

MASTER OF ENVIRONMENTAL SCIENCE (M.Env.Sc.)

ENS 800: ENVIRONMENT AND DEVELOPMENT

Concept of sustainable development; environmental crises: population, resources, pollution; human impact on earth; environment and social conditions; environmental protection and management; global dimensions of conservation issues; sustainable development; premises for building a sustainable society; international cooperation and environmental issues; Multilateral Environmental Agreements: UNCCC, Cartagena, Kyoto Protocol, UNCBD, Ramsar, CITES, UNCCD, UNMDGs, UNWCS, WHS, Agenda 21, WCED and WCD.

ESU 800: STATISTICS

Interpretation of data; descriptive data analysis; inferential data analysis; types of samples; parametric tests and non-parametric statistics; regression; multiple regression; curvilinear regression; factor analysis; cluster analysis; optimisation and mathematical statistics; partial and semi-partial cancellation; variance partitioning; computer applications in environmental sciences; computer models of physical, chemical and biological parameters.

ESU 801: RESEARCH METHODS

Nature and functions of research; identifying research problems; research proposal; statement of the problem; research design; planning and sampling protocol; concept of population and sampling procedures; instruments for data collection; data collection procedures; data sources: primary and secondary sources; analysis of data; quality control; common sampling problems; documentation and reporting; dissemination of research findings; ethical issues in research.

ESU 802: ENVIRONMENTAL IMPACT ASSESSMENT

Concept of environmental assessment; evolution of environmental assessment; environment, development and sustainability; the environmental impact assessment process; environmental assessment methods; project cycle; public consultation in environmental assessment; strategic environmental assessment; economic analysis of environmental impacts; environmental auditing; environmentally sound technology assessment; special topics in environmental impact assessment.

ENS 801: GLOBAL WARMING AND CLIMATE CHANGE

Causes of climate change and global warming; detection of climate change and global warming; climate change models and scenarios; impact of climate change on the environment; responses to climate change at local, national, regional and international levels; mechanisms for resolving climate change related issues; climate change policies and interventions; carbon trading; climate and development.

ELECTIVES

ENS 802: BIODIVERSITY

Concept of biodiversity; genetic diversity; species diversity; ecosystem diversity; inventorying and monitoring of biodiversity; threatened and endangered species; uses and values of biodiversity; agro-biodiversity; biodiversity assessment; conservation and management of biodiversity; biodiversity in Africa; indigenous knowledge systems on biodiversity; biodiversity data management; biotechnology; biodiversity prospecting; intellectual property rights; biodiversity conventions.

ENS 803: WATER RESOURCES MANAGEMENT

Properties of water; global water supply and distribution and use of water; water quality parameters; water quality problems; analytical tools and standards for water quality; international and local standards criteria for water quality; water supply problems;; groundwater; water conservation; types and sources of water pollution and their effects; Technologies in water treatment and conservation water quality assessment and monitoring

ENS 804: FOOD RESOURCES PRODUCTION AND SECURITY

Food resources and supply; world agricultural systems; world food problems; concepts and factors of food security; environmental impacts of crop, livestock and fisheries production; agriculture and biodiversity; biotechnology, food production and the environment; agriculture, international trade and economic relations; politics and world food crisis; case studies of large-scale irrigation.

ENS 805: WILDLIFE AND FOREST RESOURCES

Characteristics of tropical wildlife populations and rangelands; Resource inventory, monitoring and mapping of wildlife and rangeland resources; Adaptations of wildlife and rangeland resources in the tropics; Wildlife and rangeland's stress, recovery; and management; Resource conservation, protection and management; Interrelationships, dynamics and productivity of these resources; Importance and values of wildlife and rangeland resources; Human interactions with wildlife and rangelands; Community based wildlife and rangeland management, Parks and reserves management; Methods of studying wildlife and rangeland resources;

ENS 806: MINERAL RESOURCES, MINING AND SUSTAINABLE DEVELOPMENT

Formation and abundance of mineral resources; location, mining and processing of minerals; mineral supplies; mineral technology and resources; estimation of mineral resources; key mineral resources; the global mineral situation; multinationals and Africa's mineral resource exploitation; impact of mining on the environment.

ENS 807: TOXIC SUBSTANCES AND ENVIRONMENTAL HEALTH

Concepts of toxicology and environmental health; chemical effects; how toxins work; factors that affect the toxicity of chemicals in the human body; biological concentration and magnification; toxic substances and occupational hazards; controversy over toxic chemical effects; control of toxic substances; myth of the "banned" pesticides; global heavy metal pollution; acceptable levels of chemicals in the environment.

ENS 808: INDUSTRIAL ECOLOGY AND SUSTAINABLE DEVELOPMENT

Industrial ecology; pollution prevention; trading in wastes; conditions for waste exchange; constraints to waste exchange; examples of industrial parks; cleaner production; waste and energy audits; housekeeping; resource substitution; waste minimization; end of pipe treatments; life cycle assessment and eco-labelling; international and local quality standards: ISO and LCA; environmental labels in the global economy; Japanese Specified Household Appliances Recycling (SHAR) Law and its applications; case studies.

ENS 809: ENERGY RESOURCES AND SUSTAINABLE DEVELOPMENT

Biomass energy; forms of biomass energy, biomass conversion technologies, uses of biomass energy, fuel ethanol, biodiesel; environmental impacts of biomass energy; Solar energy; solar conversion technologies, solar photovoltaic, solar thermal; off-grid and on-grid solar photovoltaic systems, environmental impacts of solar energy; wind energy, energy from the wind, wind resource mapping in Kenya, environmental impacts of wind energy.

SECOND YEAR

ENS 810: THESIS (10 UNITS)

ENS 900: PhD In the area of specialization