Wildlife Population Genetics Training Course

Professional Development Training Course Outline

Category	Veterinary and Animal Science	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Wildlife Population Genetics Training Course is designed to provide professionals, researchers, and enthusiasts with an in-depth understanding of genetic diversity, population structure, and evolutionary processes affecting wildlife species. Participants will gain hands-on experience with cutting-edge genomic tools, bioinformatics pipelines, and statistical modeling to address real-world conservation challenges. The course emphasizes sustainable wildlife management, biodiversity preservation, and applied conservation strategies to maintain resilient ecosystems.

This course integrates theoretical knowledge with practical case studies, enabling participants to apply population genetic principles, molecular ecology, and wildlife forensics to enhance decision-making. By exploring topics such as genetic drift, gene flow, and adaptive evolution, learners will develop the expertise needed to monitor endangered species, assess genetic health, and implement evidence-based conservation interventions. Participants will also explore the latest next-generation sequencing techniques, population viability analyses, and data-driven conservation planning to meet the challenges of modern wildlife management.

Programme Curriculum

Wildlife Population Genetics Training Course

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Course Objectives

1. Understand the fundamentals of wildlife genomics and population genetics.
2. Analyze genetic diversity and population structure in natural populations.
3. Apply molecular markers and SNP analysis for wildlife monitoring.
4. Interpret phylogenetic relationships and evolutionary dynamics.
5. Conduct genetic drift, inbreeding, and gene flow analyses.
6. Utilize next-generation sequencing (NGS) and bioinformatics tools.
7. Design and implement conservation genetics strategies.
8. Perform population viability and risk assessment modeling.
9. Explore landscape genetics and habitat connectivity.
10. Integrate wildlife forensics and species identification methods.
11. Develop data-driven management plans for endangered species.
12. Evaluate adaptive evolution and resilience to environmental change.
13. Apply case studies in real-world wildlife conservation scenarios.

Target Audience

1. Wildlife biologists and ecologists
2. Conservation scientists
3. Environmental consultants
4. Graduate students in genetics and ecology
5. Government wildlife management authorities
6. Non-governmental conservation organizations
7. Zoo and sanctuary geneticists
8. Researchers in molecular ecology and biodiversity

Course Modules

Module 1: Fundamentals of Wildlife Population Genetics

- Introduction to population genetics principles
- Genetic variation and gene pool analysis
- Hardy-Weinberg equilibrium and deviations
- Molecular markers in wildlife studies
- Case Study: **Tiger (Panthera tigris) population structure in India**

Module 2: Molecular Techniques and Genomics

- DNA extraction, PCR, and microsatellite analysis
- SNP genotyping and high-throughput sequencing
- Next-Generation Sequencing (NGS) applications
- Bioinformatics pipelines for wildlife data
- Case Study: **Genomic diversity in African elephants**

Module 3: Genetic Diversity and Conservation

- Measuring genetic diversity indices
- Detecting bottlenecks and inbreeding
- Implications for conservation planning
- Tools for monitoring endangered populations
- Case Study: **Giant panda genetic health assessment**

Module 4: Population Structure and Connectivity

- Gene flow and migration patterns
- Population clustering techniques
- Landscape genetics and habitat fragmentation
- Simulation models for population connectivity
- Case Study: **Grey wolf corridors in North America**

Module 5: Evolutionary Genetics and Adaptive Traits

- Natural selection and adaptation in wildlife
- Phylogenetics and evolutionary trees
- Detecting adaptive genes
- Integrating genomics with ecological data
- Case Study: **Adaptive traits in Arctic fox populations**

Module 6: Wildlife Forensics and Genetic Identification

- DNA barcoding for species identification
- Wildlife crime investigation protocols
- Forensic genetics in poaching control
- Integrating genetic databases for legal evidence
- Case Study: **Rhino horn origin tracing in South Africa**

Module 7: Population Viability and Risk Assessment

- Population viability analysis (PVA) models
- Assessing extinction risk using genetic metrics
- Scenario-based conservation planning
- Decision-support systems for wildlife management
- Case Study: **Conservation strategy for Snow leopard in Central Asia**

Module 8: Data Analysis, Reporting, and Conservation Strategies

- Statistical analysis of genetic datasets
- Using R and Python for population genetics
- Interpretation and visualization of results
- Drafting actionable conservation recommendations

- Case Study: **Restoration of coral reef fish populations using genetic insights**

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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

Start Date	End Date	Location	Price
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
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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