

**Course Syllabus: AI Ethics & Compliance Officer****Course Title: Responsible AI: Ethics, Compliance, and Bias Mitigation**

**Target Audience:** Suitable for aspiring AI professionals, policy analysts, compliance officers, developers, and anyone interested in ensuring AI is used responsibly. No prior AI knowledge required; basic understanding of technology and an interest in ethics are helpful.

**Course Level:** Comprehensive program covering Basic, Intermediate, and Advanced levels.

**Duration:** 12 weeks (flexible for self-paced learning).

**Course Description:**

This course equips students to become AI Ethics & Compliance Officers, responsible for ensuring AI systems are fair, legal, and safe. You'll learn to identify and mitigate biases, navigate legal frameworks, and implement ethical AI practices. From understanding AI's societal impact to developing compliance policies, this course blends technical, legal, and ethical perspectives to prepare you for real-world challenges, such as ensuring fairness in platforms like Zomato's billing system.

**Learning Objectives:**

Upon completion, students will be able to:

- Understand AI's ethical challenges, including bias, fairness, and transparency.
- Identify and mitigate biases in AI models and datasets.
- Navigate legal and regulatory frameworks for AI (e.g., GDPR, AI Act).
- Develop policies and audits to ensure responsible AI use.
- Apply ethical principles to real-world AI applications (e.g., recommendation systems).
- Build a portfolio of case studies demonstrating AI ethics expertise.

**Course Structure: Part 1: Basic Foundations (Weeks 1-4)**

This section introduces AI ethics, compliance basics, and the role of an AI Ethics & Compliance Officer.

- Week 1: Introduction to AI Ethics
  - What is AI ethics? Fairness, accountability, transparency.
  - Role of an AI Ethics & Compliance Officer.
  - Real-world examples: Bias in hiring algorithms, facial recognition.
  - Case Study: Bias in Zomato's recommendation system.

- Week 2: Understanding AI Systems and Bias
  - How AI works: Overview of ML, datasets, and models.
  - Types of bias: Data bias, algorithmic bias, societal bias.
  - Hands-on: Identify bias in a sample dataset (e.g., restaurant ratings).
- Week 3: Legal and Regulatory Frameworks
  - Key regulations: GDPR, CCPA, EU AI Act.
  - Data privacy basics: Consent, anonymization.
  - Compliance requirements for AI systems.
  - Exercise: Map compliance needs for a billing platform like Zomato's.
- Week 4: Ethical AI Principles
  - Fairness, inclusivity, and transparency in AI.
  - Industry guidelines: IEEE, UNESCO AI ethics principles.
  - Hands-on Project: Draft an ethical AI policy for a hypothetical AI tool.

## **Part 2: Intermediate Concepts (Weeks 5-8)**

This section focuses on practical skills for auditing and mitigating AI biases.

- Week 5: Bias Detection Techniques
  - Tools for bias detection: Fairness metrics (e.g., demographic parity).
  - Analyzing model outputs for bias (e.g., unequal restaurant recommendations).
  - Hands-on: Use Python to analyze bias in a sample AI model.
- Week 6: Mitigation Strategies
  - Techniques: Re-weighting data, adversarial training, fairness constraints.
  - Case Study: Mitigating bias in a delivery allocation algorithm.
  - Exercise: Propose a bias mitigation plan for a dataset.
- Week 7: Compliance Audits for AI
  - Conducting AI audits: Data, model, and deployment checks.
  - Audit tools and frameworks (e.g., AI Fairness 360).

- Hands-on: Perform a mock audit on a sample AI system.
- Week 8: Stakeholder Communication
  - Communicating ethical risks to non-technical stakeholders.
  - Writing compliance reports and policies.
  - Hands-on Project: Create a compliance report for an AI system.

## **Part 3: Advanced & Expert-Level Application (Weeks 9-12)**

This section prepares students for leadership in AI ethics and compliance.

- Week 9: Advanced Bias Mitigation
  - Advanced techniques: Fairness-aware ML, explainable AI.
  - Handling trade-offs: Accuracy vs. fairness.
  - Case Study: Ensuring fairness in a global platform like Zomato.
- Week 10: Global AI Regulations
  - Emerging laws: US AI Bill of Rights, China's AI regulations.
  - Cross-border compliance challenges.
  - Exercise: Develop a compliance checklist for international AI deployment.
- Week 11: Ethical AI in Practice
  - Implementing ethical AI in real-world systems (e.g., billing, recommendations).
  - Addressing prompt injection and misuse risks.
  - Hands-on: Design an ethical AI framework for a specific industry.
- Week 12: Capstone Project & Leadership
  - Capstone Project: Develop a comprehensive AI ethics policy for a company, including bias mitigation and compliance plans.
  - Trends in AI ethics: Responsible AI certifications, governance.
  - Career paths: AI ethics roles in tech, policy, or consulting.

#### Assignments & Grading:

- Weekly Exercises & Case Studies: 25%
- Intermediate Projects (Weeks 4 & 8): 30%
- Capstone Project: 35%
- Class Participation & Peer Discussions: 10%

