An International Summer Course on Forest for Life: Managing Ecosystem Services in A Changing Climate

to bridge the gap between ecological science, policy, and practical management

1. Carbon Sequestration & Climate Mitigation: These topics focus on the forest's role as a "global lung" and a tool for meeting net-zero targets.

- **The Science of Carbon Flux:** Measuring biomass and soil carbon storage in various forest biomes.
- **Blue Carbon vs. Green Carbon:** Exploring the unique potential of mangroves and coastal forests.
- **Forests in the Carbon Market:** Understanding REDD+ (Reducing Emissions from Deforestation and Forest Degradation) and voluntary carbon credits.

2. Biodiversity & Resilience: Focused on the biological health of the forest and how it withstands climate shifts.

- **Assisted Migration:** The ethics and science of moving tree species to more favorable climates.
- **Genetic Diversity as Insurance:** Why monoculture plantations fail where diverse ecosystems succeed.
- **Wildlife Corridors:** Managing "forest connectivity" to allow fauna to migrate as temperatures rise.

3. Hydrological Services & Water Security: Forests act as natural infrastructure for water management.

- **The "Sponge" Effect:** How forests regulate watershed cycles and prevent downstream flooding.
- **Transpiration & Local Rainfall:** The link between large-scale reforestation and regional precipitation patterns.
- **Riparian Buffer Zones:** Managing forest edges to protect water quality and aquatic ecosystems.

4. Socio-Economic Dimensions & Indigenous Leadership: Centering the human element of forest management.

- **Community-Based Forest Management:** Successful models of local stewardship.
- **Traditional Ecological Knowledge (TEK):** Integrating Indigenous fire management and harvesting techniques with modern science.
- **Non-Timber Forest Products (NTFPs):** Creating sustainable livelihoods through resins, nuts, and medicinal plants.

5. Technology & Monitoring Tools: How we use data to stay ahead of environmental changes.

- **LiDAR & Satellite Imagery:** Real-time monitoring of deforestation and forest degradation.
- **AI in Conservation:** Using machine learning to predict wildfire risks or identify illegal logging patterns.
- **Environmental DNA (eDNA):** A new frontier for tracking biodiversity health through soil and water samples.

6. Policy, Law, and Ethics: The "big picture" of governance and global responsibility.

- **Nature-based Solutions (NbS) in International Law:** Implementing the Kunming-Montreal Global Biodiversity Framework.
- **The Economics of Ecosystem Services:** Putting a price on "free" services like pollination and air filtration to influence policy.
- **Urban Forestry:** Managing the "Urban Forest" to combat urban heat island effects in mega-cities.