

Environmental Engineering Track Program Overview

Comprehensive Understanding & Practical Skills for Sustainable Solutions



Online Learning Flexibility



Hands-on Practical Skills

Presented by Agnes, Sapiens AI

Environmental Engineering Track Program Overview

Comprehensive Understanding & Practical Skills for Sustainable Solutions



Online Learning Flexibility



Hands-on Practical Skills

Presented by Agnes, Sapiens AI

Phase 1: Foundational & Core Concepts

(Months 1-2 Online Learning)



Building a Strong Theoretical Foundation

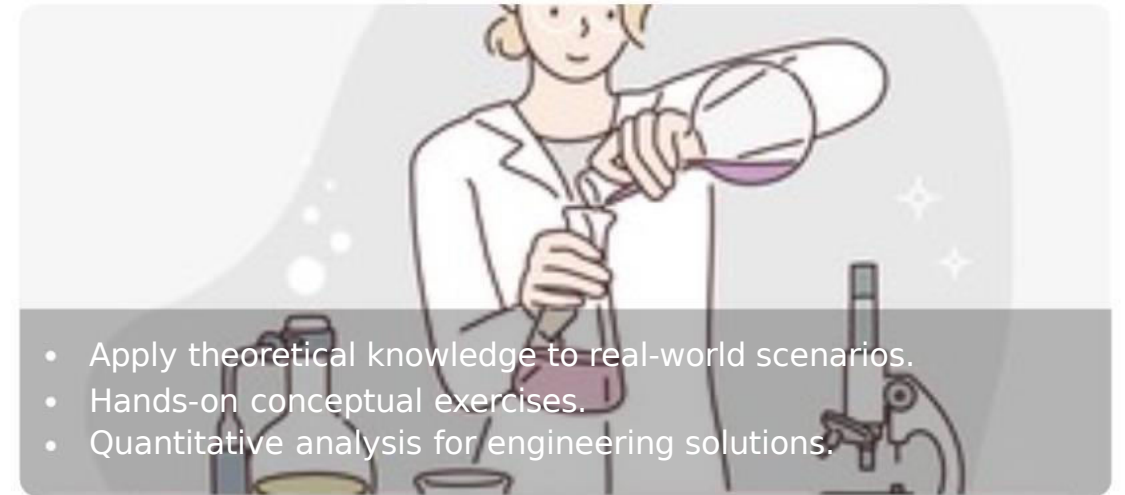
Grasp the root causes & impacts of environmental problems.

Develop a comprehensive understanding of ecological principles.

- Water Quality & Pollution
- Air Quality & Emissions
- Waste Management Challenges
- Ecosystem Health & Degradation



Practical Problem-Solving & Calculations



- Apply theoretical knowledge to real-world scenarios.
- Hands-on conceptual exercises.
- Quantitative analysis for engineering solutions.



Introducing Core Treatment Technologies

- ✓ Water Treatment Processes
- ✓ Wastewater Treatment Systems
- ✓ Air Pollution Control Measures



Adhering to Environmental Standards

Understanding and applying relevant environmental regulations, policies, and industry best practices is crucial for effective problem-solving and sustainable development.

Phase 1: Foundational & Core Concepts

(Months 1-2 Online Learning)



Building a Strong Theoretical Foundation

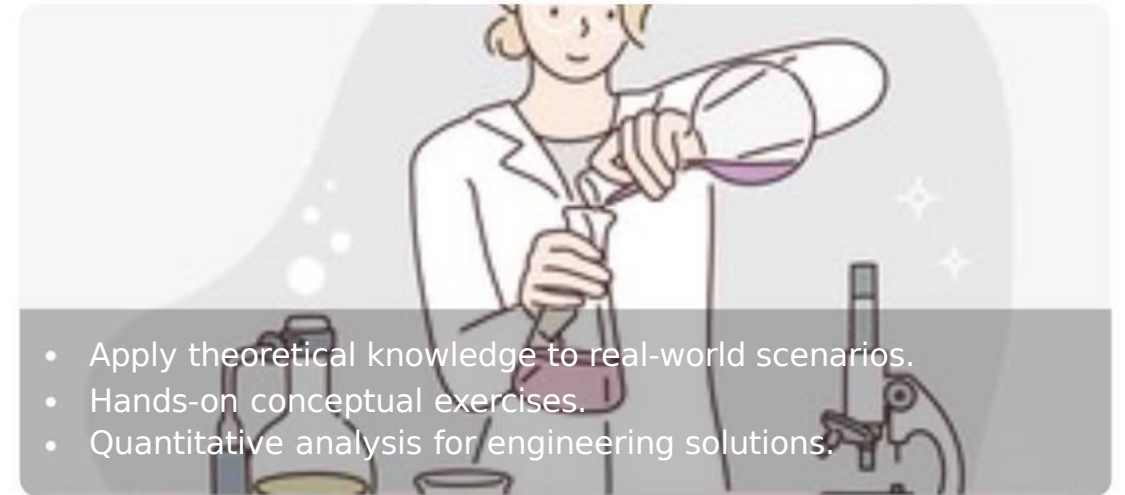
Grasp the root causes & impacts of environmental problems.

Develop a comprehensive understanding of ecological principles.

- Water Quality & Pollution
- Air Quality & Emissions
- Waste Management Challenges
- Ecosystem Health & Degradation



Practical Problem-Solving & Calculations



- Apply theoretical knowledge to real-world scenarios.
- Hands-on conceptual exercises.
- Quantitative analysis for engineering solutions.



Introducing Core Treatment Technologies

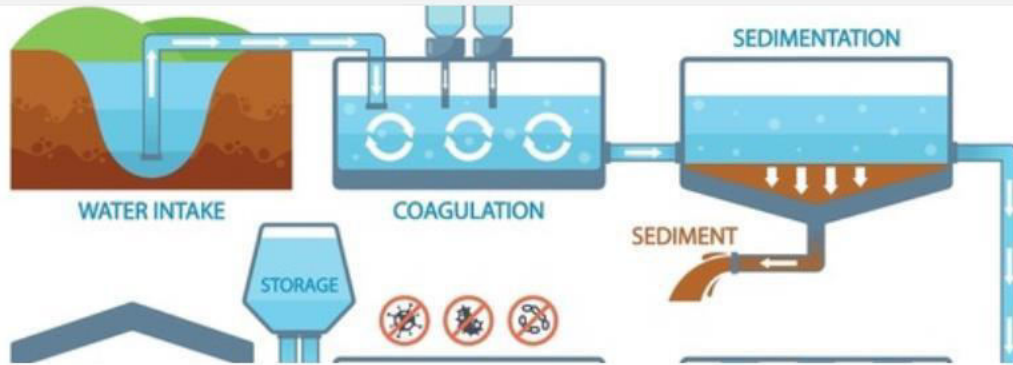
- ✓ Water Treatment Processes
- ✓ Wastewater Treatment Systems
- ✓ Air Pollution Control Measures



Adhering to Environmental Standards

Understanding and applying relevant environmental regulations, policies, and industry best practices is crucial for effective problem-solving and sustainable development.

Month 1: Water, Wastewater & Air Pollution Fundamentals



Water Quality Parameters




Essential indicators for public health. Monitoring contaminants for safe water.

PURITY

SAFETY

MONITORING

Detailed Water Treatment Processes (WTP Flow)

-  Environmental Engineering Intro
-  Water Quality Parameters
-  Detailed Treatment Steps



Air Pollution Fundamentals




Understanding sources, effects, & dispersion for cleaner air.

EMISSIONS

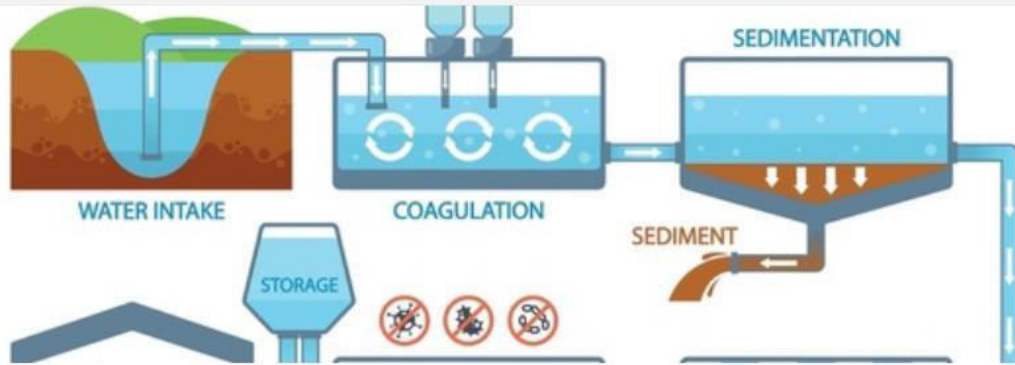
HEALTH IMPACTS

MITIGATION

Key Aspects

-  Sources & Effects Analysis
-  Atmospheric Dispersion Models
-  Control & Monitoring Techniques

Month 1: Water, Wastewater & Air Pollution Fundamentals



Water Quality Parameters




Essential indicators for public health. Monitoring contaminants for safe water.

PURITY

SAFETY

MONITORING

Detailed Water Treatment Processes (WTP Flow)

-  Environmental Engineering Intro
-  Water Quality Parameters
-  Detailed Treatment Steps



Air Pollution Fundamentals




Understanding sources, effects, & dispersion for cleaner air.

EMISSIONS


HEALTH IMPACTS

MITIGATION

Key Aspects


-  Sources & Effects Analysis
-  Atmospheric Dispersion Models
-  Control & Monitoring Techniques

Month 2: Air Pollution Control, Solid Waste & Sustainability04



Advanced Air Pollution Control


- Cutting-edge methods for cleaner air
- Technologies for emissions reduction
- Biochar for air purification



Emissions


Filtration

Remediation



Integrated Solid Waste Management

- Hierarchy of waste reduction
- Sustainable disposal practices
- Recycling & resource recovery




Reduce

Reuse


Recycle

Disposal



Waste-to-Energy & Resource Recovery


- Converting waste into energy
- Maximizing resource utilization
- Wastewater recycling initiatives



Conversion


Reclamation

Efficiency



EIA & Sustainable Construction

- Assessing environmental impacts
- Green building certifications
- Eco-friendly development practices




Assessment

Certifications

Eco-friendly


Key Focus Areas: Innovation & Impact Potential

Potential Impact Scale




Focus Area	Potential Impact Scale
Advanced Air Pollution Control	10
Integrated Solid Waste Management	10
Waste-to-Energy & Resource Recovery	10
EIA & Sustainable Construction	8

Month 2: Air Pollution Control, Solid Waste & Sustainability04



Advanced Air Pollution Control


- Cutting-edge methods for cleaner air
- Technologies for emissions reduction
- Biochar for air purification



Emissions


Filtration

Remediation



Integrated Solid Waste Management

- Hierarchy of waste reduction
- Sustainable disposal practices
- Recycling & resource recovery




Reduce

Reuse


Recycle

Disposal



Waste-to-Energy & Resource Recovery


- Converting waste into energy
- Maximizing resource utilization
- Wastewater recycling initiatives



Conversion


Reclamation

Efficiency



EIA & Sustainable Construction

- Assessing environmental impacts
- Green building certifications
- Eco-friendly development practices




Assessment

Certifications

Eco-friendly

Key Focus Areas: Innovation & Impact Potential

Potential Impact Scale



Focus Area	Potential Impact Scale
Advanced Air Pollution Control	10
Integrated Solid Waste Management	10
Waste-to-Energy & Resource Recovery	10
EIA & Sustainable Construction	8

Environmental Regulations & Standards

Key Regulatory Frameworks



Water Regulations

Clean Water Act Compliance & Discharge Permitting.

• Compliance

• Permitting



Air Regulations

Clean Air Act Provisions & Emission Limit Controls.

• Control

• Monitoring



Waste Regulations

Proactive Environmental Management



Pollution Prevention (P2)

"Minimizing environmental impact by reducing waste at its source."

• Source Reduction

• Resource Efficiency



Defining Project Scope

- ✓ Clearly define objectives
- ✓ Identify key deliverables
- ✓ Establish project boundaries
- ✓ Allocate resources effectively

Environmental Regulations & Standards

Key Regulatory Frameworks



Water Regulations

Clean Water Act Compliance & Discharge Permitting.

• Compliance

• Permitting



Air Regulations

Clean Air Act Provisions & Emission Limit Controls.

• Control

• Monitoring



Waste Regulations

Proactive Environmental Management



Pollution Prevention (P2)

"Minimizing environmental impact by reducing waste at its source."

• Source Reduction

• Resource Efficiency



Defining Project Scope

- ✓ Clearly define objectives
- ✓ Identify key deliverables
- ✓ Establish project boundaries
- ✓ Allocate resources effectively

Phase 2: Industry Immersion & Integrated Project

06



⚡ Intensive Offline Phase

Focused practical application of learned concepts, ensuring deep understanding.

Hands-on Training

Immersive Learning

Capstone Mini-Projects

💧 Water Treatment System Design

♻️ Waste Management Plan Development

Applied Skills

Problem Solving

6 Mentorship & Collaboration

Phase 2: Industry Immersion & Integrated Project

06



⚡ Intensive Offline Phase

Focused practical application of learned concepts, ensuring deep understanding.

Hands-on Training

Immersive Learning

Capstone Mini-Projects



Water Treatment System Design



Waste Management Plan Development

Applied Skills

Problem Solving

6 Mentorship & Collaboration

Capstone Mini Project: Design & Planning



Week 9: Project Kick-off

- Site/Case Study Analysis

- Data Collection

Initiate project, analyze context, and gather foundational data.



Week 10: Process Selection

- Preliminary Design

- Initial Planning

Define core processes and outline initial design parameters.



Week 11: Detailed Design

- Material Balance

- Economic Analysis

Refine design, assess performance and financial viability.



Design Calculations

Apply engineering principles for precise project sizing and specifications.

- Quantitative Analysis

- Process Optimization



Flow Diagrams



Capstone Mini Project: Design & Planning



Week 9: Project Kick-off

- Site/Case Study Analysis

- Data Collection

Initiate project, analyze context, and gather foundational data.



Week 10: Process Selection

- Preliminary Design

- Initial Planning

Define core processes and outline initial design parameters.



Week 11: Detailed Design

- Material Balance

- Economic Analysis

Refine design, assess performance and financial viability.



Design Calculations

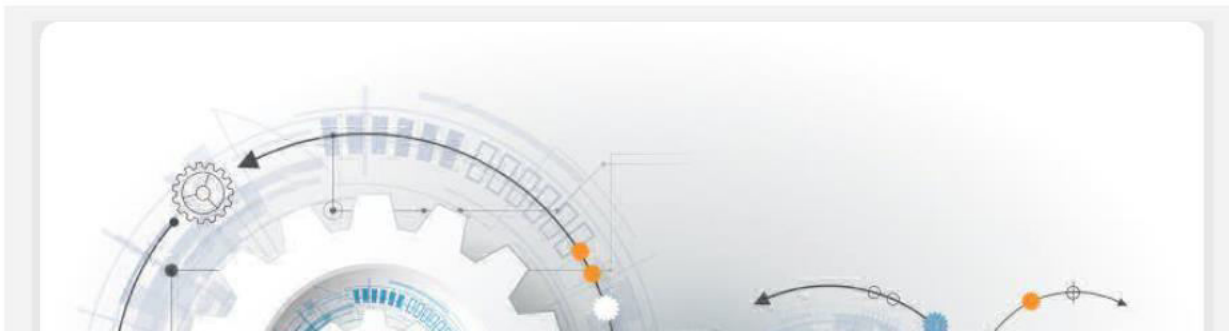
Apply engineering principles for precise project sizing and specifications.

- Quantitative Analysis

- Process Optimization



Flow Diagrams



Project Showcase & Career Launchpad



Final Project Excellence

- Problem Analysis
- Innovative Design
- Performance Validation
- Regulatory Adherence

Demonstrating practical application of engineering principles and rigorous documentation standards.



Career Launch Essentials

- Resume Mastery
- LinkedIn Presence
- Interview Acumen
- Industry Networking

Empowering career readiness through expert workshops and strategic industry connections.



Graduation & Certification

- Official Ceremony
- Professional Accreditation
- Program Certification

Marking program completion with formal recognition, paving the way for an impactful professional journey.



Project Showcase & Career Launchpad



Final Project Excellence

- Problem Analysis
- Innovative Design
- Performance Validation
- Regulatory Adherence

Demonstrating practical application of engineering principles and rigorous documentation standards.



Career Launch Essentials

- Resume Mastery
- LinkedIn Presence
- Interview Acumen
- Industry Networking

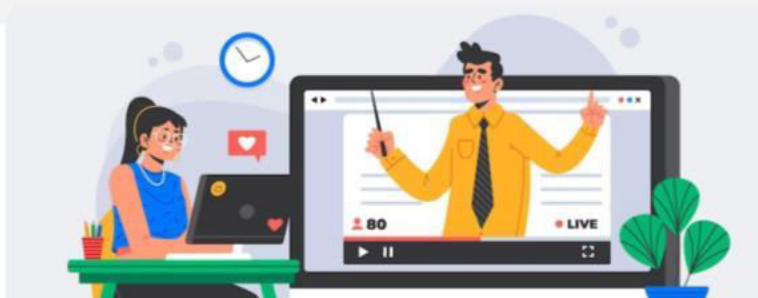
Empowering career readiness through expert workshops and strategic industry connections.



Graduation & Certification

- Official Ceremony
- Professional Accreditation
- Program Certification

Marking program completion with formal recognition, paving the way for an impactful professional journey.



Program Goal: Empowering Environmental Engineers



Analyze Environmental Problems

Deeply understand ecological challenges.

- Problem Identification
- Diagnostic Skills
- Data Analysis



Design Innovative Solutions

Create groundbreaking sustainable technologies.

- Solution Design
- Creative Thinking
- Technology Development



Contribute to Sustainable Development

Drive global environmental progress.



Become Industry-Ready Professionals

Launch an impactful career in engineering.

Program Goal: Empowering Environmental Engineers



Analyze Environmental Problems

Deeply understand ecological challenges.

- Problem Identification
- Diagnostic Skills
- Data Analysis



Design Innovative Solutions

Create groundbreaking sustainable technologies.

- Solution Design
- Creative Thinking
- Technology Development



Contribute to Sustainable Development

Drive global environmental progress.



Become Industry-Ready Professionals

Launch an impactful career in engineering.