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Chemical and Oil Tanker Cargo Operations Student Handout

This handout summarises the key knowledge and decision-making principles students need for effective revision and practical application. It is intended to complement, not replace the complete course materials.

1. Tanker Types, Certification and Cargo Properties

- Differentiate oil and chemical tanker arrangements
- Connect STCW V/1-1 competence with assigned responsibility
- Interpret SDS and cargo data
- Confirm competence, authority, roles and communications
- Review the current plan, risk assessment, limits and manufacturer or medical instructions

Module 1 worked example: Cargo nomination differs from the safety data sheet

Situation:	A nomination says "solvent blend", while the ship receives an SDS with another trade name.
Work it through:	Compare the cargo identity, SDS revision, properties and certificate of fitness where relevant. Resolve the difference with the cargo authority before assigning the tank
Then check:	Record the verified identity and applicable tank and protective controls.
Decision point:	A trade name alone cannot clear the parcel.

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2. Hazards, Atmospheres, PPE and Tanker Fire Safety

- Apply the fire triangle, toxicity, oxygen and electrostatic controls
- Select PPE and respiratory protection
- Confirm competence, authority, roles and communications
- Review the current plan, risk assessment, limits and manufacturer or medical instructions
- Identify stop criteria, emergency arrangements and the person who can authorise change

Module 2 worked example: Vapour alarm at the manifold

Situation:	A portable detector alarms near the manifold; a second worker reports a smell.
Work it through:	Move people clear, stop the affected operation and notify the responsible officer. Have a competent person verify the atmosphere with the right instrument.
Then check:	Check the wind, possible leak points and cargo SDS before choosing protection or re-entry controls.
Decision point:	No restart merely because the smell fades.

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3. Cargo Systems, Pumps, Pipelines, Valves and Instrumentation

- Verify line-up and segregation
- Recognise pressure, level and pump abnormalities
- Confirm competence, authority, roles and communications
- Review the current plan, risk assessment, limits and manufacturer or medical instructions
- Identify stop criteria, emergency arrangements and the person who can authorise change

Module 3 worked example: Discharge pump does not build pressure

Situation:	The pump pressure stays low and the receiving tank level does not change.
Work it through:	Check pump condition and positively trace the line-up against the approved piping diagram. Avoid trying random valves under pressure.
Then check:	Pause under the ship procedure; compare tank levels, recirculation, manifold communication and pressure trend.
Decision point:	Restart only when the discrepancy is resolved.

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4. Loading, Discharging, Ballasting and Ship–Shore Interface

- Complete ship–shore checks
- Control rates, stresses, trim, communications and emergency shutdown
- Confirm competence, authority, roles and communications
- Review the current plan, risk assessment, limits and manufacturer or medical instructions
- Identify stop criteria, emergency arrangements and the person who can authorise change

Module 4 worked example: Shore requests a faster loading rate

Situation:	Loading is stable, but the terminal requests a higher rate near a tank change.
Work it through:	Hold the agreed rate while checking the plan, ullages, pressure and venting limits.
Then check:	Agree any revision with the responsible ship and shore personnel, brief the team and monitor after changing rate.
Decision point:	A request does not itself amend the agreement between ship and shore.

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5. Tank Cleaning, Gas-Freeing, Inerting and Enclosed-Space Interface

- Sequence cleaning and atmosphere control
- Prevent incompatible residues
- Distinguish inert, gas-free and safe-for-entry conditions
- Confirm competence, authority, roles and communications
- Review the current plan, risk assessment, limits and manufacturer or medical instructions

Module 5 worked example: Tank called gas-free without test record

Situation:	A ventilated tank has no current atmosphere readings with its entry request.
Work it through:	Distinguish ventilation from safe entry. Check tank history and isolation, then obtain authorised atmosphere tests at the required locations.
Then check:	Use the enclosed-space permit, continuing monitoring and rescue arrangements under the ship procedure.
Decision point:	No entry on an informal assurance.

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6. Emergency Response, Pollution Control and Integrated Assessment

- Respond to leak, overflow, fire, exposure and loss of containment
- Use SOPEP/SMPEP interfaces
- Complete final scenarios
- Confirm competence, authority, roles and communications
- Review the current plan, risk assessment, limits and manufacturer or medical instructions

Module 6 worked example: Spill during transfer

Situation:	A sheen appears beside the vessel while the manifold watch sees liquid at a connection.
Work it through:	Stop the source through the agreed shutdown path, raise the alarm and coordinate immediate containment.
Then check:	Identify the cargo and estimated quantity; follow the shipboard pollution plan and reporting chain.
Decision point:	Preserve times and observations; do not delay response for an exact quantity.

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Module technical checkpoints

Use each checkpoint with the module decision map. Confirm the current ship procedure, equipment limits and operating conditions before taking action.

Module	Worked action	Evidence and decision
1. Cargo nomination differs from the safety data sheet	Compare the cargo identity, SDS revision, properties and certificate of fitness where relevant.	Record the verified identity and applicable tank and protective controls. A trade name alone cannot clear the parcel.
2. Vapour alarm at the manifold	Move people clear, stop the affected operation and notify the responsible officer.	Check the wind, possible leak points and cargo SDS before choosing protection or re-entry controls. No restart merely because the smell fades.
3. Discharge pump does not build pressure	Check pump condition and positively trace the line-up against the approved piping diagram.	Pause under the ship procedure; compare tank levels, recirculation, manifold communication and pressure trend. Restart only when the discrepancy is resolved.
4. Shore requests a faster loading rate	Hold the agreed rate while checking the plan, ullages, pressure and venting limits.	Agree any revision with the responsible ship and shore personnel, brief the team and monitor after changing rate. A request does not itself amend the agreement between ship and shore.
5. Tank called gas-free without test record	Distinguish ventilation from safe entry.	Use the enclosed-space permit, continuing monitoring and rescue arrangements under the ship procedure. No entry on an informal assurance.
6. Spill during transfer	Stop the source through the agreed shutdown path, raise the alarm and coordinate immediate containment.	Identify the cargo and estimated quantity; follow the shipboard pollution plan and reporting chain. Preserve times and observations; do not delay response for an exact quantity.

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Chemical and Oil Tanker Cargo Operations Key Checklist

Vessel or workplace	Date	Completed by	Reviewed by

Prepare

☐ Confirm scope, authority and applicable current procedure

☐ Identify hazards, operational limits and interfaces

☐ Confirm competent people, equipment, communications and contingency

☐ Brief roles, stop criteria and reporting expectations

Execute

☐ Follow the approved sequence and verify critical steps

☐ Maintain situational awareness and challenge unexpected conditions

☐ Stop, make safe and escalate when limits or assumptions are no longer valid

Monitor

☐ Use objective indicators and independent checks where appropriate

☐ Record significant events, deviations, decisions and communications

☐ Manage fatigue, workload and handover

Close out

☐ Verify safe restoration or completion

☐ Account for people, equipment and records

☐ Debrief, report defects and assign corrective actions with effectiveness checks