Certificate in Natural Gas Processing and LNG Fundamentals

GExperts Learning Academy | C-X05 | C | 8-16 weeks

Course overview

8-16 weeks C programme focused on Certificate in Natural Gas Processing and LNG Fundamentals, using energy-sector cases and applied decisions.

Designed for: Graduates, technicians and professionals

Learning outcomes

- Explain core principles and terminology for Certificate in Natural Gas Processing and LNG Fundamentals.
- 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=C-X05

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: Atmospheric testing principles

Learning objectives

- Explain atmospheric testing principles, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Atmospheric testing principles
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Atmospheric testing considers oxygen, flammable and toxic hazards with instruments suitable for the task. Calibration, functional checks, sampling location, response time and sensor limitations affect validity. A reading is evidence at a place and time, not a permanent guarantee.

Decision logic. Use manufacturer-approved training and site procedures for actual instrument operation and acceptance limits. Teach why an unsuitable or failed sensor makes a reading unreliable. Do not prescribe entry thresholds or authorise testing competence through online questions alone.

Worked example. A detector displays zero but its required functional check failed. Zero cannot be trusted as proof of safe atmosphere.

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. Evaluate fictional detector records and decide whether evidence is fit for use.

Model answer guide. Reject unreliable evidence, withdraw the instrument according to procedure and escalate for approved replacement or review.

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

Applied activity

Evaluate fictional detector records and decide whether evidence is fit for use.

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: Separation gas processing and utilities

Learning objectives

- Explain separation gas processing and utilities, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Separation gas processing and utilities
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Production fluids are separated into oil, gas and water streams before further treatment. Gas compression, dehydration, oil stabilisation and utilities support product specifications and safe operation. Explain process flow diagrams before introducing instrument-level drawings.

Decision logic. Mass balance links input, output and accumulation. A bottleneck in power, cooling or compression can limit oil production. Product quality, emissions and integrity constrain throughput. Actual settings and alarm responses must follow approved procedures.

Worked example. A separator receives 100 mass units/hour; 55 leave as oil, 20 as gas and 25 as water, with no accumulation.

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. Reconcile a second balance with a missing stream and discuss measurement uncertainty.

Model answer guide. Total output plus accumulation must equal input; unexplained imbalance requires data checking.

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

Applied activity

Reconcile a second balance with a missing stream and discuss measurement uncertainty.

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: Flow assurance

Learning objectives

- Explain flow assurance, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Flow assurance
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Flow assurance manages the ability to transport fluids through operating and transient conditions. Hydrates, wax, scale, corrosion and slugging can threaten performance. Explain the pressure-temperature-composition relationship qualitatively with a cooling pipeline sketch.

Decision logic. Assess startup, shutdown and restart as well as steady operation. Chemical treatment, insulation and operating strategies interact with facilities and environmental constraints. Classroom discussion does not prescribe inhibitor doses or live restart sequences.

Worked example. A pipeline flows normally when warm but cools during a long shutdown, changing restart risk.

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 flow-assurance risk register for normal operation and shutdown.

Model answer guide. Include fluid data, thermal history, safeguards, monitoring and an authorised specialist review before restart.

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

Applied activity

Build a flow-assurance risk register for normal operation and shutdown.

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: Certificate in Natural Gas Processing and LNG Fundamentals: Evi

Learning objectives

- Explain certificate in natural gas processing and lng fundamentals: evidence and decision gates, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Certificate in Natural Gas Processing and LNG Fundamentals: Evidence and Decision Gates
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Certificate in Natural Gas Processing and LNG Fundamentals: Evidence and Decision Gates describes a practical part of Certificate in Natural Gas Processing and LNG Fundamentals. 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 certificate in natural gas processing and lng fundamentals: evidence and decision gates. 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 certificate in natural gas processing and lng fundamentals: evidence and decision gates 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 certificate in natural gas processing and lng fundamentals: evidence and decision gates: 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 certificate in natural gas processing and lng fundamentals: evidence and decision gates: 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 5: Crude oil quality and assay interpretation

Learning objectives

- Explain crude oil quality and assay interpretation, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Crude oil quality and assay interpretation
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Crude properties include density, sulfur, acidity, metals, salt, water and distillation behaviour. API gravity is a density scale, not a complete quality grade. Explain how crude assay and sampling representativeness affect refinery fit and valuation.

Decision logic. A light crude can still present processing or materials challenges. Compare whole-crude properties with fraction yields and contaminants. Distinguish a laboratory result, a contractual specification and a refinery's acceptable feed envelope.

Worked example. Two hypothetical crudes have similar API gravity but very different sulfur and metals contents.

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 the two fictional assays and list additional data needed for refinery selection.

Model answer guide. Include contaminant management, fraction yields, blending and sampling quality; avoid ranking by API gravity alone.

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

Applied activity

Compare the two fictional assays and list additional data needed for refinery selection.

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: Global petroleum markets and price formation

Learning objectives

- Explain global petroleum markets and price formation, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Global petroleum markets and price formation
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Crude markets connect producers, traders, refiners and transport providers. Prices often reference benchmarks adjusted for quality, location and contract terms. OPEC is a producers' organisation, not a buyer qualification or an assurance of payment.

Decision logic. Separate physical delivery, price exposure and credit exposure. A high headline price can be offset by freight, quality discounts, finance or default risk. No company is labelled reliable without current due diligence and an approved transaction basis.

Worked example. Offer A is USD 75/barrel with USD 5 freight; offer B is USD 73 with USD 1 freight, before other terms.

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 simplified netbacks and identify non-price checks.

Model answer guide. A gives 70 and B gives 72 USD/barrel; check credit, delivery, sanctions and quality terms before selection.

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

Applied activity

Compare simplified netbacks and identify non-price checks.

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: Contract strategy and risk allocation

Learning objectives

- Explain contract strategy and risk allocation, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Contract strategy and risk allocation
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Contracts define scope, deliverables, payment, acceptance, change and remedies. Lump sum, reimbursable and target-cost arrangements allocate uncertainty differently. Begin with scope maturity and market capability rather than choosing a familiar contract label.

Decision logic. Risk should be allocated to parties able to manage it, with realistic pricing and assurance. Unclear interfaces create disputes despite detailed clauses. Actual indemnity, liability, insurance and governing-law terms require qualified legal and commercial review.

Worked example. A supplier prices an undefined offshore interface as an exclusion; the owner's total risk remains unresolved.

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. Draft a scope and interface schedule for a fictional package.

Model answer guide. Include deliverables, acceptance evidence, owner interfaces, change control and exclusions.

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

Applied activity

Draft a scope and interface schedule for a fictional package.

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: Certificate in Natural Gas Processing and LNG Fundamentals: Com

Learning objectives

- Explain certificate in natural gas processing and lng fundamentals: communication and escalation, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Certificate in Natural Gas Processing and LNG Fundamentals: Communication and Escalation
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Certificate in Natural Gas Processing and LNG Fundamentals: Communication and Escalation describes a practical part of Certificate in Natural Gas Processing and LNG Fundamentals. 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 certificate in natural gas processing and lng fundamentals: 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 certificate in natural gas processing and lng fundamentals: 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 certificate in natural gas processing and lng fundamentals: 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 certificate in natural gas processing and lng fundamentals: 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: Petroleum economics overview

Learning objectives

- Explain petroleum economics overview, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Petroleum economics overview
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Economics translates technical scenarios into cash-flow consequences. Define decision alternatives and the perspective first, then estimate volume, timing, realised prices, costs, fiscal payments and closure. Compare value, affordability and exposure together.

Decision logic. Use transparent assumptions with units and source dates. A model's arithmetic can be correct while its development assumptions are implausible. Separate geological uncertainty, engineering uncertainty and market risk, and show which could reverse the decision.

Worked example. Two fictional projects have equal undiscounted cash surplus but one receives cash five years later.

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. Explain which may have greater present value and what additional information is required.

Model answer guide. Earlier comparable cash usually has greater present value at positive discount rates; require timing and risk details.

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

Applied activity

Explain which may have greater present value and what additional information is required.

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: Certificate in Natural Gas Processing and LNG Fundamentals: Co

Learning objectives

- Explain certificate in natural gas processing and lng fundamentals: competence review, interpret a case, select appropriate controls and justify a documented decision.

Lessons

1. Purpose and key terms of Certificate in Natural Gas Processing and LNG Fundamentals: Competence Review
2. Systems and operating context
3. Evidence, assumptions and decision gates
4. Hazards, safeguards and escalation
5. Applied case: Certificate in Natural Gas Processing and LNG Fundamentals

Detailed teaching notes

Teaching notes

Core explanation. Certificate in Natural Gas Processing and LNG Fundamentals: Competence Review describes a practical part of Certificate in Natural Gas Processing and LNG Fundamentals. 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 certificate in natural gas processing and lng fundamentals: 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 certificate in natural gas processing and lng fundamentals: 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 certificate in natural gas processing and lng fundamentals: 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 certificate in natural gas processing and lng fundamentals: 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.