



الجمعية الخليجية للصيانة والأتمتة  
Gulf Society For Maintenance & Reliability

# EDUCATION & CERTIFICATION HANDBOOK

YOUR GATEWAY TO EXCELLENCE

TRAINING





“Accelerating progress,  
advancing excellence in  
maintenance,  
reliability, and asset  
management across  
the Gulf.”

## ➤ Introduction

The Gulf Society for Maintenance & Reliability (GSMR) has come a long way since its formation in 2010. Though young when compared to the more established societies in Europe and North America, GSMR has made its presence felt not only in the Arabian Gulf, but also internationally in perpetuating its mission to create a platform to share knowledge and network with maintenance, reliability and asset management professionals within the GCC countries and the whole world. All GCC national oil companies as well as major industrial companies contributed to the success of GSMR. Great strides have been made and GSMR is the proud organizer of the biennial MAINTCON conference that attracts the largest gathering of maintenance, reliability and asset management professionals and vendors in the Middle East. Strategic alliances have been built between GSMR and GCC Engineering societies as well as worldwide maintenance counterparts through the Global Forum for Maintenance and Asset Management (GFMAM). A culture of certification and continuous learning is fostered with the adoption of the Maintenance and Asset Reliability Certification (MARC), Certified Asset Management Assessor (CAMA) and the development of the GSMR Global Certification Scheme (GSMR-GCS) in collaboration with the World Partners in Asset Management (WPiAM) as well as various technical exchanges and training programs.

## ➤ Vision

To be the leading reference for maintenance, reliability and asset management

## ➤ Mission

To foster a community dedicated towards excellence in maintenance, reliability and asset management practices, through education, certification, and collaboration

## » Chairman's Message



**Ahmed Al Jelwah**  
Chairman, GSMR

One of the most commendable pursuits in society is the exchange of knowledge among its members to enhance their skills and capabilities. Through its initiative, the Gulf Society for Maintenance and Reliability (GSMR) has trained hundreds of professionals in the region, featuring renowned international and domestic speakers who hold certifications in their respective fields of expertise via the GSMR Virtual Academy. In an era where changes are happening at an unprecedented pace, it is imperative for every professional to have access to continuous excellence and education.

In the sphere of knowledge sharing and excellence, a team of skilled professionals has imparted their insights and experiences by creating the GSMR Body of Knowledge (BoK). This encompasses the five pillars crucial to the disciplines of Maintenance, Reliability, and Asset Management (MR&AM). The BoK and its pillars provide the groundwork for the Maintenance & Asset Reliability Certification (MARC), certifying that candidates have the essential skills and understanding needed to enhance maintenance practices, reliability strategies, and asset performance as a whole.

As a founding partner of World Partners in Asset Management (WPiAM), GSMR has played a pivotal role in advancing Asset Management in the region by actively promoting best practices and methodologies through the Certified Asset Management Assessor (CAMA) certification. Dedicated to excellence, GSMR has unveiled the GSMR-WPIAM Global Certification Scheme (GCS), designed to support its members, partners, and industry professionals in enhancing their asset management expertise. This initiative offers a structured career path, allowing individuals to further develop their skills and attain worldwide recognition for their knowledge and proficiency in asset management.

The objective is to equip industry professionals with the necessary skills, resources, and tools to initiate, improve, and lead sustainable initiatives based on best practices in the field. The different facets of training offered by GSMR not only boosts their confidence and marketability, but also enhances their ability to manage both human and material assets more effectively.

A team of qualified experts at GSMR serves as facilitators, ensuring high-quality instruction in various aspects of MR&AM. We provide our participants with access to a range of events aimed at elevating industry professionals, imparting new skills, mindsets, competencies, and invaluable knowledge sharing through our physical and virtual platforms.

We invite you to leverage these services offered by GSMR, and also follow the numerous events hosted by the GSMR Virtual Academy and look forward to offering you the highest level of service.

## Message

As we continue to build on the strong foundation established by our predecessors, the next generation of GSMR Training & Certifications Committee takes the torch with the mission to keep fostering excellence in Maintenance, Reliability, and Asset Management Professions. GSMR remains committed to providing a platform for regional professionals to share knowledge, best-in-class technologies, best practices, and experiences, with the ultimate goal of enhancing individual and organizational performance in our regional community.

Through our unique collection of training workshops, designed in collaboration with international and regional stakeholders, we aim to promote knowledge transfer, recognize international standards, and support the pursuit of certifications like MARC & CAMA. As a trusted partner in the region, we will continue to deliver high-quality training and development programs, tailored to the needs of technicians, engineers, and organizations, incorporating the latest advancements and innovations in the field.

As we move forward, our focus will be on enhancing our existing programs with emerging trends and technologies, and expanding our training portfolio with more specialized and hands-on training courses. We invite all members, stakeholders, and industry SMEs to join us on this journey, to collaborate and share their expertise, and to help us drive growth, improvement, and excellence in our community. By working together, we can make a lasting impact on the professionals and organizations we serve, and reinforce our position as a leading authority in Maintenance, Reliability, and Asset Management.

GSMR, Your Partner in Excellence



**Julio Cegarra-Figueroa**  
 Training Committee Chair GSMR

# GSMR BODY OF KNOWLEDGE (BoK) COURSE OUTLINE

**DURATION 4 days**

## OVERVIEW:

This is a four-day workshop designed to discuss and elaborate on the Gulf Society for Maintenance & Reliability (GSMR) Pillars of the Body of Knowledge (BoK) to help candidates come to an understanding of these pillars and their elements. GSMR's Body of Knowledge (BoK) consists of five pillars for professionals and organizations: MR&AM Strategy, Asset Reliability, Maintenance Work Process, Systems and Technologies, and People and Leadership. The knowledge, skill set, and abilities that are essential to each of these pillars and their elements will be discussed in detail. The workshop provides an excellent opportunity to acquire knowledge through the interactive group discussions, explanations of the rationales behind the many MR&AM concepts, and their applications in real life, to benefit the individuals and their organizations. There will also be opportunities to review and discuss practice questions and issues that are faced in real life situations, with useful recommended readings.

## KEY OBJECTIVES:

Additionally, candidates can learn from the experiences of other Maintenance & Asset Reliability Professionals and share their thoughts on a wide range of best practices in the MR&AM fields, and their applications.

- To share knowledge and familiarize the candidates with the GSMR Body of Knowledge (BoK) with applications of the concepts in real-life situations.
- To discuss a study method for candidates to prepare for MARC certification.
- To acquire knowledge and participate in an in-depth discussion on how to achieve best-in-class MR&AM performance and to create an organizational reliability culture.

## COURSE OUTLINE:

- Pillar -1 MR&AM Strategy: Discuss the high-level strategic role of MR&AM plans and programs to support achieving the organization's objectives and maximize asset value realization considering the four asset fundamentals (value, alignment, leadership & assurance).
- Pillar -2 Asset Reliability: Discuss in detail all reliability activities that must be in place to ensure the importance of asset reliability.
- Pillar -3 Maintenance Work Process: Discuss in detail all maintenance activities that must be in place to provide a systematic approach for managing and measuring asset maintenance activities.
- Pillar -4 Systems and Technologies: Discuss in detail how to become enablers (software or hardware) of successful maintenance and reliability within the context of asset management.
- Pillar -5 People and Leadership: Discuss in detail the human factor that, with all the elements above, will carry the journey of excellence in maintenance and reliability.
- In addition to covering the above GSMR BoK – 5 Pillars, more elaboration will be provided on MR&AM issues in the following training modules:
  - o Reliability Design.
  - o Predictive Maintenance.
  - o Maintenance Work Processes.
  - o Inventory Optimization and Management.
  - o Workforce Management and Leadership.
  - o Asset Performance Management.
  - o Metrics, KPI's.

The workshop is recommended for all maintenance, reliability, and asset management engineers, practitioners, and professionals who aspire to become recognized MR&AM professionals.



# PLANNING & SCHEDULING FOR EFFECTIVE MAINTENANCE

**DURATION 4 days**

## OVERVIEW:

The workshop addresses all aspects of the maintenance work management process in major industrial sites. The maintenance planning and scheduling workshop will provide participants with a clear understanding of the strategic role that planning and scheduling plays in today's industrial organizations. Pre-workshop and Post-workshop exams will reinforce retention of the lessons learnt.

## KEY OBJECTIVES:

- To clarify the roles and responsibilities of planners and schedulers
- To learn about maintenance planning & scheduling elements of the work management process
- To overcome challenges and barriers to success
- To use communication skills for effective maintenance planning and scheduling
- To benefit from operating in a planned vs. firefighting environment
- To use planning as a strategic tool for moving from a reactive to a proactive environment
- To aggressively identify defects to improve reliability
- To assess work prioritization
- To plan work orders
- To manage backlogs
- To support the scheduling process

## COURSE OUTLINE:

### Day 1:

- Introduction
- Maintenance Work Process Overview
- Pre-Assessment Questionnaire
- Identification, Prioritization and Backlog Management
- Work execution and Closure

### Day 2:

- CMMS/EAM
- Roles and Responsibilities
- Overview and Planning exercise
- Planning
- Planning exercise

### Day 3:

- Scheduling – Part 1.
- Scheduling – part 2.
- Inventory Management.
- Notification exercise

### Day 4:

- Communications.
- Metrics.
- Post Assessment Questionnaire.
- Review and close.



# HOLISTIC PHYSICAL ASSET MANAGEMENT

PHYSICAL SESSION 4 days | VIRTUAL SESSION 5 days

## OVERVIEW:

Over the last few decades, there have been major global advances in asset management standards, concepts and principles. More than ever organizations need to understand the importance of implementing a holistic approach to asset management to realize maximum value from their assets. This course will provide participants guidance on the development, implementation and maintenance of a comprehensive asset management system in the context of ISO 55000. It will also help participants to prepare for and write the Certified Asset Management Assessor (CAMA) Exam.

## KEY OBJECTIVES:

- To understand the concept and importance of Asset Management
- To learn about ISO 55000 suite of standards
- To learn about the different elements of an asset management system
- To understand how to implement ISO 55000 in your organization
- To understand how to maintain and assess the performance of an asset management system

## COURSE OUTLINE:

### Day 1:

- Introduction and ISO 55000
- Strategic Planning
- Asset Management Policy
- Asset Management Strategy & Objectives
- Demand Management
- Asset Management Planning & Asset Management Decision-Making Strategy
- Capital/Operation & Maintenance Operations
- Lifecycle Value Realization
- Resource Strategy

### Day 2:

- Shutdown & Outage Strategy
- Technical Standards & Legislation
- Asset Creation & Acquisition
- Systems Engineering
- Configuration Management
- Maintenance Delivery
- Reliability Engineering
- Asset Operations & Resource Management
- Shutdown & Outage Management
- Fault & Incident Response
- Asset Decommissioning & Disposal

### Day 3:


- Asset Information Strategy , Standards & Systems
- Data & Information Management
- Procurement & Supply Chain Management
- Asset Management Leadership
- Organizational Structure & Culture
- Competence Management
- Risk Assessment and Management
- Contingency Planning & Resilience Analysis

### Day 4:

- Sustainable Development
- Management of Change
- Asset Performance & Health Monitoring
- Asset Management System Monitoring
- Management Review, Audit & Assurance
- Asset Costing & Valuation
- Stakeholder Engagement
- Asset Management System

### Day 5:

- Day 4 recap
- Revision



# ADVANCED MAINTENANCE MANAGEMENT COURSE OUTLINE

**DURATION** 4 days

## OVERVIEW:

The workshop provides essential knowledge required for embarking on a program to enhance maintenance performance through early identification of potential failures to eliminate and minimize equipment breakdowns. The workshop will discuss the various technologies available in the market to help with the efforts of early detection of failures, and how to integrate their applications with the activities required for achieving excellence through the implementation of Best-in-Class Maintenance Work Process. Work control, planning, and scheduling will be covered. Better utilization of Computerized Maintenance Management Systems (CMMS) will also be covered in this workshop. A pre and post seminar self-assessment will be given to indicate delegate's competency improvement.

## KEY OBJECTIVES:

- To provide an overview on Maintenance management principles
- To understand the principles of Best-in-Class Maintenance Work Process
- To learn the essential elements of Maintenance Work Planning & Scheduling
- To understand the Practices of Predictive Maintenance and optimize preventive and predictive maintenance
- To learn how to focus your resources on critical equipment
- To learn how to work with contractors more effectively
- To develop organizational competence

## COURSE OUTLINE:

### Day 1:

- Expectation of Modern Maintenance
- M&R Best Practices- A cost effective approach
- Maintenance Strategy

### Day 2:

- Reliability Centered Maintenance (RCM-SRCM)
- Failure Mode and Effect Analysis (FMEA) Introduction
- Preventive Maintenance (PM) Optimization Perspective
- CBM Concept, CBM/PdM Technologies

### Day 3:

- CBM phases, Vibration Analysis Basics, and characteristics
- CBM Tools- Infrared Thermography, Ultrasonic Testing, Lubricant & Wear Particle Analysis
- Essential Tips for M&R Rotating Equipment

### Day 4:

- Concept of MWMP- what & why
- Planning & Scheduling Overview, Look-ahead scheduling, long range scheduling
- Workplace Organization: 5S
- Performance Measures: Metrics: OEE/TEEP
- Performance Measures, Metrics Development Process
- Leading & lagging Indicators
- M&R Measures
- MWP KPI's
- Measuring behaviors and sample behavioral areas



# PRINCIPLES AND PRACTICES OF PREDICTIVE MAINTENANCE

**DURATION 4 days**

## OVERVIEW:

The workshop provides essential knowledge required for embarking on a program to enhance maintenance performance through early identification of potential failures to eliminate and minimize equipment breakdowns. The workshop will discuss the various technologies available in the market to help with the efforts of early detection of failures, and how to integrate their applications with the activities required for achieving excellence through the implementation of Best-in-Class Maintenance Work Process. Work control, planning, and scheduling will be covered. Better utilization of Computerized Maintenance Management Systems (CMMS) will also be covered in this workshop. A pre and post seminar self-assessment will be given to indicate delegate's competency improvements

## KEY OBJECTIVES:

- To provide an overview on maintenance management principles
- To understand the organization's expectations from maintenance managers
- To understand the principles of best-in-class maintenance work process
- To learn the essential elements of maintenance work planning & scheduling
- To learn principles and practices of predictive maintenance
- To learn about optimization of preventive and predictive maintenance
- To understand how to focus your resources on critical equipment
- To learn how to work with contractors more effectively
- To develop organizational competence

## COURSE OUTLINE:

### Day 1:

- Introduction & Overview
- Maintenance & Reliability Best Practices
- Maintenance Strategy

### Day 2:

- PM Optimization
- Asset Performance Management
- CBM/PdM

### Day 3:

- PdM Technology
- Rotating Equipment
- Metrics

### Day 4:

- RCM/SRCM Introduction
- FMEA Introduction





# ROOT CAUSE ANALYSIS FOR MAINTENANCE & RELIABILITY APPLICATIONS

**DURATION** 4 days

## OVERVIEW

In any business problems failures, and incidents lead to deviating from meeting the business goals and desirable outcome. There are many ways to discover and solve such obstacles. Root Cause Analysis (RCA) is a very effective problem-solving method that focuses on finding and resolving the underlying causes and not only the symptoms of problems/failures/incidents thus preventing them from reoccurring again and again.

Reliability of any system is greatly improved by decreasing the probability of its components failures, and maintenance and reliability personnel are key players in decreasing the probability of such failures in any plant. This workshop is designed to acquaint the participants with the concepts, methodologies, and practices of RCA.

Participants will learn how to conduct a systematic Root Cause Analysis (RCA) as applied to maintenance and reliability. The workshop starts with an overview of the various RCA methods such as the linear method (5 Whys), fault trees, fishbone, and the barrier analysis method. Then, the focus shifts to one systematic RCA method that should lead to the same root causes regardless of who uses the method.

## KEY OBJECTIVES:

- To gain knowledge about the various RCA methods their strengths and weaknesses, and when one is favored over the other.
- To master a systematic method of conducting root cause analysis that should lead to the same root causes regardless of who uses the method.
- To learn to develop effective corrective actions to address the identified root causes of the problem being analyzed.
- To learn the key success factors of an RCA program
- To learn how to present the findings of an RCA study and the recommend corrective actions in proper report and presentation formats.

## COURSE OUTLINE:

### Day 1:

- Introduction about what RCA is and what OCA methods exist in the literature
- Defining RCA problems and their impacts on the business

### Day 2:

- Process mapping of RCA problems
- Data gathering and listing potential immediate causes
- Charting the gathered issues in a fault-tree format

### Day 3:

- Charting the gathered issues in a fault-tree format
- Determining root causes
- Developing corrective actions

### Day 4:

- Preparing proper RCA reports and presentations
- Exercising the whole RCA process



# MANAGING SHUTDOWN MAINTENANCE

**DURATION** 4 days

## OVERVIEW:

The Shutdown Planning and Management Workshop is a four day workshop that will define the purpose of and types of shutdowns. The workshop will also highlight the factors effecting shutdown duration in addition to some specific shutdown and post shutdown management techniques.

## KEY OBJECTIVES:

- To understand shutdown scope development
- To understand shutdown roles and responsibilities
- To learn the limits of authority and decision responsibility
- To gain knowledge on shutdown budget development
- To understand how to achieve the planning process milestones
- To understand the benefit of having a planning timeline

## COURSE OUTLINE:

- Shutdown planning and management processes
- The 'must do' steps for an effective shutdown
- Roles and responsibilities that impact effective shutdowns
- A work identification process and prioritization that maximizes business performance
- To use a Work Breakout Structure and Critical Path to optimally schedule a shutdown
- To develop a detailed plan for the agreed shutdown scope of work
- A formal decision making process that enhances maintenance shutdown effectiveness
- To use effective project scheduling tools and processes
- To develop and implement shutdown reporting processes

The workshop is recommended for Maintenance & Production Managers, Shutdown Projects Engineers and Superintendents.



# BUSINESS DRIVEN RELIABILITY

**DURATION** 4 days

## OVERVIEW:

The Business Driven Reliability (BDR) Workshop is a four day workshop that will reflect on the M&R issues from a business perspective. It will provide an insight in best practices of the Maintenance Work process, and review the basic skills of the maintenance & Reliability Engineers and will provide participants with an understanding of Reliability Centered Maintenance (RCM) and Root Cause Analysis (RCA) techniques.

## KEY OBJECTIVES:

- To develop an equipment criticality matrix for effective maintenance strategies
- To understand the methods of conducting RCM to establish effective maintenance strategies
- To learn the process for establishing an effective RCA Program to eliminate repeat failures
- To learn work identification process and prioritization that maximizes business performance
- To gain knowledge on the types of predictive maintenance technologies and their application
- To understand the various statistical analysis techniques for reliability analysis for early defect detection
- To learn the roles and responsibilities that impact reliability strategy
- To learn how to establish reliability performance measures to track and guide reliability improvement
- To learn the importance of aggressive work identification

## COURSE OUTLINE:

- The role of Reliability Engineers in industry
- Basic Reliability Engineer skills and tools
- An introduction to statistical analysis in reliability
- Familiarization with Condition Monitoring techniques
- Conducting RCM analysis to establish maintenance strategies
- Conducting RCA analysis to eliminate failures

The workshop will also highlight the role of Operations and Maintenance Management in establishing and managing an effective reliability program in their facilities.

The workshop is recommended for Maintenance, Reliability and Production Managers, Superintendents and Reliability Engineers.





# MAINTENANCE & ASSET RELIABILITY CERTIFICATION (MARC) EXAM

2 HOURS EXAM



## INTRODUCTION & OBJECTIVES

The Gulf Society for Maintenance & Reliability (GSMR) has established a hub of knowledge creation and exchange in the Arabian Gulf region, to provide training and facilitate professional certification. As part of its mission to share knowledge and exchange best practices, the GSMR Body of Knowledge (BoK) was evolved to offer specialized guidance to individuals, leaders, managers, and service providers working in the field of Maintenance, Reliability & Asset Management (MR&AM) both internal and external to organizations. The GSMR BoK focuses on all aspects of maintenance, from the basics of world-class maintenance to creating a reliability culture within the organization. To achieve best-in-class MR&AM performance, the GSMR Body of Knowledge is based on five pillars with an emphasis on covering the asset life cycle:

- Pillar 1 – MR&AM Strategy: Ensuring asset management fundamentals are in place (value, alignment, leadership & assurance)
- Pillar 2 – Asset Reliability: Describes all reliability activities that must be in place
- Pillar 3 – Maintenance Work Processes: Describes all maintenance activities that must be in place
- Pillar 4 – Systems & Technologies: Enablers (software or hardware) of successful maintenance and reliability within the context of asset management
- Pillar 5 – People & Leadership: The human factor that, with all the elements above, will carry the journey of excellence in maintenance and reliability

The GSMR Body of Knowledge demonstrates the alignment of the Maintenance (M) Reliability (R) and Asset Management (AM) strategies, programs, and plans with the organization's vision and mission, and business goals.

### What is MARC?

The MARC certification is designed to assess professionals' knowledge in the field of Maintenance, Reliability & Asset Management in accordance with GSMR's Body of knowledge. MARC certification candidates will be assessed on all 5 pillars MR&AM Strategy, Asset Reliability, Maintenance Work Process, Systems & Technologies, and People & Leadership.

### Why MARC?

- To be recognized and certified with the highly acclaimed certification for MR&AM professionals in the region
- To demonstrate knowledge and experience in the field of MR&AM
- To show your efforts and commitment of continued education in the field of MR&AM

### Eligibility Criteria:

- Candidates must have a minimum of 3 years experience in the Maintenance, Reliability and Asset Management field.

### Duration & Validity:

- 2 hours computer-based exam
- The certificate is valid for three years

### Exam Fees:

- GSMR members: 275.00\$ (USD)
- Nonmembers: 375.00\$ (USD) – Inclusive of one-year GSMR membership



# CERTIFIED ASSET MANAGEMENT ASSESSOR (CAMA)

2 HOURS (REMOTELY PROCTORED EXAM)

## OVERVIEW:

The Certified Asset Management Assessor (CAMA) program is one of the leading credential programs for certifying the knowledge, Competency & skills in asset management standards based on ISO 55001.

CAMA has been developed and is offered by the World Partners in Asset Management, a partnership of non-profit professional associations including the Asset Management Council (Australia), the Society of Maintenance and Reliability Professionals (USA), Gulf Society for Maintenance & Reliability (GSMR), ABRAMAN (Brazil), IFRAMI (France) and PEMAC (Canada).

CAMA is a globally recognized certification in compliance with ISO 55001, ISO 5-17021 and ISO 19011. The focus is about maximizing the value of your physical assets through setting the standards and platform for Asset Management in profit and non-profit organizations such as government and semi-government agencies.

## KEY OBJECTIVES:

- To have a better understanding of asset management framework and requirements in line with ISO 55000, ISO 55001 and ISO 55002
- To determine the minimum requirements for the organization's personnel competency and experience to develop and implement asset management Plans
- To become globally recognized as asset management professional
- To qualify individuals to become an assessor for ISO 55001

- To establish the framework and requirements for organizations to develop and implement asset management plans
  - Maximize the assets value.
  - To improve asset reliability & compliance.
  - Ensure the best cost of ownership of the assets and maximize the asset life cycle.
  - Higher customer's and stakeholder's satisfaction.
  - Enhance data mining and assets information.
  - Better decision making based on entire life cycle of assets.
  - Minimize the failures and safety incidents.

## Eligibility Criteria:

Candidates must have a minimum of 5 years work experience in asset management.

## CAMA Exam Fee:

Non Members- 450\$ (inclusive of one-year membership)  
GSMR members- 300\$





**STAY CONNECTED TO GLOBAL MAINTENANCE,  
RELIABILITY & ASSET MANAGEMENT INNOVATORS**

The GSMR community is a member of Global Forum for Maintenance & Asset Management (GFMAM), a body connecting maintenance, reliability and asset management societies worldwide.

For further information please get in touch with

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