Maintenance and Turnaround Excellence

GExperts Learning Academy | PC-X12 | PC | 12-18 weeks

Course overview

12-18 weeks PC programme focused on Maintenance and Turnaround Excellence, using energy-sector cases and applied decisions.

Designed for: Experienced professionals

Learning outcomes

- Explain core principles and terminology for Maintenance and Turnaround Excellence.
- Interpret an applied case using evidence and stated assumptions.
- Identify risks, safeguards, role boundaries and escalation points.
- Prepare a clear recommendation for a multidisciplinary audience.

Course guide

Work through each module objective, lesson and teaching note, complete the applied activity and assessment, then use the separate Academy practice page for practice questions and answer feedback.

Separate practice questions:
https://www.globalexpertsconsultoria.com/training/academy/courses/questions/?course=PC-X12

Academic and certification status

Draft learning resource for study and review. It does not confer accreditation, external certification, a regulated qualification, professional licence, safety-critical competence or site authorisation. Confirm approvals, current laws, standards, approved procedures and awarding-body requirements before delivery.

Module 1: Asset lifecycle management

Learning objectives

- Explain asset lifecycle management, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Asset lifecycle management
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Asset decisions extend from design and procurement through operations, modification and retirement. Define required functions, service conditions and performance measures early. Integrity, availability and whole-life cost are related but different objectives.

Decision logic. Identify critical assets and establish information ownership across handover. Missing design, inspection or maintenance records can undermine later decisions. Lifecycle planning includes obsolescence, spares and decommissioning obligations rather than focusing only on purchase price.

Worked example. A low-cost pump has no maintainable offshore spare strategy and long replacement lead time.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Compare purchase cost with whole-life support for two fictional assets.

Model answer guide. Include downtime, maintenance, access, spares, documentation and retirement costs.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Compare purchase cost with whole-life support for two fictional assets.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 2: Maintenance and Turnaround Excellence: Risk Controls

Learning objectives

- Explain maintenance and turnaround excellence: risk controls, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance and Turnaround Excellence: Risk Controls
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Maintenance and Turnaround Excellence: Risk Controls describes a practical part of Maintenance and Turnaround Excellence. Learners connect the principles to asset performance, people, operational risk, project value and local context.

Decision logic. Review the objective, evidence, limits, interfaces and applicable controls for maintenance and turnaround excellence: risk controls. Decisions require current information, role-appropriate authority, competent review and documented assumptions.

Worked example. Use an applied Namibia-relevant case in which a team plans maintenance and turnaround excellence: risk controls while balancing safety, integrity, schedule, cost, environmental protection and local capability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Prepare a decision brief for maintenance and turnaround excellence: risk controls: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Model answer guide. A sound response defines scope; uses current, traceable evidence; applies approved requirements and controls; records assumptions; assigns competent owners; checks interfaces; and communicates a measurable decision with an escalation path.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Prepare a decision brief for maintenance and turnaround excellence: risk controls: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 3: Reliability centred maintenance

Learning objectives

- Explain reliability centred maintenance, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Reliability centred maintenance
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. RCM begins with required functions, functional failures, failure modes and consequences. Maintenance tasks should be applicable and effective for the failure mode. Calendar replacement is one option, not a universal solution.

Decision logic. Compare condition-based tasks, scheduled restoration, failure-finding, redesign and justified run-to-failure. Hidden protective failures require particular attention. Explain why an attractive maintenance schedule may not address the dominant failure mechanism.

Worked example. A standby protective device rarely operates, so lack of breakdown reports does not demonstrate availability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Create a function-failure-task table for a fictional standby system.

Model answer guide. Include hidden failure, consequence, detection method, interval rationale and review responsibility.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Create a function-failure-task table for a fictional standby system.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 4: Maintenance planning and CMMS

Learning objectives

- Explain maintenance planning and cmms, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance planning and CMMS
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. A computerised maintenance system links asset hierarchy, work orders, tasks, spares, labour and history. Data quality determines usefulness. Separate a work request, authorised work order, job execution and verified closure.

Decision logic. Prioritise work by consequence and criticality rather than age alone. A closed work order needs meaningful evidence, not just a status change. Backlogs should expose risk, deferrals and resource constraints. Protect safety-critical assurance from administrative closure.

Worked example. A work order says complete but contains no measurement, test result or technician record.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Improve a fictional maintenance record and prioritise a small backlog.

Model answer guide. Require asset identity, scope, condition, work evidence, unresolved defects and responsible acceptance.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Improve a fictional maintenance record and prioritise a small backlog.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 5: Maintenance and Turnaround Excellence: Work Planning

Learning objectives

- Explain maintenance and turnaround excellence: work planning, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance and Turnaround Excellence: Work Planning
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Maintenance and Turnaround Excellence: Work Planning describes a practical part of Maintenance and Turnaround Excellence. Learners connect the principles to asset performance, people, operational risk, project value and local context.

Decision logic. Review the objective, evidence, limits, interfaces and applicable controls for maintenance and turnaround excellence: work planning. Decisions require current information, role-appropriate authority, competent review and documented assumptions.

Worked example. Use an applied Namibia-relevant case in which a team plans maintenance and turnaround excellence: work planning while balancing safety, integrity, schedule, cost, environmental protection and local capability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Prepare a decision brief for maintenance and turnaround excellence: work planning: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Model answer guide. A sound response defines scope; uses current, traceable evidence; applies approved requirements and controls; records assumptions; assigns competent owners; checks interfaces; and communicates a measurable decision with an escalation path.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Prepare a decision brief for maintenance and turnaround excellence: work planning: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 6: Turnaround and shutdown management

Learning objectives

- Explain turnaround and shutdown management, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Turnaround and shutdown management
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Turnarounds combine inspection, maintenance and modifications during planned downtime. Scope definition, isolation, resources, logistics and reinstatement are tightly linked. Explain freeze dates, emergent work and critical-path control.

Decision logic. Prioritise justified scope and control changes. Startup readiness needs verified reinstatement and testing; completion percentages do not prove a system is ready. Contractors and operations must share clear boundaries, handovers and emergency arrangements.

Worked example. An emergent defect requires repair that affects another contractor's access and the restart sequence.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Build a shutdown plan with a change decision and reinstatement checklist.

Model answer guide. Include isolation, dependencies, quality records, testing, handover and authorised startup acceptance.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Build a shutdown plan with a change decision and reinstatement checklist.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 7: Maintenance and Turnaround Excellence: Applied Case

Learning objectives

- Explain maintenance and turnaround excellence: applied case, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance and Turnaround Excellence: Applied Case
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Maintenance and Turnaround Excellence: Applied Case describes a practical part of Maintenance and Turnaround Excellence. Learners connect the principles to asset performance, people, operational risk, project value and local context.

Decision logic. Review the objective, evidence, limits, interfaces and applicable controls for maintenance and turnaround excellence: applied case. Decisions require current information, role-appropriate authority, competent review and documented assumptions.

Worked example. Use an applied Namibia-relevant case in which a team plans maintenance and turnaround excellence: applied case while balancing safety, integrity, schedule, cost, environmental protection and local capability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Prepare a decision brief for maintenance and turnaround excellence: applied case: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Model answer guide. A sound response defines scope; uses current, traceable evidence; applies approved requirements and controls; records assumptions; assigns competent owners; checks interfaces; and communicates a measurable decision with an escalation path.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Prepare a decision brief for maintenance and turnaround excellence: applied case: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 8: Maintenance and Turnaround Excellence: Communication and Esc

Learning objectives

- Explain maintenance and turnaround excellence: communication and escalation, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance and Turnaround Excellence: Communication and Escalation
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Maintenance and Turnaround Excellence: Communication and Escalation describes a practical part of Maintenance and Turnaround Excellence. Learners connect the principles to asset performance, people, operational risk, project value and local context.

Decision logic. Review the objective, evidence, limits, interfaces and applicable controls for maintenance and turnaround excellence: communication and escalation. Decisions require current information, role-appropriate authority, competent review and documented assumptions.

Worked example. Use an applied Namibia-relevant case in which a team plans maintenance and turnaround excellence: communication and escalation while balancing safety, integrity, schedule, cost, environmental protection and local capability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Prepare a decision brief for maintenance and turnaround excellence: communication and escalation: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Model answer guide. A sound response defines scope; uses current, traceable evidence; applies approved requirements and controls; records assumptions; assigns competent owners; checks interfaces; and communicates a measurable decision with an escalation path.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Prepare a decision brief for maintenance and turnaround excellence: communication and escalation: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 9: Maintenance and Turnaround Excellence: Knowledge Check

Learning objectives

- Explain maintenance and turnaround excellence: knowledge check, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance and Turnaround Excellence: Knowledge Check
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Maintenance and Turnaround Excellence: Knowledge Check describes a practical part of Maintenance and Turnaround Excellence. Learners connect the principles to asset performance, people, operational risk, project value and local context.

Decision logic. Review the objective, evidence, limits, interfaces and applicable controls for maintenance and turnaround excellence: knowledge check. Decisions require current information, role-appropriate authority, competent review and documented assumptions.

Worked example. Use an applied Namibia-relevant case in which a team plans maintenance and turnaround excellence: knowledge check while balancing safety, integrity, schedule, cost, environmental protection and local capability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Prepare a decision brief for maintenance and turnaround excellence: knowledge check: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Model answer guide. A sound response defines scope; uses current, traceable evidence; applies approved requirements and controls; records assumptions; assigns competent owners; checks interfaces; and communicates a measurable decision with an escalation path.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Prepare a decision brief for maintenance and turnaround excellence: knowledge check: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Module 10: Maintenance and Turnaround Excellence: Competence Review

Learning objectives

- Explain maintenance and turnaround excellence: competence review, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Maintenance and Turnaround Excellence: Competence Review
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Maintenance and Turnaround Excellence

Detailed teaching notes

Teaching notes

Core explanation. Maintenance and Turnaround Excellence: Competence Review describes a practical part of Maintenance and Turnaround Excellence. Learners connect the principles to asset performance, people, operational risk, project value and local context.

Decision logic. Review the objective, evidence, limits, interfaces and applicable controls for maintenance and turnaround excellence: competence review. Decisions require current information, role-appropriate authority, competent review and documented assumptions.

Worked example. Use an applied Namibia-relevant case in which a team plans maintenance and turnaround excellence: competence review while balancing safety, integrity, schedule, cost, environmental protection and local capability.

Facilitator prompts. Ask learners to distinguish verified facts from assumptions, identify who has decision authority, name stop-work triggers and state what evidence could change their recommendation. Compare technical, HSE, commercial and community perspectives.

Activity. Prepare a decision brief for maintenance and turnaround excellence: competence review: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Model answer guide. A sound response defines scope; uses current, traceable evidence; applies approved requirements and controls; records assumptions; assigns competent owners; checks interfaces; and communicates a measurable decision with an escalation path.

Assessment evidence. Score accuracy (30%), use of evidence (20%), safeguards (20%), analysis (20%) and communication (10%).

Applied activity

Prepare a decision brief for maintenance and turnaround excellence: competence review: scope, evidence, assumptions, hazards, safeguards, owner, decision gate and escalation trigger.

Assessment

Formative: 10-question practice quiz with answer feedback

Summative: Applied decision brief or practical case assessed against the rubric; proposed pass mark 70%, subject to academic approval.

Practice

Use the separate Academy practice questions and answer key page for this module.

Facilitator close-out and resources

Facilitator close-out

Record attendance, assessment evidence, learner support needs, incidents and improvement actions according to approved provider processes. Do not sign learners off for regulated or safety-critical work without the authorised assessment and certification route.

Resources and references

- Supplied GExperts/IUM reference materials; verify reuse rights and currentness.
- Current applicable Namibian legislation, standards and approved site procedures supplied by the provider.
- Case worksheet and instructor slides must be produced and reviewed before course release.