COURSE OVERVIEW HE0606
RCA

Course Title
RCA

Course Date/Venue
July 13-17, 2025/Meeting Plus 9, City Centre Rotana, Doha, Qatar

3.0 CEUs (30 PDHs) AWARD

H-STK© INCLUDED

Course Reference
HE0606

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview of Process Safety Root Cause Analysis (RCA). It covers the importance of process safety in oil and gas and the difference between RCA and troubleshooting; the difference between proactive and reactive problem-solving approaches; the relationship between safety, reliability, and operational efficiency; the incident investigation framework and regulatory compliance; and gathering initial incident data and developing problem statements for effective analysis.

Further, the course will also discuss the types of failures and their initial symptoms; the fishbone diagram (Ishikawa), 5-Whys methodology, fault tree analysis (FTA), failure modes and effects analysis (FMEA) and timeline analysis as a sequencing method; the systematic approach to data collection; the effective interviews and witness statements; the process flow diagrams for RCA, key process deviations and sequencing events for accurate analysis; the fault tree analysis (FTA) and failure mode analysis (FMEA); and the statistical and trend analysis for root cause identification.

During this interactive course, participants will learn the 5-Whys and the role of human factors in process failures; the barrier analysis and system defenses including advanced causal analysis techniques; the effective corrective actions, sustainable preventive measures and change management in process safety improvements; the key performance indicators (KPIs) for RCA; the RCA methodologies, corrective actions, reporting findings and presenting solutions; and creating a compelling incident investigation report and avoiding common pitfalls in RCA reporting.

Course Objectives

The purpose of this course is to enable employees to:

- Apply and gain an in-depth knowledge on process root cause analysis (RCA)
- Understand and apply a structured process for investigation problems and identify the root cause and the fundamental reason why the problem occurred
- Identify symptoms or immediate causes by understanding the root cause and implement effective corrective actions to prevent similar problems from happening again
- Provide the skills to identify the underlying causes of equipment failures or operational issues by systematically analyzing incidents and engineers can pinpoint the root causes
- Implement corrective actions to prevent recurrence and improve overall reliability and safety
- Enhance maintenance efficiency, reduces downtime and contribute to the optimization of oil and gas operations
- Discuss the importance of process safety in oil and gas as well as the difference between RCA and troubleshooting
- Differentiate proactive versus reactive problem-solving approaches and discuss the relationship between safety, reliability, and operational efficiency
- Apply incident investigation framework and regulatory compliance, gather initial incident data and develop problem statements for effective analysis
- Identify types of failures and their initial symptoms and apply fishbone diagram (Ishikawa), 5-Whys methodology, fault tree analysis (FTA), failure modes and effects analysis (FMEA) and timeline analysis as a sequencing method
- Carryout systematic approach to data collection and conduct effective interviews and witness statements
- Develop process flow diagrams for RCA, identify key process deviations and apply sequencing events for accurate analysis
- Employ fault tree analysis (FTA) and failure mode analysis (FMEA) as well as statistical and trend analysis for root cause identification
- Apply 5-Whys without assumptions, avoid circular reasoning in questioning and identify when to combine 5-Whys with other techniques
- Categorize root causes, structure the diagram effectively and verify results through data correlation

- Discuss the role of human factors in process failures and apply barrier analysis and system defenses including advanced causal analysis techniques
- Develop effective corrective actions and implement sustainable preventive measures and change management in process safety improvements
- Set-up key performance indicators (KPIs) for RCA and track effectiveness of implemented actions
- Use data analytics for process improvement and create a feedback loop for ongoing safety enhancement
- Use collected data, apply RCA methodologies, develop corrective actions and reporting findings and present solutions in team-based sessions
- Structure RCA reports for clarity and impact, discuss regulatory and legal considerations in documentation, create a compelling incident investigation report and avoid common pitfalls in RCA reporting
- Assess whether RCA outcomes are working, conduct follow-up investigations and use audits to refine RCA methodologies

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of process root cause analysis (RCA) for managers, engineers, supervisors, team leaders, safety & compliance officers, health, safety, and environment (HSE) officers and other technical staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Fee

US$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. John Burnip, EHS, SAC, STS, NEBOSH-ENV, NEBOSH-IGC, NEBOSH-IFC, NEBOSH-PSM, NEBOSH-IOG, TechIOSH, is a **NEBOSH Approved Instructor** and a **Senior HSE Consultant** with over **30 years** of practical **Offshore & Onshore** experience within **Oil**, **Gas**, **Refinery**, **Petrochemical** and **Nuclear** industries. His wide experience covers **NEBOSH** International General Certificate in Occupational Health & **Safety**, **NEBOSH** National Certificate in Construction Health & Safety, **NEBOSH** Certificate in Process Safety Management, **NEBOSH** Environmental Management Certificate, **NEBOSH** Certificate in Fire Safety, **NEBOSH** International Oil & Gas Certificate, **PHA**, **HAZOP**, **HAZCOM**, **HAZMAT**, **HAZID**, **Hazard & Risk Assessment**, **Emergency Response Procedures** Behavioural Based Safety (**BBS**), **Confined Space Entry**, **Fall Protection**, **Emergency Response**, H_2S, Safety Management System (**ISO 45001**), **Accident/Incident Investigation** System and Report PSM, **Risk Assessment**, **SCE FMEA Failure Investigations**, Site Management Safety Training (**SMSTS**), **Occupational Health & Safety and Industrial Hygiene, Crisis Management & Damage Control** in Oil & Gas Industry, **Enhancing HSSE Safety Performance & Effectiveness**, **Overhead & Gantry Crane Safety**, **HSSE Principles & Practices Advanced**, **Lifting & Rigging Equipment** Lifting Tackles Inspection License/Relicense, **API 780 Security Risk Assessment Methodology** for Petroleum & Petrochemical, **Advanced Process Safety Management** with PHA, **Quantitative and Qualitative Risk Assessment**, IADC/API **Mobile Drilling Rig Inspections**, **Maintenance and Audits**, **H2s Training and Rescue with Respiratory Equipment**, Job Safety Analysis (**JSA**), **Work Permit & First Aid**, Project HSE Management System, Health & Hygiene Inspection, PTW Control, Process Modules Fire & Gas Commissioning, MSDS, Ergonomics, Lockout/Tagout, Fire Safety & Protection, Spill Prevention & Control, **Onshore** Fabrication & **Offshore** Pipelaying & Hook-Up, **Crane** Inspection, **Crane** Operations, Oilfield Startup & Operation, Steel Fabrication, OSHA, **ISO 9001**, **ISO 14001**, **OHSAS 18001** and **IMO** (**SOLAS**) Regulations. Mr. Burnip has greatly contributed in upholding the highest possible levels of safety for numerous International Oil & Gas projects, Generation Systems & Platform Revamp, LPG & Gas Compression, Marine, Offshore and Power Plant Construction. Currently, he is the **HSE Advisor** of Solvay wherein he is responsible in planning and implementation of the corporate safety program (OSHA codes).

During Mr. Burnip's long career life, he had successfully carried out numerous projects in **Europe**, **North America**, **South America**, **Southeast Asia**, **Middle East** and the **North Sea**. He had worked for Delta Offshore Group, Solvay Asia Pacific, Likpin Dubai, SADRA/DOT, **ZADCO**, **McDermott** International (USA, Qatar, Egypt, India, Oman, Dubai and Abu Dhabi), **PDO**, **Shell**, **ARAMCO**, Salman Field, Leman Offshore Gas Field, GEC, Harland & Wolff PLC Belfast in North Ireland, Howard Doris – Kishorn in Scotland, **Westinghouse** Electric in Brazil and South Korea and **Chevron** Oil in Scotland as the **Commissioning Project Engineer**, **Project & Safety Engineer**, **Estimating Engineer**, **Senior Instrument Engineer**, **Instrument Field Engineer**, **Lead Instrument Engineer**, **Instrument Engineer**, **Engineer**, **Emergency Response Training Manager**, **HSE Advisor**, **HSE Instructor**, **HSE Supervisor**, **Instrumentation Supervisor**, **Instrumentation Specialist**, **Project Coordinator**, **Instrumentation Technician** and **Tank Farm Instrumentation Technician**.

Mr. Burnip has a **Bachelor's** degree in **Business Studies** from the **Somerset University** (**UK**). He is a **Certified/Registered Tutor** in **NEBOSH Certificate in Environmental Management**, **NEBOSH International General Certificate**, **NEBOSH International Certificate in Fire Safety & Risk Management**, **NEBOSH Process Safety Management Certificate** and **NEBOSH International Oil & Gas Certificate**; a **Certified Safety Auditor** (SAC); a **Certified ISO 45001** Auditor; an **Environmental Health and Safety Management Specialist** on Fall Protection, Elevated Structures, Material Handling, Trenching & Excavations; a Welding Brazing Safety Technician; a **Certified Safety Administrator** (**CSA**) - General Industry; a **Safety Manager/Trainer** – General Industry; a **Petroleum Safety Manager** (**PSM**) - Drilling & Servicing; a **Petroleum Safety Specialist** (**PSS**) - Drilling & Servicing; a **Safety Planning Specialist**; a **Safety Training Specialist**; a **Certified Instructor/Trainer**; a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and further holds a Certificate in **Mechanical Engineering Craft Practice** from the **City & Guilds of London Institute**; a **NEBOSH Level 3** Construction Certificate (UK); and holds a **Cambridge Teaching Certificate**. He is a well-regarded member of the **National Association of Safety Professionals**, the **Association of Cost Engineers** (**UK**), **Institution of Occupational Safety & Health** (**TechIOSH**) and an **Associate Member** of **World Safety Organization**. Further, he has conducted innumerable trainings, workshops and conferences worldwide.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Sunday, 13th of July 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Understanding Process Safety & RCA Fundamentals*** *Definition & Importance of Process Safety in Oil & Gas • Difference Between RCA & Troubleshooting • Proactive vs. Reactive Problem-Solving Approaches • Relationship Between Safety, Reliability, & Operational Efficiency*
0930 – 0945	*Break*
0945 – 1030	***Incident Investigation Framework & Regulatory Compliance*** *Overview of OSHA, API, & Other Regulatory Requirements • Importance of Incident Investigations in HSE Compliance • Role of RCA in Process Safety Management (PSM) • How Regulatory Frameworks Influence RCA Methodology*
1030 – 1130	***Identifying & Defining the Problem*** *Difference Between Symptoms & Root Causes • Gathering Initial Incident Data & Eyewitness Accounts • Developing Problem Statements for Effective Analysis • Impact of Incorrect Problem Definitions*
1130 – 1215	***Types of Failures & Their Initial Symptoms*** *Common Types of Equipment & Operational Failures • Process Deviations & Human Factor Contributions • Recognizing Leading vs. Lagging Indicators • Immediate Actions to Stabilize a System Post-Incident*
1215 – 1230	*Break*
1230 – 1330	***Essential RCA Tools & Techniques Overview*** *Introduction to Fishbone Diagram (Ishikawa) • 5-Whys Methodology Basics • Overview of Fault Tree Analysis (FTA) & Failure Modes & Effects Analysis (FMEA) • Timeline Analysis as a Sequencing Method*
1330 – 1420	***Case Study: Analyzing a Historical Industrial Incident*** *Review of a Major Past Incident in Oil & Gas • Identifying Key Takeaways • Group Discussion on Potential Overlooked Root Causes • Lessons Learned & Corrective Actions Applied*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2: ***Monday, 14th of July 2025***

0730 – 0830	***Systematic Approach to Data Collection*** *Defining Data Requirements for RCA Investigations • Types of Evidence: Physical, Operational, & Human Factors • Sources of Reliable Data: Logs, SCADA, Interviews • Ensuring Data Integrity & Avoiding Biases*
0830 – 0930	***Conducting Effective Interviews & Witness Statements*** *Best Practices for Interviewing Personnel Post-Incident • Techniques for Eliminating Hindsight Bias • Managing Conflicting Accounts in Investigations • Ethical Considerations & Confidentiality*
0930 – 0945	*Break*

0945 – 1100	***Process Mapping & Timeline Reconstruction*** *How to Develop Process Flow Diagrams for RCA • Identifying Key Process Deviations • Sequencing Events for Accurate Analysis • Using Software Tools for Event Mapping*
1100 – 1215	***Fault Tree Analysis (FTA) & Failure Mode Analysis (FMEA)*** *Introduction to Fault Tree Methodology • How to Systematically Break Down Failure Causes • Understanding Probability in FMEA • Prioritizing High-Risk Failure Modes*
1215 – 1230	*Break*
1230 – 1330	***Statistical & Trend Analysis for Root Cause Identification*** *Using Historical Data for Trend Spotting • Statistical Tools for Failure Frequency Analysis • Identifying Systemic vs. Random Failures • Case Study Using Real Operational Data*
1330 – 1420	***Case Study: Reviewing a Process Safety Incident Report*** *Hands-On Analysis of an Oil Refinery Incident • Identification of Gaps in Evidence Collection • Discussion on Alternative Data Sources • Developing a Revised Investigation Approach*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 15th of July 2025***

0730 – 0830	***The 5-Whys Technique*** *How to Properly Apply 5-Whys Without Assumptions • Avoiding Circular Reasoning in Questioning • When to Combine 5-Whys with Other Techniques • Practical Exercise: Applying 5-Whys to a Mechanical Failure*
0830 – 0930	***Fishbone (Ishikawa) Diagram for RCA*** *Categories of Root Causes: People, Process, Equipment, Environment • Structuring the Diagram Effectively • Group Exercise: Developing an Ishikawa Diagram for a Real Case • Verifying Results Through Data Correlation*
0930 – 0945	*Break*
0945 – 1100	***The Role of Human Factors in Process Failures*** *How Human Error Contributes to Systemic Failures • The Psychology of Decision-Making Under Pressure • Identifying Latent Organizational Deficiencies • Mitigating Human Errors Through Training & Automation*
1100 – 1215	***Barrier Analysis & System Defenses*** *Understanding Layers of Protection in Process Safety • Identifying Missing or Failed Barriers in Incidents • The Swiss Cheese Model in Process Safety Management • Designing More Effective Safety Barriers*
1215 – 1230	*Break*
1230 – 1330	***Advanced Causal Analysis Techniques*** *Bowtie Analysis for Risk Assessment • Cause Mapping for Multi-Faceted Failures • Bayesian Analysis for Probabilistic Root Cause Modeling • Integrating RCA With Predictive Maintenance*

1330 – 1420	***Case Study: Applying Multiple RCA Methods to a Complex Incident*** *Breakout Sessions for Different Analysis Approaches • Comparing Results from Different Methods • Identifying Discrepancies & Best Approaches • Finalizing Conclusions & Recommended Actions*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 16th of July 2025

0730 – 0930	***Developing Effective Corrective Actions*** *Characteristics of Effective Corrective Actions • Avoiding "Quick Fixes" & Symptom-Focused Solutions • Aligning Corrective Actions with Risk Management Principles • Verification & Validation of Implemented Measures*
0930 - 0945	*Break*
0945 – 1100	***Implementing Sustainable Preventive Measures*** *Difference Between Corrective & Preventive Actions • Designing Proactive Monitoring Systems • How to Integrate Preventive Strategies into Existing Operations • Long-Term Reliability Improvement Strategies*
1100 - 1230	***Change Management in Process Safety Improvements*** *Managing Resistance to Change in Safety Programs • Communicating Investigation Findings Effectively • Ensuring Continuous Improvement Through Safety Culture • Aligning Change Initiatives with Corporate Objectives*
1230 - 1245	*Break*
1245 - 1420	***Performance Metrics & Continuous Monitoring*** *Setting Up Key Performance Indicators (KPIs) for RCA • Tracking Effectiveness of Implemented Actions • Using Data Analytics for Process Improvement • Creating a Feedback Loop for Ongoing Safety Enhancement*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

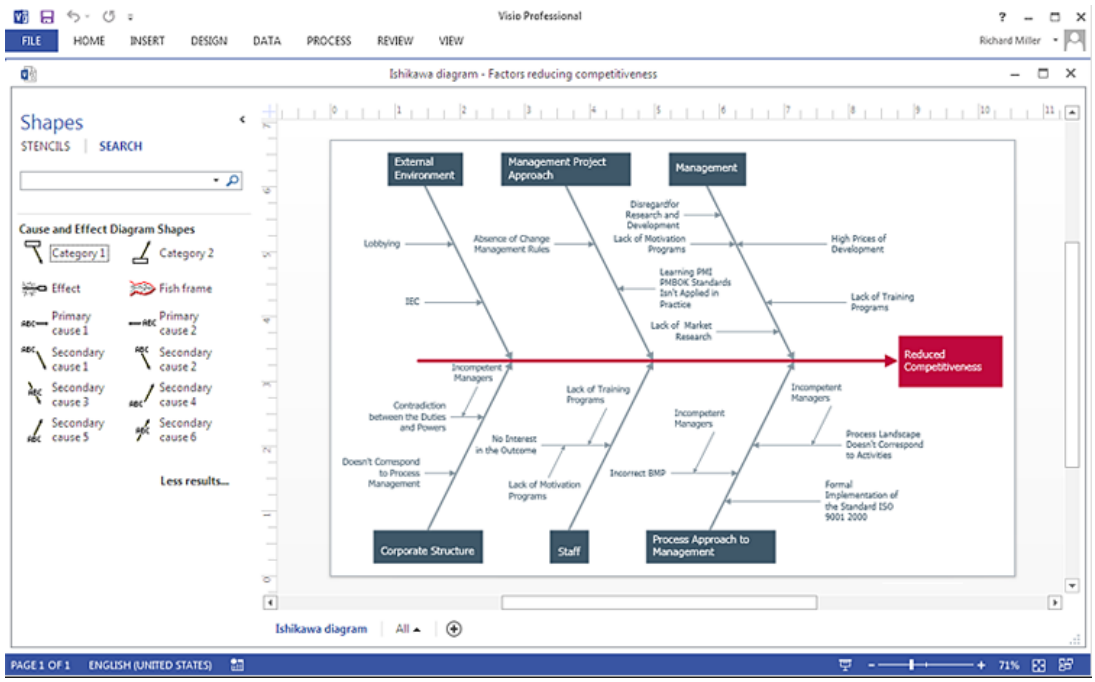
Day 5: Thursday, 17th of July 2025

0730 – 0930	***Case Study: Reviewing a Facility's RCA Process*** *Evaluating Previous Investigation Reports • Identifying Recurring Failures & Improvement Gaps • Group Recommendations for Strengthening RCA Processes • Presenting Solutions to a Simulated Management Team*
0930 – 0945	*Break*
0945 – 1100	***Full RCA Simulation Exercise*** *Participants Analyze a Simulated Process Failure • Using Collected Data, Applying RCA Methodologies • Developing Corrective Actions & Reporting Findings • Presenting Solutions in Team-Based Sessions*
1100 - 1230	***Documentation & Reporting Best Practices*** *Structuring RCA Reports for Clarity & Impact • Regulatory & Legal Considerations in Documentation • Creating a Compelling Incident Investigation Report • Avoiding Common Pitfalls in RCA Reporting*

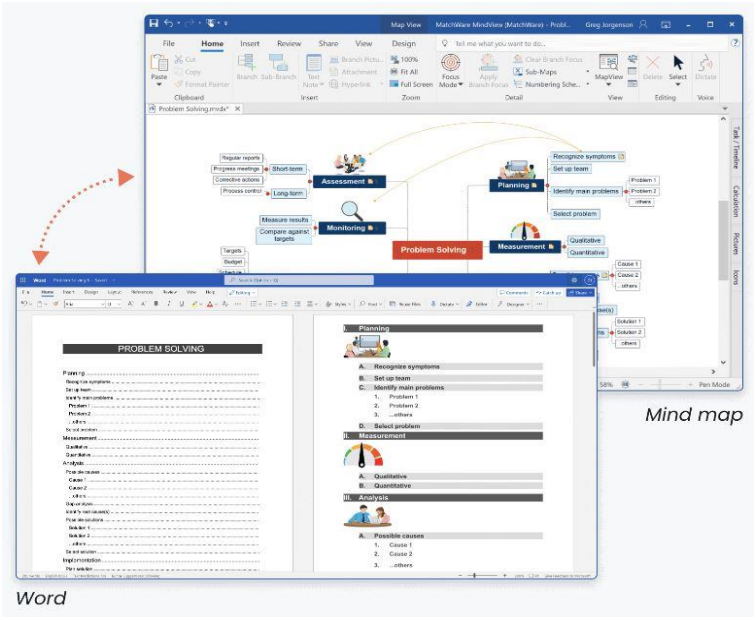
1230 – 1245	*Break*
1245 – 1345	***Audit & Verification of RCA Effectiveness*** *How to Assess Whether RCA Outcomes are Working • Conducting Follow-Up Investigations • Using Audits to Refine RCA Methodologies • Case Study: Reviewing Past RCA Effectiveness*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	*Presentation of Course Certificates*
1415 – 1430	***POST-TEST***
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art "Visio" and "Mindview" simulators.



Visio Software



Mindview Software

Course Coordinator

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