Training Course on Privacy Enhancing Technologies (PETs)

Professional Development Training Course Outline

Category	Data Security	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In an age dominated by data-driven decision-making, Privacy Enhancing Technologies (PETs) have emerged as critical tools for safeguarding personal data and ensuring compliance with global data privacy regulations. Training Course on Privacy Enhancing Technologies (PETs) offers an in-depth understanding of modern PETs, including homomorphic encryption, differential privacy, federated learning, secure multiparty computation, and zero-knowledge proofs. Designed for data professionals, policymakers, and tech leaders, this course equips learners with practical tools and real-world strategies to implement PETs across various sectors.

This course responds to increasing demand for data privacy, cybersecurity compliance, and GDPR readiness across industries. By integrating case studies and interactive exercises, learners will gain actionable insights to minimize data exposure risks while maintaining operational efficiency. Participants will explore cutting-edge privacy solutions that enhance data utility without compromising confidentiality, aligning with industry best practices and legal frameworks.

Programme Curriculum

Training Course on Privacy Enhancing Technologies (PETs)

Introduction

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Course Objectives

1. Understand the core principles of Privacy Enhancing Technologies (PETs).
2. Explore the regulatory landscape including GDPR, HIPAA, and CCPA.
3. Identify the risk factors of personal data exposure.
4. Learn how differential privacy ensures secure data analysis.
5. Apply homomorphic encryption for secure computations on encrypted data.
6. Demonstrate the use of federated learning in decentralized AI applications.
7. Evaluate the role of secure multiparty computation (SMPC) in collaborative environments.
8. Understand the application of zero-knowledge proofs in privacy authentication.
9. Design a privacy-first architecture for digital solutions.
10. Assess privacy threats in AI and machine learning models.
11. Implement privacy-by-design principles in software development.
12. Utilize PETs in financial and healthcare data sharing.
13. Create a roadmap for enterprise PETs adoption.

Target Audience

1. Data Scientists & AI Developers
2. Information Security Analysts
3. Privacy Officers & Compliance Managers
4. IT Architects & System Engineers
5. Government Policy Makers
6. Healthcare Data Managers
7. Financial Risk Officers
8. Legal Advisors in Data Law

Course Duration: 5 days

Course Modules

Module 1: Introduction to Privacy Enhancing Technologies

- Overview of PETs and their significance
- Key categories of PETs and use cases
- Legal and ethical frameworks
- PETs in today's digital economy
- Common misconceptions about PETs
- **Case Study**: Facebook's use of PETs in ad targeting

Module 2: Differential Privacy and Data Anonymization

- Introduction to differential privacy
- Techniques for data anonymization
- Noise injection and utility tradeoffs
- Tools like Google’s RAPPOR and Apple’s approach
- Use in large-scale data analytics
- **Case Study**: U.S. Census Bureau’s use of differential privacy

Module 3: Homomorphic Encryption and Secure Computation

- What is homomorphic encryption (HE)?
- Applications in finance and health sectors
- Full vs. partial HE techniques
- HE performance and scalability challenges
- Popular libraries and implementation frameworks
- **Case Study**: Encrypted disease outbreak prediction in healthcare

Module 4: Federated Learning and Decentralized Data Use

- Fundamentals of federated learning
- Benefits in mobile and edge computing
- Challenges with model convergence
- Privacy vs. accuracy dilemma
- Real-world applications in healthcare and banking
- **Case Study**: Google Gboard's on-device federated learning

Module 5: Secure Multiparty Computation (SMPC)

- How SMPC works
- Applications in privacy-preserving voting and finance
- Data collaboration across organizations
- Threat models and mitigation strategies
- Limitations and computation overhead
- **Case Study**: Private set intersection in credit risk analysis

Module 6: Zero-Knowledge Proofs (ZKPs)

- Intro to cryptographic zero-knowledge proofs
- How ZKPs enable secure authentication
- ZKPs in blockchain and Web3
- zk-SNARKs vs. zk-STARKs
- Efficiency and practical implementations
- **Case Study**: Zcash cryptocurrency and private transactions

Module 7: Privacy in AI and Machine Learning

- Privacy attacks on ML models (inference, extraction)
- PETs for model training and inference
- Synthetic data generation
- Regulatory and ethical considerations
- Best practices for AI data privacy
- **Case Study**: Federated learning in COVID-19 diagnosis modeling

Module 8: Implementing PETs in Enterprise Systems

- Developing a PETs integration strategy
- Compliance and risk management alignment
- Vendor solutions vs. in-house PETs development
- Training and governance framework
- Cost-benefit analysis and ROI
- **Case Study**: PET adoption roadmap in a multinational bank

Training Methodology

- Interactive presentations using real-world PET applications

- Hands-on labs with popular PET tools and simulators
- Group activities and breakout sessions for collaborative learning
- Case study discussions tied to each module
- Pre-assessments and post-assessments to measure learning outcomes
- Access to supplementary materials and toolkits for practical implementation

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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