

The Python Quants Training Landscape

From First Notebook to Super Quant

Dr. Yves J. Hilpisch

The Python Quants GmbH



The Webinar in One Sentence

The TPQ training landscape now covers the full path from first Python notebook to professional specialization in data science, quantitative finance, AI engineering, and crypto engineering.

What We Cover Today

- The Data Scientist (TDS) as the intro-level on-ramp for students, beginners, and career changers.
- Certificate in Python for Finance (CPF) as the flagship quant finance program.
- The AI Engineer (TAE) and The Crypto Engineer (TCE) as production-grade specializations.
- Concrete learning paths: which route fits which background and goal.

AI Changes the Talent Signal

AI Poised to Tilt Job Market Leverage Toward Older Workers

By [Victor Swezey](#)

May 16, 2026 at 5:00 PM GMT+2



Translate

Listen 2:22

Takeaways by Bloomberg AI

Hide

- More than 40% of CEOs plan to cut junior roles over the next one to two years and shift the composition of their workforce toward mid-level or senior positions.
- Companies are looking to mid- and senior-level employees to drive productivity because AI agents can't make judgment calls using the insight that comes from on-the-job experience.
- Foregoing younger talent now in favor of AI agents comes with significant risks, as it may leave companies with a shortage of experienced workers in the future.

The new hiring logic

- GenAI compresses junior analyst, coding, and research tasks.
- Employers increasingly value judgment, domain context, and evidence of execution.
- Internships and entry-level roles are no longer enough as automatic stepping stones.

The TPQ answer

- Juniors need portfolio proof that signals practical maturity.
- Seniors need technical fluency to turn experience into AI-enabled workflows.
- Production-first training, realistic exercises, and capstone portfolios make both signals visible.

<https://www.bloomberg.com>

Why Production-Grade Training Matters More Than Ever

The new signal

- Certificates alone are weaker signals than visible skill.
- Employers look for judgment, technical fluency, and execution evidence.
- Portfolio-ready work is the practical bridge between learning and opportunity.

The TPQ response

- Production-first training around realistic workflows.
- Structured paths from fundamentals to specialization.
- Capstones, labs, notebooks, and code that make progress visible.

The point

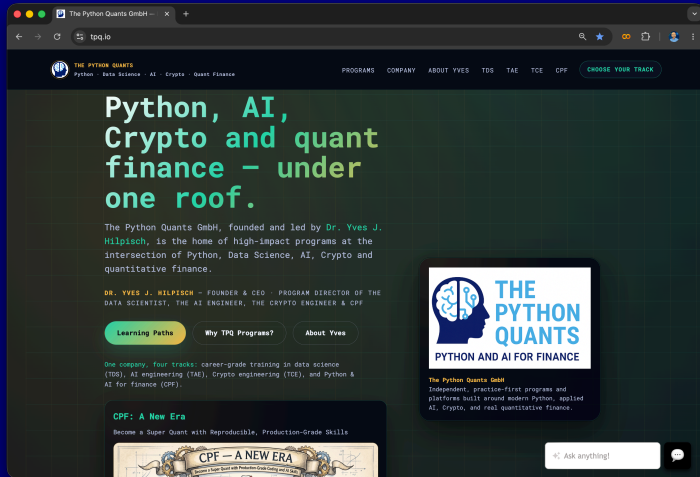
Juniors need credible portfolio evidence. Seniors need technical fluency to amplify domain experience. TPQ gives both groups a coherent route.

Agenda

- 1 The Python Quants
- 2 The Data Scientist (TDS)
- 3 Programs in Comparison
- 4 Certificate in Python for Finance (CPF)
- 5 The AI Engineer (TAE)
- 6 The Crypto Engineer (TCE)
- 7 Common Features
- 8 Learning Paths
- 9 Bundle Option & Special Offer

The Python Quants

The Python Quants



TPQ in 60 Seconds

Independent, practice-first education company led by Dr. Yves J. Hilpisch.

20 years

Python and AI for quantitative finance.

1,000s trained

Academics and professionals trained live and online.

7 published books

Python & AI finance books: 5 O'Reilly, 2 Wiley.

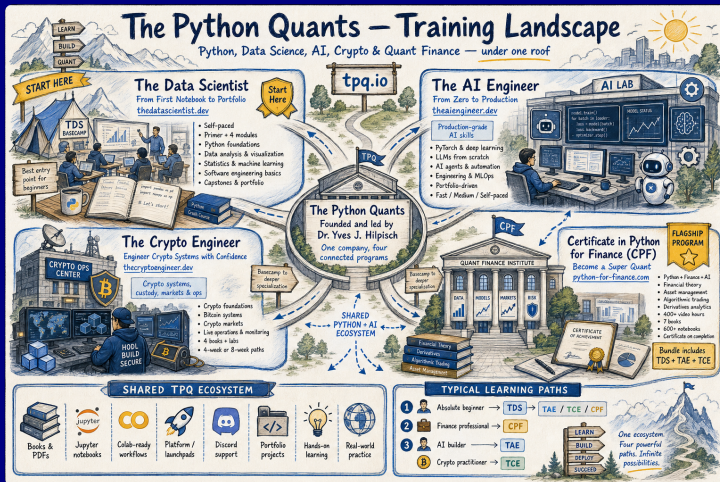
Leading institutions

Corporate training for Citadel, Two Sigma, and PDT Partners.

TDS, CPF, TAE, and TCE share one philosophy: guided practice, real code, real workflows.

The Training Landscape

This is the map for today: TDS is the entry point, CPF is the flagship finance route, and TAE/TCE add production specializations.



From First Notebook to Super Quant

The Data Scientist (TDS)

Python, data science, portfolio

Certificate in Python for Finance (CPF)

Quant finance, trading, derivatives

The AI Engineer (TAE)

LLMs, agents, deployment

The Crypto Engineer (TCE)

Bitcoin, custody, markets

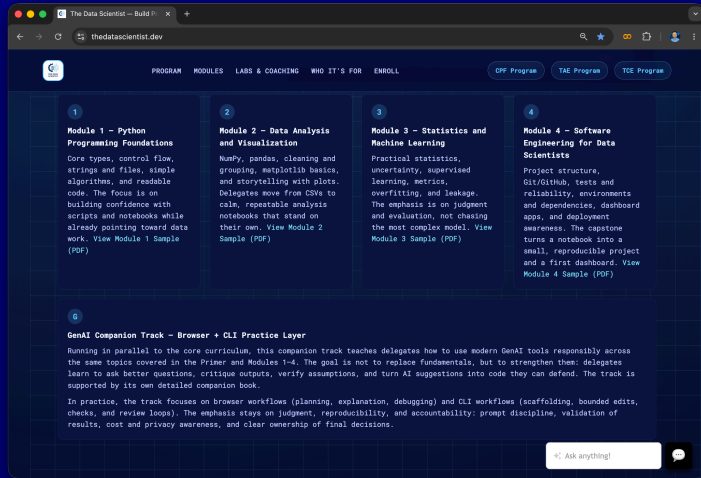
Super Quant

Python + data + finance + AI + crypto

Super Quant: a finance professional who can reason quantitatively, code fluently, use AI productively, understand crypto systems, and ship reproducible workflows.

The Data Scientist (TDS)

The Data Scientist (TDS)



TDS: The Intro-Level On-Ramp

The Data Scientist is a self-paced, portfolio-driven program for students from all disciplines, absolute beginners, early-stage practitioners, and working analysts.

What it develops

- Practical Python from the first Colab notebook and local script.
- Data analysis, visualization, statistics, and first machine learning models.
- Professional project habits: environments, Git/GitHub, tests, READMEs, and dashboards.
- A systematic GenAI introduction with detailed instructions, guided workflows, and reusable prompts.

Hard Facts

- 6 books, including a dedicated GenAI module.
- 9 labs and focused drills.
- 25 Colab-ready Jupyter notebooks.
- Weekly coaching guides.

TDS: Role in the Ecosystem

TDS is the natural basecamp for the rest of the TPQ ecosystem.

To CPF

- Finance specialization.
- Quant research and analytics.
- Capstone depth.

To TAE

- AI engineering.
- LLMs and agents.
- Deployment workflows.

To TCE

- Crypto infrastructure.
- Bitcoin and custody.
- Market operations.

GenAI leverage

The TDS GenAI module gives learners a structured foundation that also helps them move faster in CPF, TAE, and TCE.

Programs in Comparison

Programs in Comparison

The screenshot shows a web browser window with the URL `tpq.io`. The website header includes the logo for 'THE PYTHON QUANTS' and navigation links for 'PROGRAMS', 'COMPANY', 'ABOUT YVES', 'CPF', 'TAE', 'TCE', and a 'CHOOSE YOUR TRACK' button. The main heading is 'Your launchpad: three focused programs'. Below this, a paragraph explains that users should select a program based on their next step, from deepening Python-for-finance skills to building full AI systems or mastering crypto engineering. It also mentions that platform login credentials are sent after payment (at most one German business day later). The three program cards are:

- CPF - CERTIFICATE IN PYTHON FOR FINANCE** (Flagship): 'Become a Super Quant'. Master Python, finance, and AI in one coherent, practice-driven curriculum. 400+ hours of video, 3,000+ pages, 600+ notebooks and capstone research - all integrated on the Quant Platform. Button: 'Explore the CPF Program'.
- TAE - THE AI ENGINEER**: 'Production-grade AI systems'. From Math and PyTorch to building LLMs from scratch - a portfolio-first AI engineering program. Design, build, and ship end-to-end AI engineering projects and applications with a focus on real deployments, not isolated code snippets. Button: 'Explore The AI Engineer'.
- TCE - THE CRYPTO ENGINEER**: 'Confident Crypto Operations'. Understand custody, markets, monitoring and risk through runnable labs and operational runbooks. Four concise volumes, hands-on labs and a practical, operational approach to Crypto engineering for institutional markets. Button: 'Explore The Crypto Engineer'.

At the bottom right, there is a search bar with the text 'Ask anything!' and a chat icon.

Four Programs at a Glance

	TDS	CPF	TAE	TCE
Outcome	First notebook to portfolio	Become a Super Quant	Build production-grade AI systems	Engineer crypto systems with confidence
Best for	Beginners, analysts, students, career changers	Quants, finance professionals, analysts, researchers	Engineers and practitioners building real AI apps	Builders, risk/ops leads, quants touching crypto rails
Core coverage	Python, data analysis, visualization, statistics, ML, projects	Asset management, algo trading, derivatives, AI in finance	PyTorch, LLMs, agents, deployment patterns	Primitives, Bitcoin, custody, markets, monitoring, runbooks

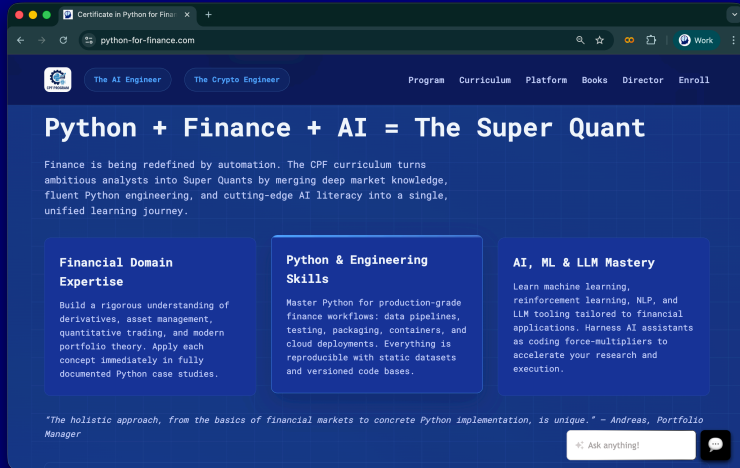
Four Programs: Hard Facts

	TDS	CPF	TAE	TCE
Books/docs	6 books	7 published books + 2 new CPF books	7 books + 1 supplementary doc	4 books + 17 notes PDFs
Notebooks	25 Colab-ready notebooks	600+ notebooks	100+ Colab-ready notebooks	51 notebooks
Practice layer	9 labs, projects, dashboards	Exercises, capstone, case studies	Scripts, services, agents, deployment workflows	Labs, scripts, custody and ops runbooks
Role	On-ramp	Flagship	AI specialization	Crypto specialization

CPF core track (fully revamped): 61 PDFs, 2,903 pages.

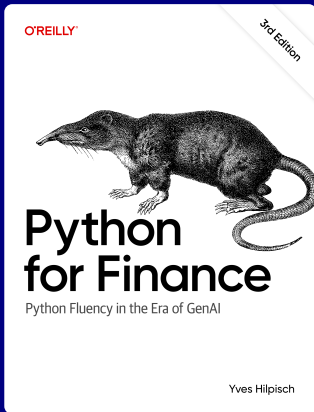
Certificate in Python for Finance (CPF)

Certificate in Python for Finance (CPF)



Python for Finance, 3rd Edition

Python Fluency in the Era of GenAI is the upcoming 3rd edition of the O'Reilly book *Python for Finance*. It builds on the first edition from 2014 and the second edition from 2018.



Why this matters

- A deeper reference for Python fluency in quantitative finance.
- Multiple new chapters and a complete new part on Asset Management.
- Explicitly updated for the GenAI era and AI-assisted workflows.
- Included as early access HTML version in both TDS and CPF.

Edition timeline: 2014 first edition → 2018 second edition → 2026/2027 third edition

CPF: Content, Target Groups, Benefits

The flagship quant finance route. CPF turns motivated learners into confident practitioners with reproducible, production-grade Python workflows.

What it covers

- Python for finance workflows, data engineering, reproducible research, and applied AI in finance.
- Financial theory, asset management, algorithmic trading, derivatives analytics, and AI-assisted finance workflows.

Who benefits most

- Finance professionals, quants, analysts, researchers, lecturers, career changers, students.

Why it matters now

- Quantitative finance is increasingly based on Python, driven by AI, and influenced by crypto.
- The GenAI era rewards teams that combine domain depth with reproducible execution.

CPF: New Books for the GenAI Era

Brand-new resources for quantitative finance, AI-assisted asset management, and AI-based algorithmic trading.

Python and AI for Asset Management

Data Science, Machine Learning, and Modern AI Workflows

Dr. Yves J. Hilpisch¹

January 8, 2026 (preliminary draft)



¹Get in touch: contact@tpq.training. Web page: <https://tpq.io>. Research, strategizing, drafting, and visualization were assisted by CPF 1.x as a co-writing tool under human direction. Comments and feedback are welcome.

Python & AI for Algorithmic Trading

Efficient Markets, Data, and AI-Powered Trading Systems

Dr. Yves J. Hilpisch¹

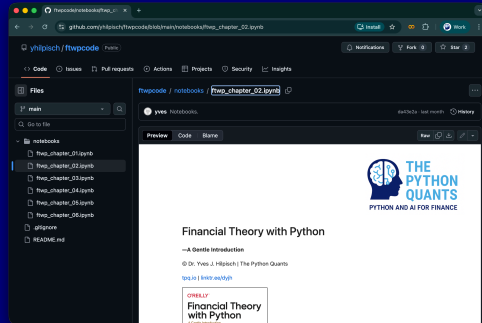
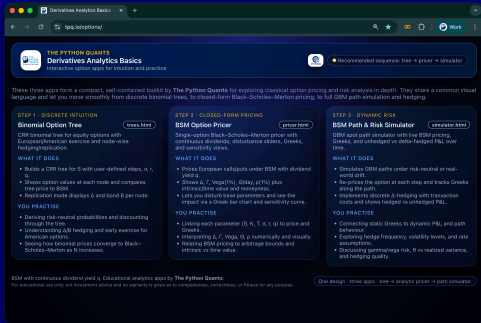
January 27, 2026 (work in progress)



¹Get in touch: contact@tpq.training. Web page: <https://tpq.io>. Research, strategizing, drafting, and visualization were assisted by CPF 1.x as a co-writing tool under human direction. Comments and feedback are welcome.

CPF: Tools, Apps, and Code

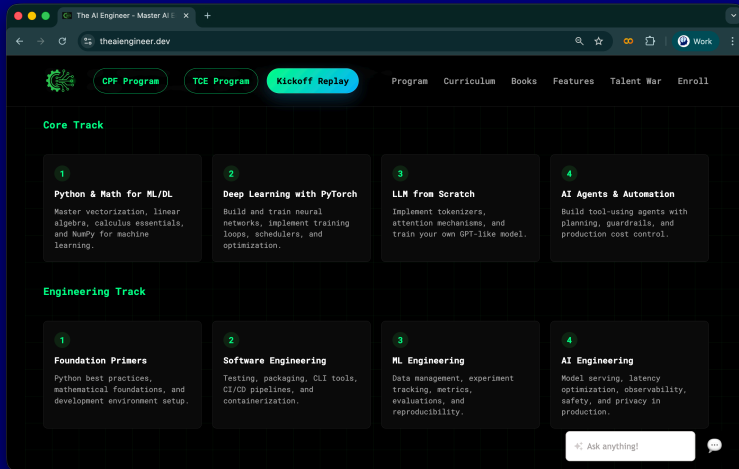
CPF offers standalone training apps and complete code repositories to support efficient skill acquisition.



github.com/yhilpisch/ftwpcode

The AI Engineer (TAE)

The AI Engineer (TAE)



TAE: Content, Target Groups, Benefits

From models to production-grade AI systems. TAE is the path from foundations to shipping with an engineering-first, portfolio-driven approach.

What it covers

- Math and PyTorch foundations, deep learning, LLM engineering, and AI agents.
- Production AI systems, deployment patterns, services, configs, tests, and monitoring habits.

Who benefits most

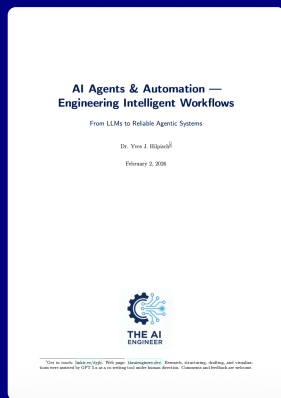
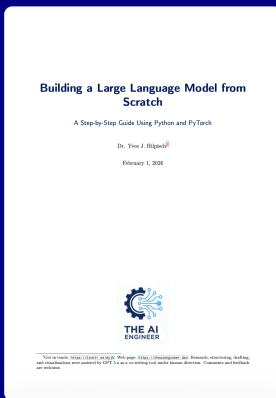
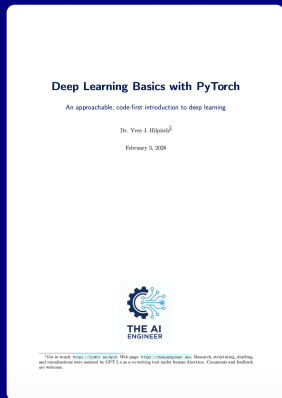
- Engineers and practitioners building real AI systems, including finance and quant contexts.

Why it matters now

- AI engineering is a high-value skill because reliable AI is an engineering problem.
- TAE focuses on end-to-end systems, deployment habits, and visible portfolios.

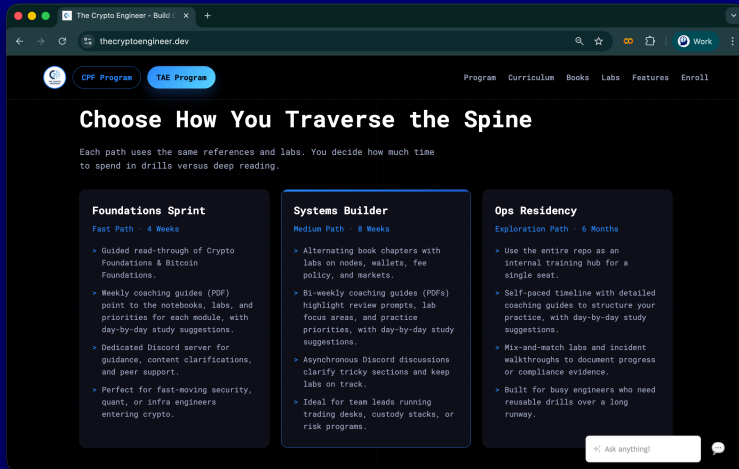
TAE: Books about DL, LLMs, and AI Agents

Three focused books support the core deep learning, LLM, and AI agent path. The full TAE program spans seven books total plus supplementary resources, so there is much more beyond this trio.



The Crypto Engineer (TCE)

The Crypto Engineer (TCE)



TCE: Content, Target Groups, Benefits

From crypto theory to operational confidence. TCE teaches delegates to reason about custody, markets, and live systems under real constraints.

What it covers

- Crypto primitives, Bitcoin foundations, markets/data plumbing, and production operations.
- Custody and wallet ops, Bitcoin infrastructure, market data pipelines, monitoring, and runbooks.

Who benefits most

- Builders, quants, and teams operating crypto rails across custody, markets, risk, operations, compliance, and institutional crypto workflows.

Why it matters now

- Crypto requires production-focused skills for custody, markets, and operations.
- Institutions need operational confidence; TCE bridges theory to incident-ready practice.

Common Features

Common Features

The screenshot shows a web browser window with the URL `tpq.io/cpl/`. The page is titled "Certificate in Python for Finance" and has navigation links for "Ramp-Up", "Financial Theory", and "Bridge Topics". The "Bridge Topics" section is active, displaying the title "Bridge Topics: Covariance, Efficient Markets, FTAP". Below the title, a paragraph explains that three bridge notes strip central ideas from covariance geometry, efficient markets, and the Fundamental Theorems of Asset Pricing down to their smallest nontrivial setups. The page is divided into three columns, each representing a topic:

- Covariance Geometry in a Two-Asset World**
 - A focused treatment of covariance in a two-asset setting that builds geometric intuition around payoff clouds, covariance matrices, eigenvalues, and portfolio variance; it bridges directly into the risk and diversification perspectives used later in asset management.
 - BRIDGE TOPIC - COVARIANCE
 - Notes: [covariance.pdf](#)
 - Slides: [covariancel.pdf](#)
 - ▶ Recording
 - Read this after the core variance-covariance material in Financial Theory to see the geometry and portfolio implications in a compact two-asset lab.
- Efficient Markets Hypothesis - Theory and Tests**
 - A compact note and slide deck on the Efficient Markets Hypothesis that formalize market efficiency as a conditional expectation restriction and walk through core empirical tests relevant for asset management and algorithmic trading.
 - BRIDGE TOPIC - EFFICIENT MARKETS
 - Notes: [markets.pdf](#)
 - Slides: [marketsl.pdf](#)
 - ▶ Recording
 - A video player is shown with the title "Efficient Markets Hypothesis - Theory and Tests" and a timestamp of 0:00 / 1:13:30.
- Fundamental Theorems of Asset Pricing - Finite-State Markets**
 - A finite-state, one-period development of the Fundamental Theorems of Asset Pricing that makes no-arbitrage, state prices, martingale measures, and completeness fully explicit in low-dimensional payoff spaces.
 - BRIDGE TOPIC - ASSET PRICING
 - Notes: [ftap.pdf](#)
 - Slides: [ftapsl.pdf](#)
 - ▶ Recording
 - Use this to connect the abstract FTAP statements from the main Financial Theory notes to concrete two- and three-state examples with explicit replication and price bounds.

Common Features Across Programs

These features keep learning coherent, fast, and oriented around real outcomes.

- Launchpads for fast onboarding and a single place for resources.
- Books as the basis: a coherent reference layer.
- GitHub repositories with Colab-ready notebooks and code.
- Recorded sessions and replay resources where available.
- Slide decks, notes, labs, and high-level summaries.
- Weekly or bi-weekly coaching guides with day-by-day study suggestions.
- Exercises and capstones for portfolio assets and competence signals.
- Community and support through Discord, clarifications, and accountability.

Detailed Notes, Exercises, and Coaching

Fundamental Theorems of Asset Pricing

Finite-State, One-Period Markets in the Smallest Nontrivial Setting

Dr. Yves J. Hilpisch¹

CPF Program

Abstract

This note develops the Fundamental Theorem of Asset Pricing (FTAP) in the simplest possible discrete-time setting: a one-period economy with finitely many future states. We treat (i) a complete market with two future states, where the risk-neutral probability measure is unique and replication holds for every contingent claim, and (ii) an incomplete market with three future states, where there exist infinitely many risk-neutral measures and contingent claim prices are generally interval-valued (arbitrage bounds). The exposition is self-contained and emphasizes geometry, computation, and concrete numerical examples, including post-optimal pricing by replication in the complete case and by bounds in the incomplete case. All figures are collected in blue in an appendix and referenced from the main text.

¹Go to <https://jpmey.me/yjch>. Web page: <https://tpq.io>. Research, mentoring, coaching, and translations were assisted by CPF, i.e. as a co-writing tool under human direction. Comments and feedback are welcome.

Bridge Week Exercises

CPF Program

February 3, 2026

Abstract

This exercise set supports the Certificate in Python for Finance (CPF) bridge week. It covers covariance geometry, the Efficient Markets Hypothesis (EMH), and the Fundamental Theorem of Asset Pricing (FTAP). Each topic provides five exercise types: review questions, exercises, advanced exercises, a capstone project, and interview-style prompts—so you can scale the depth of your practice to the available time.



CPF Week 4 Coaching Guide

Bridge Week: Covariance, Efficient Markets, Fundamental Theorems of Asset Pricing

CPF Program

January 30, 2026

Abstract

Week 4 is the CPF bridge week. You work through three compact notes on covariance geometry, the Efficient Markets Hypothesis, and the Fundamental Theorem of Asset Pricing or the transition from Financial Theory with Python (FTWP) to the multi-stock phase in month. This guide helps you set a consistent rhythm for the bridge week, align them with your Python checks, and integrate the Engineering Track claims without losing the focus on the core bridge topics.



TAE Week 3 Coaching Guide

LLMs, Attention & Tiny Transformers Capstone

The AI Engineer Program

November 15, 2025

Abstract

Week 3 connects transformer theory with practical LLM engineering. You will deepen your understanding of attention and layer dissection by transcribing using the dedicated handbook, then extend from these into an engineering workflow using Part II of the AI/ML Engineering book and the LLM guide. The capstone centers on a fine-tuned tiny transformer language model, built and trained in a Colab notebook, with clear logging, checkpoints, and sampling utilities.



- Theory notes and books provide the conceptual backbone.
- Exercise sets, labs, capstones, and interview-style questions turn content into active skill.
- Coaching guides translate large programs into manageable weekly execution.

Learning Paths

Learning Paths for the GenAI Era

Where you start depends on your current background and the signal you want to build.

Start from your background

- **Student/beginner/career changer:** TDS.
- **Finance/quant focus:** TDS $\rightarrow$ CPF, or directly CPF.
- **AI builder:** TDS $\rightarrow$ TAE, or TAE $\rightarrow$ CPF.

Build toward your goal

- **Crypto/digital assets:** TDS $\rightarrow$ TCE, or CPF + TCE.
- **Senior/domain expert:** TAE, TCE, or CPF for technical leverage.
- **Maximum ambition:** full ecosystem as the Super Quant route.

Full ecosystem = TDS + TAE + TCE + CPF.

Paths 1–4: Foundation-First Routes

Path	Why it fits	Portfolio signal
TDS Solo	Solid, affordable starting point for students, analysts, and career changers.	Notebooks, datasets, small projects, and defensible analysis stories.
TDS → TAE	Turns notebook and data comfort into deployable AI systems.	Exploratory notebooks plus AI services with configs, tests, and monitoring stubs.
TDS → TCE	Adds custody, Bitcoin, and market operations to Python and data foundations.	Blockchain data pipelines, wallet drills, fee-policy simulations, and monitoring setups.
TDS → CPF	Reduces overwhelm before investing in a deep finance specialization.	TDS projects plus CPF case studies and a graded capstone.

Paths 5–8: Specialization and Full Ecosystem

Path	Why it fits	Portfolio signal
TAE → CPF	Concentrates learning around AI-enhanced trading workflows.	Strategy libraries, research notebooks, and AI-powered trading tools.
TDS → TAE → CPF	Matches asset-management teams using data pipelines, dashboards, and AI-supported research.	End-to-end asset-management projects, risk reports, and research assistants.
CPF + TCE	Bridges institutional finance and crypto infrastructure.	Risk dashboards for exchange exposures and custody/operations case studies.
Full Ecosystem	Multi-year learning and reference platform for Python, data, AI, finance, and crypto.	Layered body of notebooks, services, labs, capstones, and runbooks: the clearest Super Quant route.

Bundle Option & Special Offer

Bundle Option & Webinar Special

SPECIAL5

5% off any program during checkout

Best Value: Full Ecosystem Bundle

CPF + The Data Scientist + The AI Engineer + The Crypto Engineer.

- Start with TDS immediately if you need foundations and portfolio proof.
- Prepare systematically for CPF as the flagship quant finance route.
- Add AI and crypto engineering depth as needed.
- For teams: corporate invoicing, team discounts, and tailored onboarding available.

Next step: choose your route at tpq.io

Contact and Links

Dr. Yves J. Hilpisch

The Python Quants GmbH

Email:	team@tpq.io
Ecosystem Hub:	tpq.io
TDS Program:	thedata scientist.dev
CPF Program:	python-for-finance.com
TAE Program:	theaiengineer.dev
TCE Program:	thecryptoengineer.dev
Linktree:	linktr.ee/dyjh

