

Course Outline & Study Guide PCP-AI

The complete study outline — thirteen domains, sixty-one Knowledge Areas, weighted 40/40/20, with the method behind them and a suggested path through



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PROJECT CONTROLS INSTITUTE GLOBAL
AI proposes. The professional disposes.

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What this document is. The complete outline of the Certified Project Controls Professional (PCP-AI) course of study, in document form. It follows the published PCP-AI Body of Knowledge, First Edition, of Project Controls Institute Global ("the Institute"): thirteen domains and sixty-one Knowledge Areas across project accounting & finance, project management principles, and AI knowledge & practical approach. The examination will sample the same thirteen domains at the published group weighting — the framework you study is the framework you will be assessed against.

How to read it. Each domain below is listed with every one of its Knowledge Areas and the topics each Knowledge Area teaches. Use the outline three ways: as a map before you start, as a checklist while you study, and as the basis of the self-audit described at the end.

— The blueprint — three groups, one weighting

Domain group	Domains	Exam weight
Project accounting & finance	Domains 1–4	40 %
Project management principles	Domains 5–12	40 %
AI knowledge & practical approach	Domain 13	20 %

The domain groups and their 40/40/20 weighting are those of the published PCP-AI Body of Knowledge, First Edition. Three Knowledge Areas are flagged as **flagships** — KA 2.2 (IFRS 15), KA 6.3 (the EAC family) and KA 13.5 (AI applied across the lifecycle) — the deepest treatments in their groups and the hinges the rest of the framework turns on.

— Domains 1–4 · Project accounting & finance — 40 %

The financial grammar of project controls. These four domains teach how project numbers are recorded, reported, planned and turned into decisions — the accounting the rest of the framework assumes.

Domain 1 — Foundations of Accounting for Project Controls

Reading, reconciling and reporting against the books — the double-entry model, the four statements, accruals and provisions, and the cost coding that ties a ledger to a WBS.

- **KA 1.1 — The accounting model.** *Topics:* the accounting equation · debit & credit rules by account type · double-entry mechanics · the ledger and the trial balance · a full transaction cycle worked end-to-end.
- **KA 1.2 — Components of the financial statements.** *Topics:* the statement of financial position · the statement of profit or loss & OCI · the statement of cash flows · the statement of changes in equity · the notes · how the statements articulate.
- **KA 1.3 — Accrual accounting and the matching concept.** *Topics:* accrual vs cash basis · the matching principle · the four period-end adjustments · depreciation as systematic matching · why controls professionals care about the cut-off.
- **KA 1.4 — Cost provisions and cost accruals (IAS 37).** *Topics:* accrual vs provision · the IAS 37 recognition tests · measurement (best estimate, expected value, discounting) · contingent liabilities and assets · onerous (loss-making) contracts · remeasurement and reversal.
- **KA 1.5 — Chart of accounts and cost coding for projects.** *Topics:* the chart of accounts · cost extraction, coding and reconciliation · the cost breakdown structure and its link to the WBS · control accounts (the WBS×OBS intersection) · designing a project cost code.

Domain 2 — Financial Reporting & the Standards

The rules that decide what number is recorded, and when — the reporting framework and the standards that shape project numbers, with IFRS 15 at the centre.

- **KA 2.1 — The reporting framework.** *Topics:* the purpose of financial reporting · the qualitative characteristics · IFRS vs local GAAP · IAS 1 and the presentation principles.

- **KA 2.2 – IFRS 15 Revenue from Contracts with Customers. Flagship.** *Topics:* the five-step model · step 1, the contract · step 2, performance obligations · step 3, the transaction price (variable consideration, constraint, financing) · step 4, allocation · step 5, recognition — over time vs point in time, input vs output methods · contract assets and liabilities (over/under-billing) · contract modifications · disclosures.
- **KA 2.3 – Revenue recognition beyond the basics.** *Topics:* principal vs agent · bundled goods and services · linking revenue to billing and the BoQ.
- **KA 2.4 – Other relevant standards for project controls.** *Topics:* IAS 2 inventories/WIP · IAS 16 property, plant & equipment · IFRS 16 leases · IAS 23 borrowing costs · IAS 37 (recap) · IAS 11 legacy context — why IFRS 15 superseded it.
- **KA 2.5 – Management reporting versus statutory reporting.** *Topics:* the two reporting worlds · reconciling management to statutory numbers · what a controls professional owns.

Domain 3 — Budgeting & Forecasting

From a credible estimate to a time-phased cost baseline to an honest estimate at completion — and the cash flow that sits behind the profit.

- **KA 3.1 – Budgeting fundamentals.** *Topics:* the purpose of a budget · top-down, bottom-up and zero-based · the project budget baseline · contingency reserve vs management reserve.
- **KA 3.2 – Cost estimation.** *Topics:* estimate classes and accuracy · estimating methods (analogous, parametric, bottom-up) · the basis of estimate.
- **KA 3.3 – The time-phased budget / cost baseline (Planned Value).** *Topics:* spreading cost over the schedule · the S-curve · building a time-phased budget.
- **KA 3.4 – Forecasting.** *Topics:* what forecasting is · the estimate at completion (EAC) family · rolling forecasts and trend analysis.
- **KA 3.5 – Cash-flow forecasting.** *Topics:* profit is not cash · building a project cash-flow forecast · the funding requirement and its drivers.

Domain 4 — Performance Management, Variance Analysis & Management Reporting

Turning numbers into decisions — KPIs and thresholds, flexed budgets and variance bridges, and reports designed for the decision each audience must take.

- **KA 4.1 — Performance management principles.** *Topics:* KPIs, targets, thresholds and tolerances · leading vs lagging indicators · management by exception.
- **KA 4.2 — Variance analysis.** *Topics:* what a variance is · the flexed budget · price/rate vs quantity/efficiency variances · the variance bridge · favourable and adverse — reading them well.
- **KA 4.3 — Management reporting.** *Topics:* designing the report for the decision · the project-controls dashboard · narrative vs numbers · cadence and audience · the exception report.
- **KA 4.4 — Data visualisation and storytelling for controls.** *Topics:* choosing the right chart · common distortions to avoid · storytelling with controls data.

— Domains 5–12 · Project management principles — 40 %

The delivery disciplines controls serves — cost control, earned value, contracts, the lifecycle, agile, scheduling, the business process cycles and risk. Domain 6, earned value management, is the flagship of the group.

Domain 5 — Cost Management & Cost Control

Controlling cost on a live project — the commitment–accrual–actual cycle, the cost breakdown structure and control accounts, and change control that protects the baseline.

- **KA 5.1 — The cost management framework.** *Topics:* cost classifications · cost drivers · allocation, absorption and overhead recovery.
- **KA 5.2 — The cost control cycle.** *Topics:* commitment → accrual → actual · the cost ledger and cost-to-date · cost extraction and reconciliation · data integrity.

- **KA 5.3 — Cost breakdown and control accounts.** *Topics:* the cost breakdown structure · control accounts and work packages · the integration point for earned value.
- **KA 5.4 — Change control and cost impact.** *Topics:* why change control matters · trends, variations and change orders · assessing cost impact and protecting the baseline.

Domain 6 — Earned Value Management & Forecasting (EVM/EAC)

The flagship discipline of the group: how much have we done, what did it cost, and what will it cost to finish — earned value, the indices and a defensible EAC.

- **KA 6.1 — EVM fundamentals.** *Topics:* the three measures · measuring earned value · the integrated picture.
- **KA 6.2 — Variances and performance indices.** *Topics:* cost and schedule variance · the performance indices · the to-complete performance index · reading the indices together.
- **KA 6.3 — Forecasting with EVM: the EAC family. Flagship — the heart of the domain.** *Topics:* the ETC/EAC identity · the EAC methods and their assumptions · selecting a method · VAC and the completion picture.
- **KA 6.4 — Integrating cost & schedule; limitations; earned schedule.** *Topics:* EVM as cost-schedule integration · the limitations of EVM · earned schedule · EVM and adaptive delivery · sector mini-case — a deteriorating trend.

Domain 7 — Contracts, Commercial Management, BoQ, Invoicing & Revenue

Where risk is allocated and money is defined — contract types, variations and claims, bills of quantities, the billing cycle and the loop back to IFRS 15 revenue.

- **KA 7.1 — Types of contract.** *Topics:* the risk-allocation spectrum · lump sum and remeasurement · cost-plus and incentive forms · target cost and pain/gain · T&M, unit-rate, framework and EPC.

- **KA 7.2 — Contract management.** *Topics:* the contract lifecycle · variations and claims · liquidated damages · retention, bonds and guarantees · standard forms (FIDIC awareness).
- **KA 7.3 — Bills of Quantities (BoQ).** *Topics:* what a BoQ is · structure and measurement · rates and preliminaries · pricing and remeasuring a BoQ.
- **KA 7.4 — Invoicing and applications for payment.** *Topics:* interim valuations and progress billing · certification and payment · retention in the valuation · linking BoQ/EVM progress to billing.
- **KA 7.5 — Revenue recognition in the commercial cycle.** *Topics:* tying billing to IFRS 15 · over- and under-billing · the commercial-to-accounting loop.

Domain 8 — Project Management Lifecycle

The whole life of a project — initiating through closing, and the development approaches that determine how controls is applied.

- **KA 8.1 — Initiating.** *Topics:* the business case and feasibility · the project charter · stakeholder identification · success criteria.
- **KA 8.2 — Planning.** *Topics:* scope and the WBS · the integrated plan and the baselines · the subsidiary plans.
- **KA 8.3 — Executing.** *Topics:* directing the work · managing resources and stakeholders · quality assurance and procurement execution.
- **KA 8.4 — Monitoring & Controlling.** *Topics:* performance measurement · integrated change control · controlling the constraints.
- **KA 8.5 — Closing.** *Topics:* contract and project closure · handover and the final account · lessons learned.
- **KA 8.6 — Development approaches: predictive, iterative, incremental & adaptive.** *Topics:* the approach spectrum · incremental vs iterative — the key distinction · hybrid delivery · tailoring and choosing an approach.

Domain 9 — Agile, Scrum & Adaptive Delivery for Project Controls

Measuring, forecasting and governing adaptive and hybrid delivery — Scrum, backlogs and flow metrics, AgileEVM and gate-based governance over Sprints.

- **KA 9.1 — Agile foundations.** *Topics:* the agile mindset and the Manifesto · empirical process control · adaptive vs predictive planning · when agile is (and isn't) appropriate.
- **KA 9.2 — The Scrum framework in depth.** *Topics:* Scrum theory and pillars · the three accountabilities · the five events · the three artefacts and their commitments.
- **KA 9.3 — Backlogs, estimation and agile metrics.** *Topics:* user stories, acceptance criteria and INVEST · refinement and prioritisation · relative estimation and velocity · burndown, burnup and flow metrics · the inverted iron triangle.
- **KA 9.4 — Kanban, Lean and scaling.** *Topics:* Kanban and flow · Lean and waste · scaling frameworks at awareness level.
- **KA 9.5 — Agile cost control, forecasting & earned value (AgileEVM).** *Topics:* funding and run-rate · forecasting from velocity and burnup · AgileEVM · reconciling story points to % complete and IFRS 15.
- **KA 9.6 — Hybrid delivery and agile governance.** *Topics:* combining stage-gate and agile · milestone and phase-gate reporting over Sprints · contracting for agile · assurance and audit trail.

Domain 10 — Project Scheduling

The model of the work in time — logic-driven networks, the critical path and float, compression and resourcing, and schedule control against a baseline.

- **KA 10.1 — Schedule development.** *Topics:* activity definition · sequencing and dependency types · leads and lags · estimating durations (incl. PERT).
- **KA 10.2 — Network analysis and the Critical Path Method.** *Topics:* the network · the forward pass (early dates) · the backward pass (late dates) · total and free float · the critical path.

- **KA 10.3 — Schedule compression and resourcing.** *Topics:* crashing · fast-tracking · resource levelling and smoothing · schedule risk (PERT/Monte Carlo).
- **KA 10.4 — Progress measurement and schedule control.** *Topics:* updating and progressing the schedule · schedule variance and baseline comparison · relating classical scheduling to agile cadence.

Domain 11 — Business Process Cycles (O2C, P2P & the control environment)

The processes behind every project number — order-to-cash, procure-to-pay and the internal controls and segregation of duties that keep them honest.

- **KA 11.1 — Order-to-Cash (O2C).** *Topics:* the cycle end-to-end · controls in O2C · the link to revenue and receivables.
- **KA 11.2 — Procure-to-Pay (P2P).** *Topics:* the cycle end-to-end · the three-way match · the link to cost, commitments and payables.
- **KA 11.3 — Internal control and segregation of duties.** *Topics:* internal control · segregation of duties · the audit trail and process mining.

Domain 12 — Risk Management for Project Controls

Handling uncertainty deliberately — the risk framework and appetite, the process from register to quantification, and the contingency the analysis justifies.

- **KA 12.1 — The risk framework.** *Topics:* what risk is · ISO 31000 principles · risk appetite and tolerance.
- **KA 12.2 — The risk process.** *Topics:* identification and the risk register · qualitative analysis · quantitative analysis (EMV, Monte Carlo) · response planning · monitoring.
- **KA 12.3 — Contingency and management reserve.** *Topics:* from quantified risk to contingency · contingency vs management reserve · drawing down and re-baselining.

— Domain 13 · AI knowledge & practical approach — 20 %

The systematic treatment of governed AI. Every other domain carries embedded "AI in this domain" coverage; Domain 13 goes deep — from concepts and data to applied workflows across the whole controls lifecycle.

Domain 13 — AI for Project Controls & PM: Concepts, Tools & Practice

The governed use of AI across the whole controls lifecycle — concepts, data, prompting, tool categories, applied workflows, governance and capability building.

- **KA 13.1 — AI foundations for professionals.** *Topics:* AI, ML and GenAI · how machine learning learns · large language models · training, inference, fine-tuning and RAG · strengths and hard limits · rules vs ML vs GenAI.
- **KA 13.2 — Data: the fuel.** *Topics:* garbage in, garbage out · data quality dimensions · structure, governance and lineage · project-controls data sources · privacy, confidentiality and preparing data.
- **KA 13.3 — Prompting and working with generative AI.** *Topics:* what a good prompt contains · prompt patterns · iterative refinement and verification · guardrails.
- **KA 13.4 — AI tool categories for project controls & PM.** *Topics:* the category map · assistants, RAG and analysis tools · domain and platform AI · choosing a category.
- **KA 13.5 — AI applied across the project-controls lifecycle. Flagship — the heart of the domain.** *Topics:* the pattern · estimating & budgeting · forecasting & EVM/EAC · cost control & extraction · scheduling · agile delivery · contracts & commercial · reporting & performance · risk · financial reporting & standards.
- **KA 13.6 — Governance, ethics, risk & assurance of AI.** *Topics:* "AI proposes, the professional disposes" · accountability, sign-off and auditability · hallucination, bias and confidentiality · when not to use AI · an AI-use policy and verification checklist.

- **KA 13.7 – Building an AI-augmented project-controls capability.**
Topics: the maturity model · integration and upskilling · measuring value · pitfalls and change management · the near-future outlook (honestly).

— How each domain teaches

Every domain follows the same teaching apparatus, so the course reads as one book rather than thirteen. Whatever the subject, you always know what is coming next and how it will be checked.

- **Taught by worked example.** Every calculation is worked in the uniform five-step format — setup, formula, substitution, result, interpretation — with numbers that actually add up and a closing line on what the answer means for the decision. Monetary figures throughout the course are stated in USD.
- **Checked as you go.** Each Knowledge Area closes with its key terms, tagged multiple-choice questions — every one with a rationale explaining why the right answer is right — and a self-check against the learning outcomes.
- **Stretched at the edges.** A set of advanced topics extends each domain beyond the core — from probabilistic estimating and earned schedule to merge bias, fraud typologies and CPI stability.
- **Grounded in sectors.** Two full case studies per domain apply the material in different industries — construction, energy, rail, aviation, healthcare, banking, manufacturing, retail and more — followed by an executive perspective on what leadership expects of the numbers.
- **Practised, not just read.** The quantitative domains carry graded calculation exercises with full solutions, and every domain ends with a practitioner's toolkit — the checklists, templates and habits to take back to a live project.
- **Pointed at the exam.** Each domain closes with exam preparation: what the blueprint samples from the domain, the traps candidates fall into, and how the Knowledge Areas connect to the rest of the framework.

The course closes with the **integrated capstone (Appendix G)**: one project followed through all thirteen domains — its baseline, its earned value, its contract, its risks and its governed AI — so the framework is finally exercised as the single discipline it is. The appendices also carry the master formula sheet, the global glossary, the standards referenced, self-check answers and the sample-MCQ bank.

— A suggested study path

The domains are examined together but built in a deliberate order, and a study plan that follows their dependencies is far more efficient than reading front to back.

1. **Finance first — Domains 1–4.** Start with the accounting grammar. The delivery domains assume you can read a ledger, apply IFRS 15, phase a budget and decompose a variance — Domains 1–4 supply exactly that, in that order.
2. **Then delivery — Domains 5–12.** Work through the project management group with one firm rule: take Domain 6 (earned value) before Domain 9, because AgileEVM builds directly on the EVM symbols and logic. The rest can flex around your experience.
3. **Weave Domain 13 throughout.** Do not leave AI to the end. Its applied coverage (KA 13.5) revisits every earlier domain, so pairing each finance or delivery domain with its AI workflows reinforces both at once.

However you sequence the material, the governing principle holds across every Knowledge Area: *AI proposes; the professional disposes.*

— Before you plan: the self-audit

Before committing to a schedule, audit yourself honestly against the sixty-one Knowledge Areas listed above. For each KA, mark yourself one of three ways:

- **Strong** — you could answer questions and perform the calculations today;
- **Working** — you know the ground but would need revision to be exam-ready;

- **Weak** — the KA is new to you, or your knowledge of it is out of date.

Then weight your study effort where the gaps cluster, not where the reading is most comfortable. Candidates from a finance background typically find their gaps in Domains 5–12; candidates from a delivery background typically find them in Domains 1–4; nearly everyone benefits from treating Domain 13 as genuinely examinable material rather than background reading. Repeat the audit partway through your preparation — the point is not the first score but the direction of travel.

One boundary to note as you prepare: the worked examples, self-checks and sample questions in the study materials are kept separate from any live examination bank — no preparation resource previews real exam items. The examination will sample the framework at the published 40/40/20 weighting; the outline above is the whole of what it will sample from.

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