator components.

COURSE OUTLINE:

- Oil & Gas Steam Turbines General
- Field Applications
- Fundamentals of Steam Turbine Cycle
- Major Components and Equipment
- Condenser
- Steam Consumption Diagrams
- Auxiliary and Protection Systems
- Description of Condensate and Drain
- Control System
- Preliminary Procedures for Steam Turbine Startup
- Startup and Shut-down Sequences
- Loading
- Key Parameters for Steam Turbine
- Maintenance Philosophy Overview
- Troubleshooting
- How to use the Unit Service Manuals
- Workshop Training

WHO SHOULD ATTEND

Managers, Engineers, Shift Charge Engineers and Technicians.

DATE OF COMMENCING AND VENUE

- TO BE CONFIRMED LATER.

COURSE DURATION

- 2 Days.

PROGRAM FEES

The following fees for the Certificate Program will be applicable accordance to the venue of training;

- RM 1,890.00.

STEAM TURBINE OPERATION & MAINTENANCE COURSE



ORGANIZED BY

