TPC
Performance
Centre

AI Developer

Full Qualification

Tech Performance Centre: AI Developer

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AI Developer

Executive Snapshot

Launch a Future-Proof Career in AI

Step into one of the fastest-growing careers in tech with the Occupational Certificate: Artificial Intelligence Software Developer (NQF Level 5). In just 18 months, you'll be equipped to build AI systems that detect diseases, predict trends, and power smart solutions across industries.

Career Pathways & Opportunities

After completion, unlock high-demand roles in sectors like finance, healthcare, and tech. With AI job demand doubling in 2025 and projected 18% growth for software developers by 2033, you'll be well-positioned for:

- **Roles at top tech firms and startups**
- **Remote international opportunities**
- **Salaries from R400,000 (junior) to R1.5M+ (senior) annually**

More Than a Qualification - A Launchpad

This isn't just another course—it's a career catalyst. Developed with universities and leading AI researchers, this program blends real-world practice with powerful AI theory to prepare you for South Africa's booming tech market.

Fast-Growing Industry, Real-World Skills

- SA tech jobs grew by 50,000+ since 2023
- AI skills demand is up 61%
- Average graduate salaries: R600K–R1M/year

Program Overview

This 18-month journey transforms you from AI curious to AI creator.

This hands on program was developed in partnership with several Universities and leading AI researchers - think practical projects from Day 1, blended learning that hooks you with AI excitement before diving deep, and exposure to generative AI and cloud deployment for that competitive edge.

What You'll Learn:

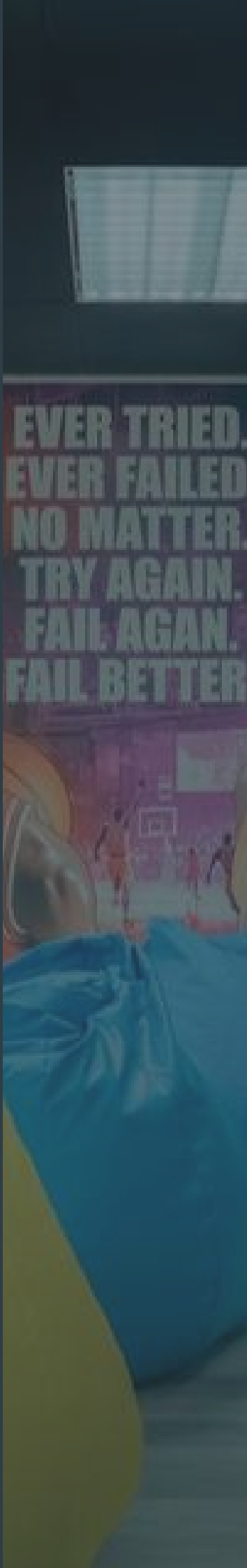
Master the full AI lifecycle:
Intro to AI history, applications, and ethics.

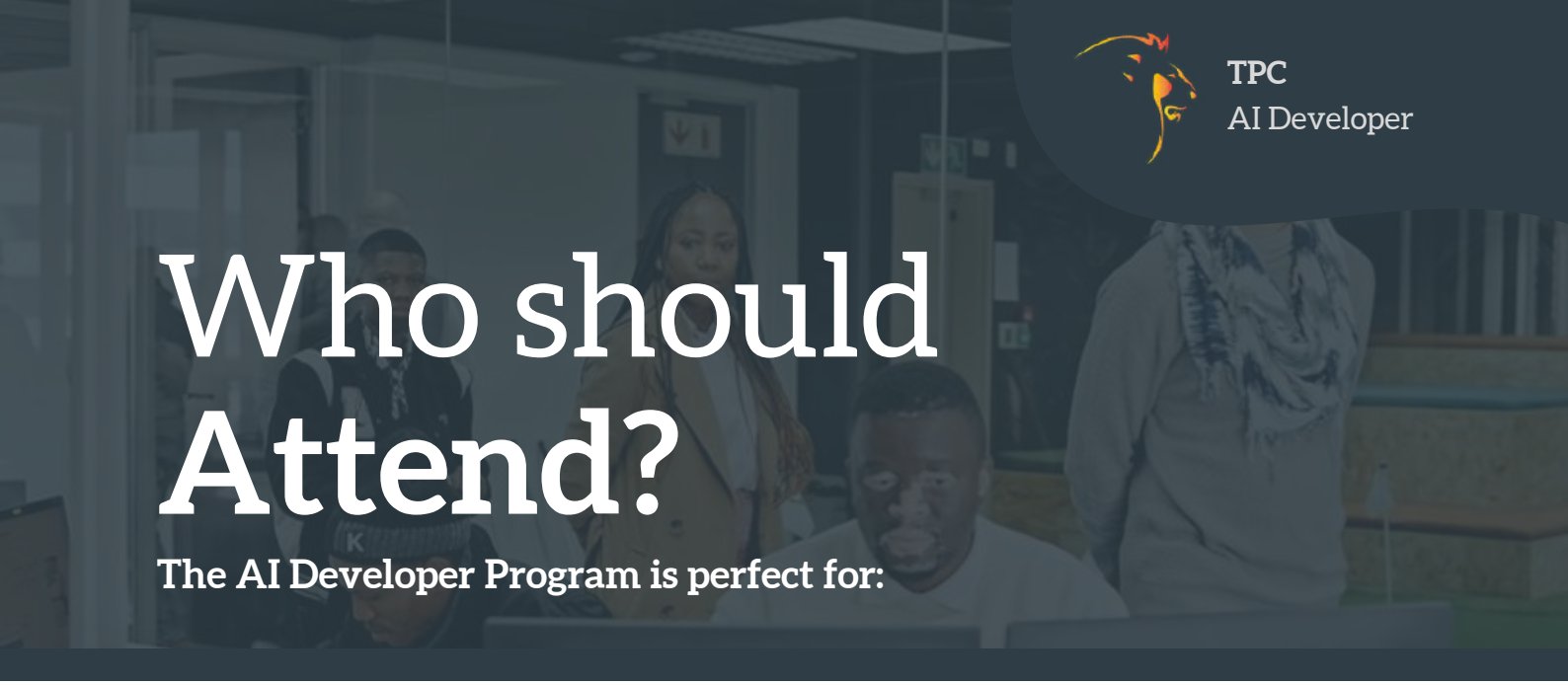
Build foundations in Python programming and CLI basics:
Blend in essential math, statistics, and data handling (using tools like NumPy, Pandas, and SQL) with immediate AI contexts—like coding simple models to predict trends.

Core machine learning (supervised/unsupervised algorithms, feature engineering) **and deep learning** (neural networks in TensorFlow and PyTorch):
Train models, tackle overfitting, and deploy solutions on cloud platforms.

Soft skills:
Design thinking workshops, ethical teamwork, and 4IR trends, ensuring you're innovative and responsible.

By the end, you'll have a portfolio of real-world projects, including capstones like building predictive apps or image classifiers, plus three months of structured work experience for on-the-job mastery.





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Who should Attend?

The AI Developer Program is perfect for:

Recent Matriculants / NQF Level 4 Holders

- Grade 12 graduates (esp. with CAT/Computer Science)
- No tech background needed—just motivation and curiosity

Career Changers & Upskillers

- IT, data, engineering professionals moving into AI
- RPL (Recognition of Prior Learning) available for experienced individuals

Youth & Unemployed Innovators

- Aspiring changemakers, especially from underserved communities
- Aligned with initiatives like Microsoft's digital skills pledge

Corporate Professionals & Entrepreneurs

- Employees looking to apply AI in business
- Startup founders building AI-driven solutions

Industry snapshot

96% growth in AI-related jobs since 2019

Average AI developer salaries: **R600,000 – R1,000,000**

Only **16% of South Africans** currently have advanced digital skills

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What Will Be **Expected** of You:

This is a commitment-driven program designed to transform beginners into confident AI developers.

Your Commitment

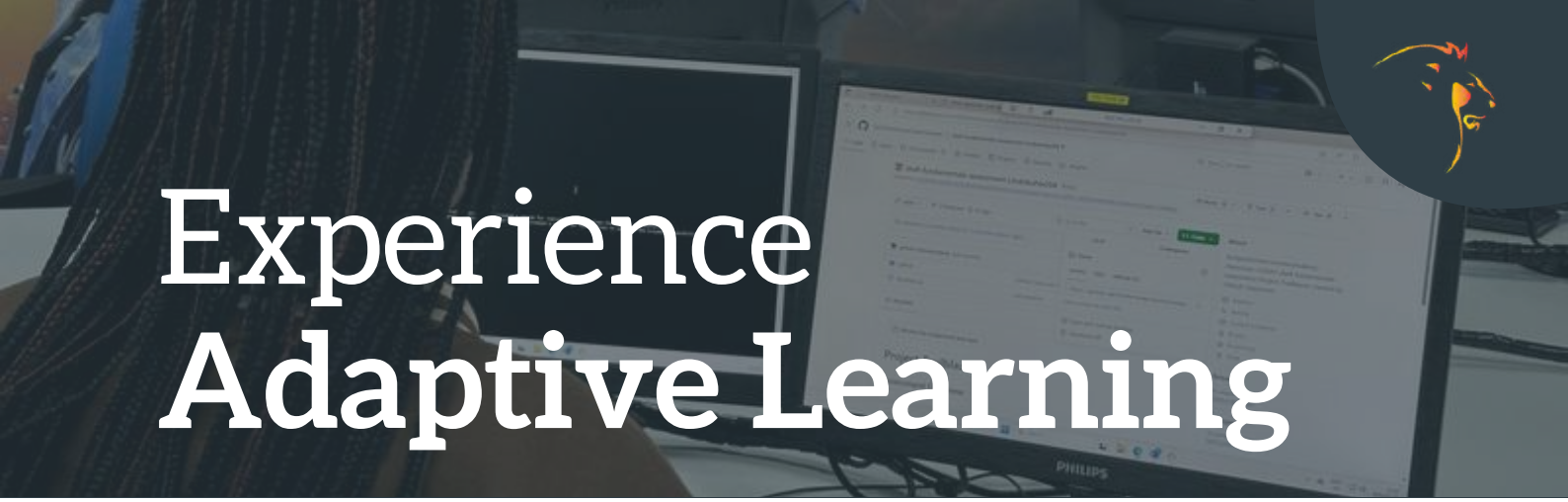
- Weekly coding practice
- Group projects & peer collaboration
- Workplace simulations or internships

What You'll Need

- No prior coding required
- Curiosity, persistence & a passion for problem-solving

What You'll Gain

- A market-ready qualification
- Real-world project portfolio
- Career confidence in a fast-growing field



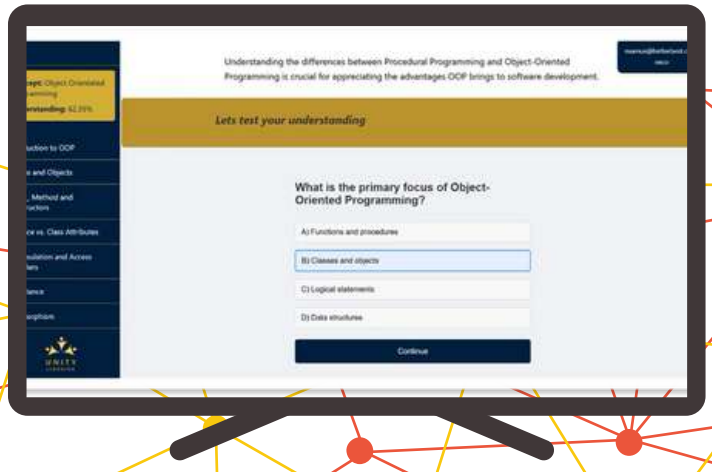
Experience Adaptive Learning

Your Personalised Pathway Powered by Unity Learning

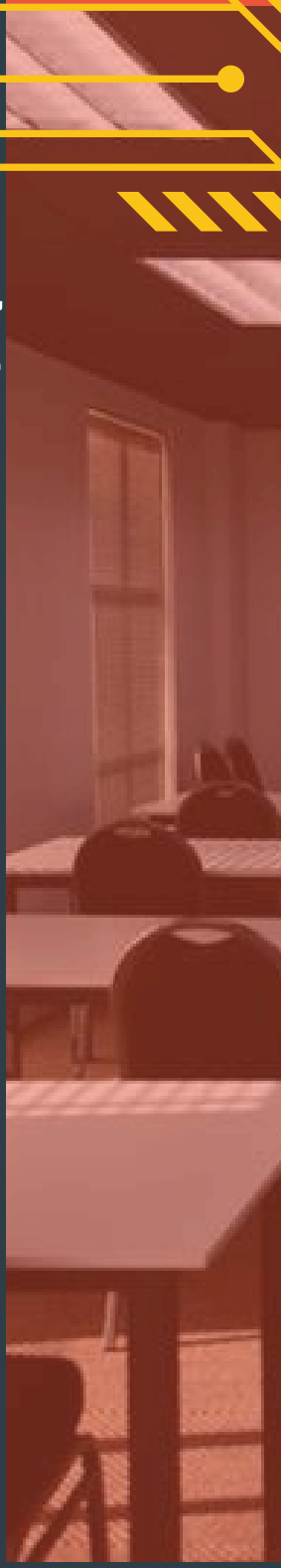
At TPC, we recognise that every learner is unique, with distinct strengths, learning styles, and goals. To ensure you thrive in our AI Developer program, we've developed an intelligent, **AI-driven platform that delivers a truly personalised learning experience.** Unlike traditional one-size-fits-all bootcamps, our adaptive learning system dynamically tailors' content, exercises, and pacing to your individual needs, maximising engagement, retention, and **mastery of critical skills** like React, Firebase, and AI tools (GitHub Copilot, OpenAI Codex). This innovative approach empowers you to learn efficiently and confidently, setting you on a direct path to becoming a job-ready AI Developer.

How Adaptive Learning Works

Our platform uses advanced algorithms to **analyse** your progress, learning preferences, and performance in real time. From the moment you begin, it assesses your responses to coding exercises, quizzes, and capstone projects, identifying areas of strength and opportunities for growth. Based on this data, the system adjusts the difficulty, format, and delivery of learning materials to suit your style - whether you excel with hands-on coding challenges, benefit from additional conceptual explanations, or prefer a faster-paced progression. For example, if you grasp JavaScript fundamentals quickly, the platform may introduce advanced topics like async/await earlier; if you need more practice with CSS, it will provide targeted exercises to build confidence. This dynamic **personalisation** ensures you're always challenged without feeling overwhelmed, creating a learning journey as unique as you are.



Benefits of Adaptive Learning



Personalised Pace and Content:

The platform adapts to your learning speed, delivering content that aligns with your current skill level, whether you're a beginner or have some coding experience, ensuring you stay engaged and progress efficiently.

Enhanced Retention:

By tailoring exercises to your learning style - visual, kinesthetic, or analytical - the system reinforces concepts in ways that resonate, improving long-term mastery of complex topics like OOP.

Seamless Integration with AI Tools:

The platform incorporates AI-driven development tools like GitHub Copilot and OpenAI Codex, guiding you to use them effectively in your personalised workflow, preparing you for the AI-augmented tech landscape.

Confidence Without Pressure:

Adaptive learning creates a supportive environment where you can focus on growth without the fear of falling behind, complementing our 1:1 mentorship and professional code reviews.

Our Learning Philisophy

At TPC, we believe that the fastest path to becoming a job-ready AI Developer is through practical, industry-aligned training delivered by those who live and breathe code. Our programs are built on a philosophy that prioritises real-world skills, personalised mentorship, and a supportive community, ensuring you graduate not just with technical expertise but with the confidence and connections to thrive in the tech industry.

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Here's what **Sets TPC Apart**

Learn from Industry Professionals, Not Professors

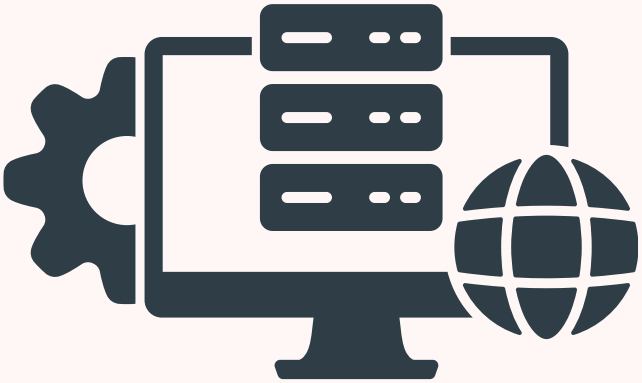
Our instructors are seasoned senior developers with years of experience building and deploying applications in fast-paced tech environments. Forget academic theory or "fluff" - every lesson is rooted in industry relevance, teaching you the hardcore skills needed to excel as an AI developer. Beyond core fundamentals, you'll master the "tricks of the trade"—practical techniques and problem-solving strategies that only come from real-world experience. This hands-on approach ensures you're equipped to deliver solutions that meet professional standards from day one.

Personalised 1:1 Mentorship

Learning to code is a journey, and at TPC, you're never alone. You'll be paired with a dedicated mentor - a senior developer who provides tailored guidance through regular 1:1 session. This close relationship fosters a safe, judgment-free space to discuss challenges, explore roadblocks, and track your progress at a pace that suits you. Free from the fear of failure, you'll build confidence as you tackle complex concepts and refine your skills, knowing your mentor is invested in your success.

Code-Driven Instruction, Not Slides

Say goodbye to PowerPoint presentations and passive lectures. At TPC, you'll learn directly in the code editor, where concepts come to life through live coding, debugging, and hands-on exercises. Every lesson is interactive, ensuring you gain practical experience that translates seamlessly to the workplace.



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Here's what Sets TPC Apart

Professional Code Review

What truly distinguishes TPC is our rigorous code review process. Your work will be meticulously assessed by experienced developers who provide detailed, constructive feedback within 48 hours, mirroring industry practices. This intensive review not only sharpens your coding skills but also immerses you in professional standards—such as clean code, scalability, and security—from the outset. By internalising these best practices, you'll graduate with the skills and polish employers are looking for.

A Vibrant Community of Learners

At TPC, you're not just a student—you're part of a dynamic community of like-minded individuals united by a passion for technology. Through group workshops, peer coding challenges, and online forums, you'll forge lasting relationships that provide support and inspiration throughout the program and beyond. Our community extends to alumni and industry partners, offering networking opportunities that can open doors to your future career.

Straight Talk, Real Results

We believe in honesty and transparency. You won't find inflated job market stats or overhyped promises at TPC. Instead, we provide clear, realistic insights into the opportunities and challenges of an AI development career in an AI-augmented world. Our focus is on delivering measurable outcomes: a portfolio of deployed applications, mastery of in-demand tools, and the skills to compete in a global market. With TPC, you get the truth—and the training—to succeed.

Join us to experience a learning environment where industry expertise, personal support, and community spirit converge to transform you into a confident, capable developer ready to shape the future of tech.

What You'll Learn

1. Solid Foundations in Code & Data

Reliable AI starts with clean code and trustworthy data.
Master:

- Professional Python (testing, logging, type hints, packaging)
- Git & GitHub for version control
- Data handling with NumPy, Pandas & visual storytelling
- SQL for analysts & devs; Python-SQL pipelines
- Statistics for decisions: sampling, hypothesis testing, evaluation metrics

Outcome: You'll clean, analyse, and document data workflows in reproducible, shareable code.

2. Classical Machine Learning

Most business problems are still solved with tabular ML.
You'll learn:

- Regression, classification, tree-based models (RF, XGBoost), SVMs, Naive Bayes
- Feature engineering, CV strategies, hyperparameter tuning
- Responsible ML: bias, fairness, privacy, documentation

Outcome: You can build, tune, and evaluate ML pipelines with ethical awareness.

3. Deep Learning Fundamentals

DL powers perception, prediction, and creativity.
You'll cover:

- Tensors, autodiff, optimisers (SGD, Adam), regularisation (dropout, weight decay)
- MLPs in PyTorch/TensorFlow
- Learning rate schedules, overfitting control

Outcome: Build and train stable neural networks from scratch.

4. Convolutional Neural Networks (CNNs)

CNNs are essential for computer vision and signal processing.
You'll cover:

- Convolutions, pooling, receptive fields, feature hierarchies
- Architectures: ResNet, EfficientNet, MobileNets
- Transfer learning, finetuning & data augmentation
- CNNs beyond images: audio, time series; UNet, Faster RCNN

Outcome: Adapt and deploy top-tier vision models quickly and effectively.

5. Sequence Models - RNNs, LSTM & GRU

Sequences drive language, speech, sensors & more.
Outcome: Build memory-aware models for language, translation, and streaming.

- **You'll explore:**
- RNNs → LSTM/GRU (gating, memory cells, gradient issues)
- Sequence-to-sequence models with attention, masking, teacher forcing
- Real-time inference vs. transformer tradeoffs

What You'll Learn

6. Transformers & Modern NLP

Self-attention revolutionised NLP and multi-modal AI.
You'll explore:

- Attention mechanisms, positional encodings
- BERT, GPT, T5 architectures
- Tokenisation, embeddings, prompt engineering
- RAG (vector stores, chunking, guardrails, LoRA)

Outcome: Build controllable, citation-ready LLM apps with safety in mind.

7. Time Series & Forecasting

Businesses depend on time-aware predictions.
You'll learn:

- Classical models: ARIMA, ETS
- ML + DL: boosting, 1D CNNs, LSTM, TCNs
- Backtesting rigor and uncertainty estimates

Outcome: Deliver forecasting tools with realistic confidence intervals.

8. Generative Models

GenAI is shaping creation, simulation, and tooling.
You'll explore:

- Autoencoders & VAEs
- GANs: architecture, stability, mode collapse
- Diffusion models: intuitive overview & deployment notes

Outcome: Implement generative models responsibly for synthesis and denoising.

9. Graph Neural Networks (GNNs)

Many real-world systems are graphs (social, logistics, molecules).

Outcome: Build models that leverage structure and relationships in data.

You'll cover:

- Message passing, node/edge/graph-level predictions
- Applications: recommendations, fraud detection, route optimisation

10. Data Products, APIs & MLOps

Great models must ship, scale, and stay reliable.
You'll master:

- **Model packaging (FastAPI), containerisation (Docker), cloud basics**
- **MLflow/W&B, CI/CD, monitoring drift/latency/quality**
- **ONNX, quantization, edge deployment**

Outcome: Deploy models from notebook to production with testing and dashboards.

11. Responsible AI & Governance

Trust, transparency, and compliance are non-negotiable.
You'll cover:

- **Bias/fairness checks, privacy patterns**
- **Risk registers, model cards, data sheets**
- **Global compliance standards**

Outcome: Deliver AI that's auditable, documented, and aligned to policy.

12. Work-Integrated Learning & Portfolio

Employers hire proof, not just potential.

You'll complete:
A supervised industry placement with real deliverables (dashboards, RAG apps, pipelines)
A public portfolio with code, reports, model cards, and deployment runbook

Outcome: A credible, job-ready body of work that shows you can deliver in a team.

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What are the benefits?

Future-Proof Your Skills

AI adoption is accelerating, and professionals understand it will be in higher demand.

Work Smarter, Not Harder

Learn how to automate repetitive tasks so you can focus on strategic, high-value work.

Enhance Problem-Solving Abilities

Leverage AI to analyse data, test ideas, and predict outcomes faster.

Boost Your Earning Potential

AI fluency is a premium skill that employers reward with better roles and pay.

Cross-Industry Applicability

Whether you work in finance, marketing, HR, logistics, or healthcare, AI skills apply everywhere.

How This Course Sets You Apart From Other Professionals

Practical, Not Just Theory

You'll graduate with hands-on experience using real AI tools that employers already trust.

Fluency in AI Language

You'll be able to confidently discuss AI concepts with technical teams, managers, and clients.

Ethical & Strategic Mindset

You'll understand not just how to use AI, but how to use it responsibly and align it with business goals.

Adaptability & Innovation

In a world where tech evolves quickly, you'll be the person who can adapt early and help guide others.

Certification of Competence

Showcase your achievement with a professional certificate that signals AI-readiness to employers.

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Potential Jobs After Completing the Course

Completing this course opens doors to a variety of AI-driven roles across industries. While you don't need to become a programmer, your new skills will make you valuable in positions where AI knowledge is increasingly essential:

AI-Enabled Project Manager

Lead projects that integrate AI tools to improve efficiency and decision-making.

Data-Driven Decision Maker

Any role where AI helps you interpret and act on large amounts of data quickly.

Digital Transformation Specialist

Help organisations adopt AI solutions across departments.

Business Analyst (AI-Focused)

Use AI-powered analytics to uncover insights and drive strategy.

AI Solutions Consultant

Advise businesses on selecting and implementing AI tools.

Marketing Automation Specialist

Design and run campaigns enhanced by AI for targeting, content, and analytics.

HR Technology Specialist

Optimise recruitment, performance reviews, and employee engagement using AI.

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*"At TPC, we know - winning isn't for everyone. **But for our students, it's everything.**"*

Contact Us

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