

# Cordant™ RCA and Reliability Training Courses

Revision 11: June 20, 2025

Author: David Turner,  
Global Training Leader, Cordant™ Solutions



## Table of Contents

<b>Table of Contents</b> .....	<b>2</b>
<b>Cordant™ RCA and Reliability Training Courses</b> .....	<b>3</b>
<b>1 Cordant™ Root Cause Analysis Training Courses</b> .....	<b>4</b>
1.1 CRCA101 – Cordant™ RCA Participants Course.....	5
1.2 CRCA102 – Cordant™ RCA Managers Course.....	7
1.3 CRCA201 – Cordant™ RCA Facilitators Course.....	9
1.4 CRCA202 – Cordant™ RCA Refresher.....	11
1.5 CRCA301 – Cordant™ RCA Advanced Facilitators Course.....	12
1.6 CRCA302 – Cordant™ RCA Incident Investigation.....	13
<b>2 Reliability Training Courses</b> .....	<b>14</b>
2.1 REL101 – Introduction to Reliability Engineering.....	15
2.2 REL201 – Reliability Methods.....	17
2.3 FMECA101 – Failure Mode, Effects and Criticality Analysis.....	19
2.4 RCM101 – Introduction to Reliability Centered Maintenance.....	21
2.5 RCM201 – Maintenance Strategy Development.....	23
2.6 RBD101 – Improving Plant Availability using Reliability Block Diagrams.....	26
2.7 LCC101 – Life Cycle Costing Analysis.....	28
<b>3 Asset Strategy Management Training Courses</b> .....	<b>30</b>
3.1 ASM101 – Introduction to Asset Strategy Management.....	31
3.2 ASM201 – Asset Strategy Management for Reliability Leaders.....	33
<b>4 Cordant™ Software Training Courses</b> .....	<b>35</b>
4.1 CAS101 – Introduction to Cordant™ Asset Strategy Software.....	36
4.2 CADE101 – Introduction to Cordant™ Asset Defect Elimination.....	38
<b>5 Isograph Software Training Courses</b> .....	<b>39</b>
5.1 AWB101 – The Weibull Module.....	40
5.2 AWB201 – The RCMCost Module.....	42
5.3 AWB301 – The AvSim Module.....	44
5.4 AWB401 – The LCC Module.....	46
<b>6 Price List</b> .....	<b>48</b>
<b>7 Learning Programs</b> .....	<b>50</b>

## Cordant™ RCA and Reliability Training Courses

### Training courses in a range of disciplines

Our training courses are designed to build your core competency and skill level to progress you through the learning curve from novice to expert. Whether you're a beginner, have some skill gaps to close, or you're ready to take your abilities to the next level, we can help you gain the skills and knowledge to implement and drive reliability initiatives at your site with confidence.

Our courses can be delivered as:

- Public courses, following the latest public training schedule on our website
- Private courses, through client request to our Sales Account Managers
- Instructor led face-to-face
- Instructor led virtual
- eLearning courses for Cordant™ software products

Our training covers the listed subjects, and these are explained in detail through the subsequent sections:

- Root Cause Analysis
- Asset Strategy Management
- Reliability
- Failure Mode Effect & Criticality Analysis (FMECA)
- Reliability Centered Maintenance (RCM)
- RAM Modelling
- Cordant™ Software
- Isograph™ Software

## 1 Cordant™ Root Cause Analysis Training Courses

A series of courses designed to form part of a complete Defect Elimination program for a company.

Be a better problem solver and learn a Cause Tree Root Cause Analysis methodology to prevent the recurrence of any kind of event-based problem or failure.

Why choose **Cordant™ RCA**?

- ✓ **Drive** simple, logical problem-solving techniques throughout your organisation.
- ✓ **Align** your teams to an interpretation of the Cause Tree methodology stated in the IEC 62740 international standard for Root Cause Analysis.
- ✓ **Focus** on exercises to familiarise students with each aspect of the methodology.
- ✓ **Demonstrate** how to build upon a simple linear Cause & Effect path (5-Why) and grow it into a Cause Tree covering many more causes, and potential root causes, to apply prevention solutions.
- ✓ **Deliver** without software in any place (for face-to-face courses); just using simple techniques to visualise the cause paths. Or utilise the web portal based intuitive software Cordant™ Asset Defect Elimination.
- ✓ **Develop** each member of the team into a strong facilitator capable of leading a problem analysis.
- ✓ **Ensure** each attendee has grasped the concepts of the Cause Tree method by completion of a chart marked by our instructor.
- ✓ **Grow** the RCA techniques into a full Defect Elimination process within the organisation with prioritisation and reporting.

Code	Title	Duration
CRCA101	<b>Cordant™ RCA Participants Course</b>	1 day
CRCA102	<b>Cordant™ RCA Managers Course</b>	0.5 day
CRCA201	<b>Cordant™ RCA Facilitators Course</b>	2 days
	<b>Cordant™ RCA Facilitators Course with Workshop</b>	3 days
CRCA202	<b>Cordant™ RCA Refresher Course</b>	1 day
CRCA301	<b>Cordant™ RCA Advanced Facilitators Course</b>	1 day
CRCA302	<b>Cordant™ RCA Incident Investigation</b>	1 day

## 1.1 CRCA101 – Cordant™ RCA Participants Course

### Learning Objectives

- An introduction to effective problem-solving using Root Cause Analysis
- This is a perfect first course into effective problem solving and is a recommended course for anyone who will participate in Root Cause Analysis
- Students will learn how to apply RCA to both simple systems and complex groups of systems

### Key Learnings

- The students will learn how to perform an RCA. They will work numerous instructor-led exercises that build upon each other to learn how to identify causes and to recognize the differences in cause types.
- The students will be exposed to the Cause Tree methodology that grows into a much stronger result when compared to a simple linear 5-why approach.
- Following a step-by-step method to solve any problem the workplace can present, each module builds upon the progression of effective solution generation that complements the RCA Facilitator Course.

### Why you should attend

- Ideal for people who are likely to be participating in a Root Cause Analysis investigation and need to grasp the concept and process beforehand.
- Enables swift action towards reducing risks from safety, environmental, customer complaints or poor quality, or high maintenance costs and unplanned downtime.
- Provides a simple methodology to tackle one-off or recurring problems, and drive confidence in creating solid solutions.

### Duration and Delivery

1-day face-to-face classroom, or

8-hours remote web conferencing, typically over 2 days

### Who should attend

Supervisors, Engineers, LEAN Specialists, 6 Sigma Black Belts, Maintenance Trades, Design Engineers, Safety Representatives, Operators, Administrators, Continuous / Healthcare Improvement Specialists, Business Analysts, IT Professionals, HR Personnel.

## Program

- Introduction to RCA and the IEC 62740 international standard for Root Cause Analysis
- Triggers for an RCA + *Exercise*
- Preparation + *Exercises*
- Analysis
  - Develop Problem Statement + *Exercises*
  - Construct Initial Timeline
  - Build the Cause and Effect Chart + *Exercises*
  - Add Supporting Information + *Exercise*
  - Quality Check the Cause and Effect Chart + *Exercises*
- Resolution
  - Generate and Select Solutions + *Exercise*
  - Implement Solutions

## Benefits

First-hand experience of participating in RCA

## Languages

- English
- Spanish
- Portuguese
- Chinese (Mandarin / Simplified Chinese)

## Learning Path

- Prerequisites: None
- Next Steps:
  - Practice! And then grow into a Facilitator with the CRCA201 – Cordant™ RCA Facilitators Course

## 1.2 CRCA102 – Cordant™ RCA Managers Course

### Learning Objectives

- Designed to bring Managers along the same journey as their personnel who are facilitating or participating in Root Cause Analysis investigations.
- To enable Managers to speak the same language as their workers and grasp an overview of the concept of the Cause Tree RCA methodology.
- Trigger the mindset that a successful RCA program requires a culture of ownership and culture flows from the top.

### Key Learnings

- The Management Team will be exposed to Cause Tree methodology that grows into a much stronger result when compared to a simple linear 5-why approach.

### Why you should attend

- Your team is utilising the Cause Tree RCA methodology and requires support and report approval.
- You need to perform Root Cause Analysis in the management domain and require a common methodology that can be applied across any situation.
- Overcomes the challenges in getting management and stakeholders to buy into the vision for reliability initiatives.
- As a Manager you have time constraints and require a short half day introduction to strong, simple RCA methodology.

### Duration and Delivery

0.5-day face-to-face classroom, or  
4-hours remote web conferencing

### Who should attend

Manager, Supervisors, Superintendents, Senior Engineers.

**Program***Day 1*

- Introduction to RCA and the IEC 62740 international standard for Root Cause Analysis
- Triggers for an RCA
- Preparation
- Analysis
  - Develop Problem Statement
  - Construct Initial Timeline
  - Build the Cause and Effect Chart
  - Add Supporting Information
- Resolution
  - Generate and Select Solutions
  - Implement Solutions

**Languages**

- English
- Spanish
- Portuguese
- Chinese (Mandarin / Simplified Chinese)

## 1.3 CRCA201 – Cordant™ RCA Facilitators Course

### Learning Objectives

- The purpose of this course is to provide students with the knowledge and skills necessary to facilitate an effective problem analysis.
- This course is ideal for anyone whose job involves problem-solving. As a minimum, all supervisors and lead personnel should take this course.
- During the course, the participants will apply everything learned to solve an exercise problem and each student will be given the opportunity to facilitate a group in effective analysis.

### Key Learnings

- Provides a working knowledge of the Cause Tree RCA methodology. It assists anyone in understanding fundamental problem-solving processes and how to facilitate an effective investigation.

### Why you should attend

- Ideal for people who are likely to be leading and facilitating a Root Cause Analysis investigation and need to have a strong understanding of the methodology with interactive exercises.
- Enables action towards reducing high maintenance costs and unplanned downtime.
- Provides a simple methodology to tackle recurring problems and reverse a lack of confidence in current solutions.
- Counters the challenges in getting management and stakeholders to buy into the vision for reliability initiatives.

### Duration and Delivery

- 2-days face-to-face classroom, or 3-days face-to-face classroom with 1-day of workshop facilitation exercises  
Or
- 15-hours remote web conferencing, typically over 3 days. A 7-hour workshop of facilitation exercises can also be included for remote delivery.
- The course can be delivered without software using sticky notes and whiteboards (for face-to-face classroom delivery), or with software using the Cordant™ Asset Defect Elimination application; trainees will be provided with access and a licence for the duration of the training plus 30 days.

### Who should attend

Supervisors, Engineers, LEAN Specialists, 6 Sigma Black Belts, Design Engineers, Safety and Environmental Representatives, Administrators, Continuous / Healthcare Improvement Specialists, Business Analysts, IT Professionals, HR Personnel.

## Program

### Day 1

- Introduction to RCA and the IEC 62740 international standard for Root Cause Analysis
- Triggers for an RCA + *Exercise*
- Preparation
  - Gather Information and Data
  - Organise People, including The Facilitator + *Exercise*
  - Organise Time and Venue + *Exercise*
- Analysis
  - Develop Problem Statement + *Exercises*
  - Build the Cause and Effect Chart + *Exercises*
  - Validate Causes

### Day 2

- Analysis continued
  - Quality Check the Cause and Effect Chart + *Exercises*
- Resolution
  - Generate and Select Solutions + *Exercise*
  - Implement Solutions
  - Communicate RCA Findings to Organisation
  - Measure Success of Solutions
  - Communicate Wins Across the Organisation

### Day 3

- Optional Workshop: *Full problem exercises*

## Benefits

First-hand experience of performing and facilitating an RCA with a group

## Languages

- English
- Spanish
- Portuguese
- Chinese (Mandarin / Simplified Chinese)
- French
- Italian

## Learning Path

- Prerequisites: None
- Next Steps:
  - CRCA301 – Cordant™ RCA Advanced Facilitators Course
  - CRCA302 – Cordant™ RCA Incident Investigation

## 1.4 CRCA202 – Cordant™ RCA Refresher

### Learning Objectives

- The purpose of this course is to provide a refresher of the key concepts of the Cordant™ RCA approach. It is mainly concentrated towards previous attendees of the 2-day CRCA201 RCA Facilitators course who may not have been able put their skills into practice, or who require a re-focus with our expert trainer.
- The aim is for attendees to go back to their roles, revitalised with the skills and knowledge of how to perform a solid RCA investigation on any problem.

### Key Learnings

- Students will re-learn the concepts of Cause Tree RCA methodology in a condensed, agile, fun format. They will walk away ready to again perform as facilitators in an RCA investigation.

### Duration and Delivery

1-day face-to-face classroom, or  
7.5-hours remote web conferencing

### Who should attend

Anyone who has previously attended the CRCA201 RCA Facilitators course, or the CRCA101 RCA Participants, or the CRCA102 managers course, and requires a refresh in the concepts of performing an RCA investigation as a facilitator.

### Program

- Revisit the core concepts of RCA and the link to the IEC 62740 international standard
- Triggers for an RCA
- Preparation for the facilitator; Gather Information, Data, Organise People, Time and Venue
- Analysis; Develop Problem Statement, Timeline, Build the Cause and Effect Chart, Supporting Information, Quality Check the Cause and Effect Chart
- Resolution; Generate, Select and Implement Solutions
- Communicate RCA Findings to Organization and Measure Success of Solutions

### Languages

- English
- Spanish
- Portuguese

### Learning Path

- Prerequisites: CRCA201 – Cordant™ RCA Facilitators Course

## 1.5 CRCA301 – Cordant™ RCA Advanced Facilitators Course

### Learning Objectives

- The purpose of this course is to improve the knowledge and skills of root cause analysis facilitators to increase their problem-solving effectiveness and facilitation management skills. This course is suitable for experienced facilitators who are conducting a lot of investigations and would like to fine tune their skills to become an expert in the methodology.

### Key Learnings

- This course is for people who have previously completed the 2-day CRCA201 Facilitators course. The course goes beyond basic methodology and teaches students effective skills that help them to become expert facilitators. Students will learn practical skills that will help them to better understand the management and process of effective facilitation.

### Duration and Delivery

1-day face-to-face classroom, or  
7.5-hours remote web conferencing

### Who should attend

Anyone who has previously attended the CRCA201 RCA Facilitators course and has practiced the methodology but requires further guidance on advanced techniques.

### Program

- Chart Best Practices
- Advanced Facilitation Skills
- Event Reporting
- RCA Program Development

### Languages

- English
- Spanish
- Portuguese

### Learning Path

- Prerequisites: CRCA201 – Cordant™ RCA Facilitators Course

## 1.6 CRCA302 – Cordant™ RCA Incident Investigation

### Learning Objectives

- The purpose of this course is to provide the knowledge and skills necessary to conduct a thorough incident investigation supported by an RCA.

### Key Learnings

- Incidents occur every day in the workplace. The failure of people, equipment, the environment and management systems to behave as expected cause most of these incidents. Incidents and injuries are always undesirable. Investigating incidents is important to learn what went wrong so repeat occurrences can be prevented. In this workshop, attendees will learn why to conduct incident investigations and how to capture information vital for performing an effective root cause analysis.

### Duration and Delivery

1-day face-to-face classroom, or  
7.5-hours remote web conferencing

### Who should attend

Supervisors, Engineers, LEAN Specialists, 6 Sigma Black Belts, Design Engineers, Safety Representatives, Administrators, Continuous / Healthcare Improvement Specialists, Business Analysts, IT Professionals, HR Personnel.

### Program

#### Day 1

- Benefits of Incident Investigation
- Pillars of Investigation Readiness
- Incident Investigation Process
- Securing the Incident Scene
- Team selection
- Data collection at site
- Developing a timeline
- Interview techniques

### Languages

- English
- Spanish
- Portuguese

### Learning Path

- Prerequisites: CRCA201 – Cordant™ RCA Facilitators Course

## 2 Reliability Training Courses

Courses that will equip you with effective decision making so that you can reduce risk and maximize the reliability and availability of your assets.

You will be able to perform:

- Reliability analysis using the right tool from the Reliability Toolkit
- Reliability improvement activities throughout your organization
- Failure-mode based analysis and task mitigation
- Maintenance strategy development with justified, optimized tasks
- Plant or system availability and capacity modelling and identify areas for improvement

<b>Code</b>	<b>Title</b>	<b>Duration</b>
REL101	<b>Introduction to Reliability Engineering</b>	1 day
REL201	<b>Reliability Methods</b>	2 days
FMECA101	<b>Failure Mode, Effects and Criticality Analysis</b>	2 days
RCM101	<b>Introduction to Reliability Centred Maintenance</b>	1 day
RCM201	<b>Maintenance Strategy Development</b>	2 days
RBD101	<b>Improving Plant Availability using Reliability Block Diagrams</b>	2 days
LCC101	<b>Introduction to Life Cycle Costing Analysis</b>	2 days

## 2.1 REL101 – Introduction to Reliability Engineering

### Learning Objectives

- Gain a solid understanding of the essential reliability and maintainability concepts and principles
- Learn which key methods and tools to employ to achieve reliability improvement across the asset lifecycle
- Know what the objectives are of reliability management and how does the reliability discipline interact with the rest of the organization

### Key Learnings

- This interactive, practical course addresses the integration of a range of reliability initiatives into an asset management strategy. You'll discover the tools necessary to develop, implement, and sustain best in class maintenance and reliability programs. You'll learn the foundational elements your organization needs in order to reduce reactive maintenance, downtime, and maintenance costs with proven reliability methods.

### Why you should attend:

- You are new to reliability engineering
- You are looking to get your team started and reliability programs ramped up
- You need you and your team to be speaking the same language for reliability improvement
- Experiencing recurring problems and/or lack of confidence in current solutions
- Consistently exceeding your maintenance budget
- Unsure of where your reliability program is currently positioned

### Duration and Delivery

1-day face-to-face classroom, or

8-hours remote web conferencing (typically over 2-days)

### Who should attend

Graduate Engineers, Project Engineers, Asset Managers, Maintenance Engineers, Design Engineers, Reliability Engineers/Technicians, Operators, Safety Engineers, Risk Engineers, Defect Elimination Managers

### Program

#### Day 1

- Reliability Concepts
- Breaking The Reactive Cycle
- Benefits of Reliability Based Maintenance
- Definition of Reliability Terms
- Overview of key Reliability Engineering Tools:
  - Root Cause Analysis (RCA)
  - Reliability Centered Maintenance (RCM)
  - Life Cycle Costing (LCC)
  - Reliability Block Diagrams (RBD)
  - Asset Criticality

- Failure Mode Effects & Criticality Analysis (FMECA)

**Languages**

English

Spanish

Chinese

**Benefits**

Provides a solid foundation for reliability growth across all levels

**Learning Path**

- Prerequisites: None
- Next Steps: Method specific courses:
  - FMECA101 – Failure Mode, Effects and Criticality Analysis
  - RCM201 – Maintenance Strategy Development
  - RBD101 – Improving Plant Availability using Reliability Block Diagrams

## 2.2 REL201 – Reliability Methods

### Learning Objectives

- Taking a more detailed view and expanding on the key Reliability Methods, this course provides an alternative to the basic 1-day REL101 introduction course and instead provides a deep dive into all the main tools which the Reliability Engineer should be equipped with.
- Covering 2-days of methodology learning with interactive exercises, this course provides a strong foundation of the essential reliability and maintainability concepts and principles.
- Learn which key methods and tools to employ to achieve reliability improvement across the asset lifecycle.
- Know what the objectives are of reliability management and how the reliability discipline interacts with the rest of the organization.

### Key Learnings

- This interactive, practical course addresses the integration of a range of reliability initiatives into an asset management strategy. You'll discover the tools necessary to develop, implement, and sustain best in class maintenance and reliability programs. You'll learn the foundational elements your organization needs in order to reduce reactive maintenance, downtime, and maintenance costs with proven reliability methods.

### Why you should attend

- Suffering high maintenance costs and unplanned downtime
- Want immediate performance improvement and to reduce costs, but don't know where to start
- Experiencing recurring problems and/or lack of confidence in current solutions
- Continually under-performing due to current design not meeting business goals
- Consistently exceeding your maintenance budget
- Unsure of where your reliability program is currently at
- You are new to reliability engineering
- You are looking to get your team started and reliability programs ramped up

### Duration and Delivery

2-days face-to-face classroom, or

15-hours remote web conferencing (typically over 3-days)

### Who should attend

Graduate Engineers, Project Engineers, Asset Managers, Maintenance Engineers, Design Engineers, Reliability Engineers/Technicians, Operators, Safety Engineers, Risk Engineers, Defect Elimination Managers

## Program

### Day 1

- Reliability Concepts
- Breaking The Reactive Cycle
- Benefits of Reliability Based Maintenance
- Definition of Reliability Terms
- Introduction to key Reliability Engineering Tools:
  - Failure Mode Effects & Criticality Analysis (FMECA)
  - Weibull Distribution Analysis
  - Reliability Centered Maintenance (RCM)

### Day 2

- Introduction to key Reliability Engineering Tools (continued):
  - Life Cycle Costing (LCC)
  - Availability & Capacity Modelling using Reliability Block Diagrams (RBD)
  - Asset Criticality
  - Root Cause Analysis (RCA)
  - Performance Measures (ROI, OEE)
  - Fault Tree Analysis (FTA)
  - Event Tree Analysis (ETA)
  - Reliability Prediction

## Languages

English

Spanish

## Benefits

Provides the toolkit for a reliability engineer to develop and grow.

## Learning Path

- Prerequisites: None
- Next Steps:
  - FMECA101 – Failure Mode, Effects and Criticality Analysis
  - RCM201 – Maintenance Strategy Development
  - RBD101 – Improving Plant Availability using Reliability Block Diagrams

## 2.3 FMECA101 – Failure Mode, Effects and Criticality Analysis

### Learning Objectives

- The objective of this course is to interactively teach participants how to conduct and facilitate their own maintenance FMECA's.
- The participants will explore the key elements of both FMEA's and FMECA's, and practice conducting their own analysis using the core facilitation skills.
- Many of the exercises will be performed in groups of 4-5 minimum on a white board or paper. Each group will find a volunteer facilitator that will be responsible for leading the discussion. Facilitator skills and ground rules will be established.

### Key Learnings

- This interactive, practical course will provide guidance on performing a maintenance FMECA from start to finish including failure mode identification, effects assignment and pre/post risk mitigation criticality judgement.
- The course will guide the attendee through the process using a simple step by step format with examples and group exercises at each stage to lock in the knowledge gained ensuring it can be replicated back in the working environment.

### Why you should attend

- Learn a tried and tested technique for failure mode identification and mitigating action justification
- You are looking to get your team started and reliability programs ramped up using a key reliability improvement tool
- Use this simple approach across maintenance but also apply it for machinery, process and design validation
- Experiencing recurring problems and/or lack of confidence in current solutions
- Continually under-performing due to current design not meeting business goals

### Duration and Delivery

2-days face-to-face classroom, or

15-hours remote web conferencing (typically over 3-days)

### Who should attend

Graduate Engineers, Project Engineers, Asset Managers, Maintenance Engineers, Design Engineers, Reliability Engineers/Technicians, Operators, Safety Engineers, Risk Engineers, Defect Elimination Managers

**Program***Day 1*

- Introduction to FMEA/FMECA
- Setting Up For FMECA
- The FMECA Process
- Create the Block diagram
- Constructing the hierarchy
- Functions
- Functional Failures
- Failure Mode and Causes
- Group exercise

*Day 2*

- Failure Severities / Effects
- Criticality Ranking
- Mitigating tasks
- Post Mitigation Criticality
- Report
- Group exercise
- Evolving from FMECA to RCM
- Summary – Process, Potential Barriers, Success Factors

**Languages**

- English
- Spanish

**Benefits**

Introduces the basis of failure mode effect and criticality analysis in a manner for all to understand and apply.

**Learning Path**

- Prerequisites: None
- Next Steps:
  - RCM201 – Maintenance Strategy Development
  - RBD101 – Improving Plant Availability using Reliability Block Diagrams

## 2.4 RCM101 – Introduction to Reliability Centered Maintenance

### Learning Objectives

- To get the entire team to buy into Reliability Centered Maintenance and speak the same language using the same parameters and goals.
- To understand how direct mitigation of failure modes will drive up your equipment and plant reliability
- Working through the key steps of an RCM program and finalise with implementation

### Key Learnings

- RCM 101 is your introduction to the powerful RCM methodology, and provides an ideal starting point if you plan to participate in RCM studies. In the course, you will use instructor-led scenarios as a fast-tracked method of learning how to interact with the RCM process.

### Why you should attend:

- You are new to reliability engineering
- You are looking to get your team started and reliability programs ramped up
- You need you and your team to be speaking the same language for reliability improvement
- Experiencing recurring problems and/or lack of confidence in current solutions
- Consistently exceeding your maintenance budget
- Unsure of where your reliability program is currently at

### Duration and Delivery

1-day face-to-face classroom, or

8-hours remote web conferencing, typically over 2 days

### Additional information

When this course is provided privately, it can be extended to include a second day providing further detail on each step of the RCM decision method.

### Who should attend

RCM team members, Reliability engineers, Project engineers, Maintenance analysts, Maintenance superintendents, Design engineers, Plant Performance engineers

**Program***Day 1*

- The current environment
- The reactive maintenance cycle
- Benefits of a reliability based maintenance system
- Definitions of reliability and maintainability
- Introduction to the Weibull distribution
- What is Reliability Centered Maintenance?
- What are the 7 questions of RCM?
- Performing an RCM study
- Identification of failure modes
- Preventative and predictive maintenance
- Choosing the optimal package

**Languages**

- English
- Spanish
- Chinese

**Benefits**

Introduces the concept of reliability centred maintenance in a manner for all to understand and apply.

**Learning Path**

- Prerequisites: None
- Next Steps:
  - RCM201 - Maintenance Strategy Development
  - RBD101 - Improving Plant Availability using Reliability Block Diagrams

## 2.5 RCM201 – Maintenance Strategy Development

### Learning Objectives

- Learn how to develop logical, justified maintenance strategies following the Reliability Centered Maintenance (RCM) approach.
- Leverage powerful reliability software to optimize your plans in a simulated environment leading to effective plan implementation. Analyse and utilize failure data to drive improvement.
- Deliver successful outcomes and meet business objectives through quantifying and calculating business benefits and risk reduction.

### Key Learnings

- Discover how to analyse failure data by going further than just MTBF; this course introduces the Weibull distribution and demonstrates using software how this methodology will drive superior maintenance results.
- Linking the Weibull distribution to the logical Reliability Centered Maintenance (RCM) approach, this class will provide a justified outcome to maintenance strategies that can be implemented through to preventative maintenance documentation.
- By utilizing software to logically follow the step-by-step pathway to optimized maintenance strategy development the course will drive excellent asset performance at low cost and risk.

### Why you should attend:

- Currently following OEM recommendations, but would like to optimize
- High maintenance costs and unplanned downtime
- Want immediate performance improvement and to reduce costs, but don't know where to start
- Continually under-performing due to current design not meeting business goals
- Consistently exceeding your maintenance budget
- Currently using too many generic or inconsistent strategies
- Want to learn the framework to move out of reactive state to a proactive state
- A need to optimize spares due to significant downtime, unnecessary spending but unsure how to plan

### Duration and Delivery

2-days face-to-face classroom, or

15-hours remote web conferencing, typically over 3 days

When this course is provided privately, it can be extended to include a third day focusing on further exercises to drive a greater understanding of applying an RCM approach using the dedicated software.

**Who should attend**

Reliability Engineers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Plant Performance Engineers, RCM Team Members

**Program***Day 1*

- Analysing failure data. Utilizing MTBF & MTTR and explaining the flaws.
- Introducing the Weibull distribution and its benefits for Reliability data analysis. The importance of analysis at a failure mode level and applying the corresponding Weibull shape.
- Practical exercises analysing failure and suspensions data with Weibull. How to analyse with limited failure data. How to be more efficient with failure analysis.
- Introducing the RCM methodology approach for maintenance optimization.
- How to justify maintenance by linking through Business Goals & Asset Strategies.
- Identifying system boundaries, functional analysis & failure mode definitions.
- Applying failure consequences for cost & risk, and failure frequencies. Analysing the Run-To-Failure strategy.
- Inspections, predictive maintenance & preventative choices. Understanding P-F intervals.

*Day 2*

- Learning by doing exercises; understanding the complexities of calculating maintenance justification without computers.
- Building an RCM model from scratch. Performing task optimization as a group, identifying the optimal strategy & intervals, and justifying the reasons.
- Grouping of tasks to create maintenance plans.
- Preparing for implementation; load sheet into CMMS creation and preventative maintenance instruction documents.

*Day 3 (Optional)*

- Further learning by doing exercises, add complexity. Building an RCM model from scratch. Performing task optimization as a group, identifying the optimal strategy & intervals, and justifying the reasons. Showing the comparison of cost & risk.
- Importing failure data, creating Weibull sets, linking to the RCM model.

**Benefits**

Enables engineers to develop justified, optimized maintenance strategies following an RCM approach.

**Languages**

- English
- Spanish
- Portuguese
- Chinese

**Learning Path**

- Prerequisites: None
- Next Steps:
  - RBD101 - Improving Plant Availability using Reliability Block Diagrams

## 2.6 RBD101 – Improving Plant Availability using Reliability Block Diagrams

### Learning Objectives

- Learn what a Reliability Block Diagram is used for and how to construct the logic to replicate a plant or system process.
- Acquire the skills to calculate system availability and capacity (throughput) figures over a lifetime. Build the model at a high level, or low level and capture maintenance task data, spares usage data and perform spares holding cost optimisation.
- Extend your knowledge to increase the complexity of the modelling to more closely replicate the actual plant reality. Start your growth of RAM (Reliability, Availability, Maintainability) modelling using powerful software (Isograph's Availability Workbench™ AvSim module).

### Key Learnings

- Engage in RAM (Reliability Availability Maintainability) modelling to drive plant improvements.
- Learn how to perform system availability simulation modelling using Reliability Block Diagrams (RBDs).
- Leverage powerful reliability software to create RBDs quickly and efficiently with multiple features to replicate reality.
- Perform numerous interactive real world exercises to fully understand the key factors in availability calculation and drive improvements to your system and plant performance.

### Why you should attend:

- New greenfield site and want to know how the design will perform from an Availability and Capacity viewpoint using Reliability based data.
- Design change to an existing plant or system and want to understand the impact to Availability and Capacity.
- Existing site and want to understand which assets in the plant are causing most loss of Availability.
- Want to model a plant shutdown / turnaround and understand differing scenarios to optimise intervals and durations.
- Want to perform a high-level RAM study to trigger more detail analysis of specific bad actor assets or areas.
- A need to optimize spares due to significant downtime, unnecessary spending but unsure how to plan.

### Duration and Delivery

2-days face-to-face classroom, or

15-hours remote web conferencing, typically over 3 days

**Additional information**

When this course is provided privately, it can be extended to include a third day focusing on further client scenario exercises to drive a greater understanding of applying RBDs.

**Who should attend**

Reliability Engineers, Asset Performance Managers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Plant Performance Engineers.

**Program***Day 1*

- Introduction to System Availability Analysis
- Types of Reliability Block Diagram modelling
- Creating Reliability Block Diagrams; Series vs Parallel
- How to represent Capacity or Throughput
- The Process; including Consequences & Simulation
- Alternate Scenario Analysis
- Interactive Exercises to Build-up the RBD complexity

*Day 2*

- RBD Software Exposure
- Adding Failure Modes & Maintenance
- Increasing Complexity with Nodes & Phases
- Interactive Exercises to Build-up RBD Skills
- Non Linear Capacity Loss
- Putting it all together
- Importing Data to Accelerate Model Building

*Day 3 (Optional)*

- Further learning by building an RBD as a group using a client system

**Benefits**

Enables engineers to develop techniques for improving plant availability using reliability block diagrams as a basis.

**Languages**

- English
- Spanish

**Learning Path**

- Prerequisites: None
- Next Steps:
  - FMECA101 – Failure Mode, Effects and Criticality Analysis
  - RCM201 – Maintenance Strategy Development

## 2.7 LCC101 – Life Cycle Costing Analysis

### Learning Objectives

- Learn about Life Cycle Costing and its application in Asset Management.
- Understand the different elements that make up a full Life Cycle Costing Analysis
- Discover how to build a Cost Breakdown Structure and what parameters are used to drive the LCC calculation.

### Key Learnings

- Understand the foundation of Life Cycle Costing and the main terminology used in its analysis.
- Discover the data requirements needed to ensure an accurate LCC analysis.
- Participate in a real-world exercises to develop LCC models within dedicated software.

### Why you should attend:

- Looking to improve the efficiency and effectiveness of asset management plans, supply logistics, technology, equipment and spare parts purchasing decisions, project evaluation.
- Interested in the future impact of their equipment engineering, maintenance, procurement, asset management and reliability activities and the cost of failures.

### Duration and Delivery

2-days face-to-face classroom, or  
15-hours remote web conferencing

### Who should attend

Asset Managers, Reliability Engineers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Continuous Improvement personnel.

### Program

#### Day 1

- Asset Management and Life Cycle
- Introduction to Life Cycle Cost
- Interest; Simple Interest and Compound Interest
- Nominal and Effective Interest Rates
- Life Cycle Cost Analysis Formulas; Future Value, Present Value, Current Value and NPV.
- Cost Breakdown Structure
- Cost Disciplines
- Data Requirements; Database, Existing Data Sources

#### Day 2

- Steps in Life Cycle Cost Analysis
- Using AWB software, Availability Workbench, LCC module
- Sensitivity Analysis
- Life Cycle Cost Models
- LCCA Examples Workshop

**Benefits**

Provide participants with the skills to be able to make optimal hiring and purchasing decisions, and know their benefit to the business throughout the life cycle.

Know how to predict future lifecycle costs of engineering, maintenance, spare parts, resources, budgets, and risk decisions.

**Languages**

- English
- Spanish

**Learning Path**

- Prerequisites: None

### 3 Asset Strategy Management Training Courses

ASM is a dedicated process with the objective of ensuring reliability strategy decisions (what you choose to do) and reliability strategy content (how you choose to do it and why you chose to do it) are optimal and implemented on all assets, all of the time.

**You will be able to:**

- Broaden your knowledge of the role of ASM in the asset management system and the value it delivers.
- Understand the key elements for effective reliability strategy development.
- Understand the foundations of ASM and how to implement them.

<b>Code</b>	<b>Title</b>	<b>Duration</b>
ASM101	<b>Introduction to Asset Strategy Management</b>	1 day
ASM201	<b>Asset Strategy Management for Reliability Leaders</b>	2 days

## 3.1 ASM101 – Introduction to Asset Strategy Management

### Learning Objectives

- Broaden knowledge of the role of Asset Strategy Management (ASM) in the asset management system and the value it delivers.
- Learn the key elements for effective reliability strategy development.
- Understand the foundations of ASM and how to implement them.

### Key Learnings

- A course designed to give you everything you need to create the foundation for the Asset Strategy Management (ASM) process. ASM is a business process describing how asset maintenance plans are managed over time to continue to provide the desired balance of risk, cost and performance.
- ASM has the objective of ensuring reliability strategy decisions (what you choose to do) and reliability strategy content (how you choose to do it and why you chose to do it) are optimal and implemented on all assets, all the time.

### Why you should attend:

- High maintenance costs and unplanned downtime
- No line of sight from the tasks being executed in the field to reliability strategy decisions
- Challenges in benchmarking asset performance and measuring continuous improvements
- Inconsistent maintenance plans and Master Data

### Duration and Delivery

1-day face-to-face classroom, or  
7.5-hours remote web conferencing

### Who should attend

Reliability Engineers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Continuous Improvement personnel.

### Program

#### Day 1

- The Current Reliability Environment
- Reliability Strategy
- Asset Strategy Management
- The Three Phases Of Asset Strategy Management
- Connected Reliability Strategies
- Building a Culture of Reliability
- Implementing Asset Strategy Management

### Benefits

Provides the foundation for asset strategy management across an organisation.

**Languages**

- English
- Spanish
- Portuguese

**Learning Path**

- Prerequisites: None
- Next Steps:
  - RCM201 - Maintenance Strategy Development

## 3.2 ASM201 – Asset Strategy Management for Reliability Leaders

### Learning Objectives

- Broaden knowledge of the role of Asset Strategy Management (ASM) in the asset management system and the value it delivers.
- Learn the key elements for effective reliability strategy development.
- Understand the foundations of ASM and how to implement them.

### Key Learnings

- A course designed to give you everything you need to lead and manage an Asset Strategy Management (ASM) process. ASM is a business process describing how asset maintenance plans are managed over time to continue to provide the desired balance of risk, cost and performance.
- ASM has the objective of ensuring reliability strategy decisions (what you choose to do) and reliability strategy content (how you choose to do it and why you chose to do it) are optimal and implemented on all assets, all the time. To ensure that the optimal strategy is on all assets, all the time requires ongoing review, and update, of the performance of the asset, and adjustment of the reliability strategy to meet changing performance needs or operational conditions.

### Why you should attend:

- High maintenance costs and unplanned downtime
- No line of sight from the tasks being executed in the field to reliability strategy decisions
- Challenges in benchmarking asset performance and measuring continuous improvements
- Inconsistent maintenance plans and Master Data

### Duration and Delivery

2-day face-to-face classroom, or  
15-hours remote web conferencing

### Who should attend

Reliability Leaders, Maintenance Managers, Asset Managers, Project Managers, Operations Managers, Continuous Improvement Managers, Strategy Optimization Managers.

### Program

#### Day 1

- Establish current state of the reliability function in most industries and organizations.
- Perform a maturity assessment
- Describe the elements of reliability strategy covering an assets life cycle.
- Learn the key elements required for sound reliability strategy development or review.
- Understand the key elements of Routine Maintenance

#### Day 2

- Creating Standards
- Provide an overview of the Asset Strategy Management process.
- Cover the three foundational phases of ASM; Build, Deploy, Sustain.
- Explore the value in connected reliability strategies and how to achieve them.

- Connected reliability strategies.
- Outline how ASM supports the development of a culture of reliability.
- Study the implementation options for ASM.

**Benefits**

Provides the foundation for asset strategy management across an organisation.

**Languages**

- English
- Spanish
- Portuguese

**Learning Path**

- Prerequisites: None
- Next Steps:
  - RCM201 - Maintenance Strategy Development

## 4 Cordant™ Software Training Courses

Courses dedicated towards users starting their pathway with the Cordant™ software suite. These courses provide an introduction into the basic functions of how to use the software with interactive exercises to drive learning retention.

You will be able to:

- Access and navigate the software.
- Create and manage components and assign to multiple physical assets.
- Develop physical assets with associated data and understand variations.
- Assign corporate data including effects of failure, labour, equipment and spares.
- Run a criticality analysis.
- Understand how to package and generate documentation for strategy implementation.
- Support a Root Cause Analysis investigation.

<b>Code</b>	<b>Title</b>	<b>Duration</b>
CAS101	<b>Introduction to Cordant™ Asset Strategy Software</b>	5 days
CADE101	<b>Introduction to Cordant™ Asset Defect Elimination Software</b>	0.5 days

## 4.1 CAS101 – Introduction to Cordant™ Asset Strategy Software

### Learning Objectives

- Learn how to use Cordant™ Asset Strategy.
- Develop a high-level understanding of what Asset Strategy Management is, how ASM works alongside Work Management, and how Cordant™ Asset Strategy aligns with the ASM process.
- Explore the ASM process, understanding how it is supported within Cordant™ Asset Strategy through the Maintenance Strategy Development, Deployment and Governance phases.
- Become familiar with each of the core modules within Cordant™ Asset Strategy, and their position within the process.
- Understand how to create single Components and link them to multiple Physical Assets
- Understand how to create and manage strategy variations between a Component and its associated Physical Assets.
- Understand how to package your strategies for implementation into your CMMS, with document generation and direct CMMS synchronisation.
- Understand how to update and re-deploy existing strategies, documents, and CMMS master data.

### Key Learnings

- How to use Cordant™ Asset Strategy and an introduction of the whole suite.
- Experience all the key features of Cordant™ Asset Strategy from Component build through to document generation and loading data to your CMMS.
- Explore each of the core modules definitions, functions and capabilities. This allows a user to understand the Maintenance Strategy Development process and key decision points.
- Develop an understanding of what a Baseline Strategy is, and how best to leverage previously developed strategies and learnings.
- Develop an understanding of what an Asset Strategy is, and how to associate a Physical Asset with a Component.
- Learn how to manage the strategies to ensure the most appropriate strategy is deployed for each Asset.
- Learn what Packaging is, and how to deploy packaged strategies to a CMMS

### Why you should attend:

- Get on the pathway to becoming an expert user of Cordant™ Asset Strategy.
- You are looking to get your team started and reliability programs ramped up using this advanced reliability improvement and strategy management tool.

### Duration and Delivery

5-days face-to-face classroom

### Who should attend

Reliability Engineers, Maintenance Engineers, Analysis & Improvement Engineers, Project Engineers, Maintenance Analysts, Maintenance Superintendents, Planners, Schedulers, Master Data Specialists.

**Program***Day 1*

- Introductions, Orientation, Safety Moment, Asset Strategy Management Overview
- Introduction to Cordant™ AS Navigation
- Working With Cordant™ AS. High level Functional Overview
- Managing Components (overview)

*Day 2*

- Managing Components (Strategy Updates, Workflows)
- Physical Assets and Variations (overview)
- Physical Assets and Variations (Strategy Updates, Workflow)
- Criticality Assessment

*Day 3*

- Implementing Strategies (auto-packaging)
- Implementing Strategies (PMI Documents)

*Day 4*

- Implementing Strategies (SAP Load Files / CMMS Sync)
- Asset Strategy Governance
- Cordant™ ADE (if subscribed)
- Cordant™ AS RCA (if subscribed)

*Day 5*

- Scenarios for optimization
- Real world packaging
- CMMS Sync
- Resource levelling (if subscribed)
- Worked Examples

**Benefits**

Enables users to efficiently develop a complete strategy management program for their assets using Cordant™ AS. Provides the first step into becoming an expert in using this reliability dedicated software.

**Languages**

- English
- Spanish
- Mandarin

**Learning Path**

- Prerequisites: None
- Next steps:
  - Mentored user support

## 4.2 CADE101 – Introduction to Cordant™ Asset Defect Elimination

### Learning Objectives

- Learn how to use Cordant™ Asset Defect Elimination from initiating an investigation, to creating a chart, and adding actions and solutions tables.
- See how Cordant™ ADE fits into the wider Cordant™ Asset Performance Management framework.
- Explore how individual investigations feed into the wider Cordant™ ADE dashboard for visualising and tracking desired KPIs.

### Key Learnings

- How to use Cordant™ Asset Defect Elimination as a standalone web application and develop an understanding for how it fits into an Asset Strategy Management platform.
- Experience all the key features of Cordant™ Asset Defect Elimination from investigation creation through to report generation.

### Why you should attend:

- Get on the pathway to becoming an expert user of Cordant™ Asset Defect Elimination.

### Duration and Delivery

0.5-days face-to-face classroom or virtually

### Who should attend

Supervisors, Engineers, LEAN Specialists, 6 Sigma Black Belts, Maintenance Trades, Design Engineers, Safety Representatives, Operators, Administrators, Continuous / Healthcare Improvement Specialists, Business Analysts, IT Professionals, HR Personnel.

### Program

- Introduction to Cordant™ Asset Defect Elimination and Asset Performance Management
- Accessing ADE
- Dashboard and Investigation Register
- Creating a new Investigation
- Creating Potential Items
- Viewing the Timeline
- Developing a Chart
- Actions, Solutions & Attachments
- Report generation
- RCA exercises using Cordant™ ADE

### Benefits

Enables users to efficiently develop investigations using Cordant™ Asset Defect Elimination.

### Languages

- English

### Learning Path

- Prerequisites: None

## 5 Isograph Software Training Courses

Learn how to use Isograph's Availability Workbench™ (AWB) software to simulate reliability, availability and maintenance decisions over a lifetime. Understand the relevance of the software to RCM methodology, Reliability Block Diagram modelling, and Life Cycle Costing studies.

You will be able to perform:

- Analysis of failure data in Isograph's Availability Workbench™ using a range of distributions
- A complete RCM study including maintenance task development and optimisation
- Availability and Capacity modelling using Reliability Block Diagrams
- Life Cycle Costing using simulated data from other AWB modules

Code	Title	Duration
AWB101	<b>AWB – The Weibull Module</b>	0.5 day
AWB201	<b>AWB – The RCMCost Module</b>	2 days
AWB301	<b>AWB – The AvSim Module</b>	2 days
AWB401	<b>AWB – The LCC Module</b>	0.25 day

Further training courses are available for using other Isograph software; Reliability Workbench™ (RWB) and Network Availability Prediction™ (NAP).

## 5.1 AWB101 – The Weibull Module

### Learning Objectives

- Learn the basics of Availability Workbench™; navigation, layout, basic grid function, importing.
- Discover the explanation of MTBF and its flaws, leading into the strengths of the Weibull distribution and which distribution to apply.
- Gain the expertise of analysing failure (and suspension) data using the Weibull module.
- See first-hand how limited data can still be used for providing maintenance justifications.

### Key Learnings

- How to use the Weibull module of Availability Workbench™ and an introduction of the whole suite.
- Participate in real world exercises using failure (and suspension) data in the Weibull module.
- Linking the Weibull distribution to the logical Reliability Centered Maintenance (RCM) approach.

### Why you should attend:

- Interested in Isograph's Availability Workbench™ and want to see and learn how to use it.
- Lots of failure data and non-failure data but not sure where to start.
- Limited failure data and not sure where to start.
- Want to bring actual failure data analysis into an RCM or FMECA study.

### Duration and Delivery

0.5-day face-to-face classroom, or  
4-hours remote web conferencing

### Additional information

The AWB101 course is typically the first lead in course to either AWB RCMCost or AWB AvSim or both. It is recommended to take AWB101 prior to other AWB courses.

### Who should attend

Reliability Engineers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Plant Performance Engineers.

**Program***Day 1*

- Analysing failure data. Utilizing MTBF & MTTR and explaining the flaws.
- Introducing the Weibull distribution and its benefits for Reliability data analysis. The importance of analysis at a failure mode level and applying the corresponding Weibull shape.
- Practical exercises analysing failure and suspensions data within the Weibull module. How to analyse with limited failure data. How to be more efficient with failure analysis.
- Importing failure data to speed up analysis.

**Benefits**

Enables engineers to efficiently analyse data using the Isograph Availability Workbench™ Weibull module. Provides the first step into becoming an expert in using this reliability dedicated software.

**Languages**

- English
- Spanish

**Learning Path**

- Prerequisites: None
- Next Steps:
  - AWB201 - The RCMCost Module
  - AWB301 - The AvSim Module

## 5.2 AWB201 – The RCMCost Module

### Learning Objectives

- Learn how to use the RCMCost module of Availability Workbench™.
- Develop logical, justified maintenance strategies following the Reliability Centered Maintenance (RCM) approach directly in the software.
- Use the software to optimize your plans in a simulated environment leading to effective plan implementation. Analyse and utilise failure data to drive improvement.
- Deliver successful outcomes and meet business objectives through quantifying and calculating business benefits and risk reduction.

### Key Learnings

- How to use the RCMCost module of Availability Workbench™ and understand where it fits into the whole suite.
- Experience all the key features of RCMCost from model build through to simulations and results output.
- Participate in real world exercises to develop optimised maintenance strategies, and select the best strategy as a group.
- Linking the Weibull distribution to the logical Reliability Centered Maintenance (RCM) approach, this class will provide a justified outcome to maintenance strategies that can be implemented through to preventative maintenance documentation.

### Why you should attend:

- Interested in Isograph's Availability Workbench™ and want to see and learn how to use it.
- Currently following OEM recommendations, but would like to optimize.
- High maintenance costs and unplanned downtime.
- Want immediate performance improvement and to reduce costs, but don't know where to start.
- Currently using too many generic or inconsistent strategies.
- A need to optimize spares due to significant downtime, unnecessary spending but unsure how to plan

### Duration and Delivery

2-days face-to-face classroom, or

15-hours remote web conferencing, typically over 3 days

### Who should attend

Reliability Engineers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Plant Performance Engineers.

## Program

### Day 1

- Introducing RCMCost and the RCM methodology approach for maintenance optimization.
- How to justify maintenance by linking through Business Goals & Asset Strategies.
- Identifying system boundaries, functional analysis & failure mode definitions.
- Applying failure consequences for cost & risk, and failure frequencies. Analysing the Run-To-Failure strategy.
- Inspections, predictive maintenance & preventative choices. Understanding P-F intervals.
- Learning by doing exercises; understanding the complexities of calculating maintenance justification without computers.

### Day 2

- Building an RCM model from scratch. Performing task optimization as a group, identifying the optimal strategy & intervals, and justifying the reasons.
- Grouping of tasks to create maintenance plans.
- Preparing for implementation; load sheet into CMMS creation and preventative maintenance instruction documents.

### Day 2 continued and Day 3 (Optional)

- Further learning by doing exercises, add complexity. Building an RCM model from scratch. Performing task optimization as a group, identifying the optimal strategy & intervals, and justifying the reasons. Showing the comparison of cost & risk.
- Importing failure data, creating Weibull sets, linking to the RCM model.

## Benefits

Enables engineers to efficiently develop justified, optimized maintenance strategies using the Isograph Availability Workbench™ RCMCost module. Provides a logical step into becoming an expert in using this reliability dedicated software.

## Languages

- English
- Spanish

## Learning Path

- Prerequisites: AWB101 – The Weibull Module.
- Next Steps:
  - AWB301 – The AvSim Module
  - AWB401 – The LCC Module

## 5.3 AWB301 – The AvSim Module

### Learning Objectives

- Learn how to use the AvSim (Availability Simulation) module of Availability Workbench™.
- Learn what a Reliability Block Diagram is used for and how to construct the logic to replicate a plant or system process.
- Acquire the skills to calculate system availability and capacity (throughput) figures over a lifetime. Build the model at a high level, or low level and capture maintenance task data, spares usage data and perform spares holding cost optimisation.

### Key Learnings

- How to use the AvSim module of Availability Workbench™ and understand where it fits into the whole suite.
- Experience all the key features of AvSim from model build through to simulations and results output.
- Participate in real world exercises to develop availability and capacity models which replicate reality as closely as possible using all the key features of AvSim.
- See how data from the Weibull module and RCMCost module can be easily and efficiently brought across into AvSim.

### Why you should attend:

- Interested in Isograph's Availability Workbench™ and want to see and learn how to use it.
- New greenfields site or applying a significant design change to an existing plant and want to know how the design will perform from an Availability and Capacity viewpoint using Reliability based data.
- Existing site and want to understand which assets in the plant are causing most loss of Availability.
- Want to model a plant shutdown / turnaround and understand differing scenarios to optimise intervals and durations.
- A need to optimize spares due to significant downtime, unnecessary spending but unsure how to plan.

### Duration and Delivery

2-days face-to-face classroom, or

15-hours remote web conferencing, typically over 3 days

### Additional information

When this course is provided privately, it can be extended to include a third day focusing on further client scenario exercises to drive a greater understanding of applying RBDs.

**Who should attend**

Reliability Engineers, Asset Performance Managers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers, Plant Performance Engineers

**Program***Day 1*

- Introduction to System Availability Analysis
- Types of Reliability Block Diagram modelling
- Creating Reliability Block Diagrams; Series vs Parallel
- How to represent Capacity or Throughput
- The Process; including Consequences & Simulation
- Alternate Scenario Analysis
- Interactive Exercises to Build-up the RBD complexity

*Day 2*

- RBD Software Exposure
- Adding Failure Modes & Maintenance
- Increasing Complexity with Nodes & Phases
- Interactive Exercises to Build-up RBD Skills
- Non Linear Capacity Loss
- Putting it all together
- Importing Data to Accelerate Model Building

*Day 3 (Optional)*

- Further learning by building an RBD as a group using a client system

**Benefits**

Enables engineers to develop techniques for improving plant availability using the Isograph Availability Workbench™ AvSim module. Provides a logical step into becoming an expert in using this reliability dedicated software.

**Languages**

- English
- Spanish

**Learning Path**

- Prerequisites: None
- Next Steps:
  - AWB101–The Weibull Module
  - AWB201 – The RCMCost Module
  - AWB401 – The LCC Module

## 5.4 AWB401 – The LCC Module

### Learning Objectives

- Learn how to use the Life Cycle Costing (LCC) module of Availability Workbench™.
- Discover how to build a Cost Breakdown Structure and what parameters are used to drive the LCC calculation.

### Key Learnings

- How to use the LCC module of Availability Workbench™ and understand where it fits into the whole suite.
- Experience all the key features of LCC from cost breakdown structure build through to results output.
- Participate in a real-world exercise to develop an LCC model which shows the key features of the LCC module.
- See how simulation data from the AvSim module and RCMCost module can be easily and efficiently brought across into LCC.

### Why you should attend:

- Interested in Isograph's Availability Workbench™ and want to see and learn how to use it.
- Want to perform an LCC study and utilise existing modelling data from RCMCost or AvSim.
- Need a dedicated LCC program to perform modelling for presentation.

### Duration and Delivery

0.25-days face-to-face classroom, or  
2-hours remote web conferencing

### Who should attend

Reliability Engineers, Project Engineers, Maintenance Analysts, Maintenance Supervisors, Design Engineers

### Program

#### Day 1

- Building the Cost Breakdown Structure
- Global variables
- Phases
- Setting interval cost
- Utilising simulation results from RCMCost / AvSim
- Results
- Group exercise

**Benefits**

Provides engineers with the skills to be able to perform a LCC study either as a standalone analysis or directly from RCMCost or AvSim simulated data within AWB.

**Languages**

- English
- Spanish

**Learning Path**

- Prerequisites: None
- Next Steps:
  - AWB201 - The RCMCost Module
  - AWB301 - The AvSim Module