STUDY PLAN
MASTER IN (Environmental Sciences and Management)
(None Thesis Track)

Plane Number		2005	N

VII. GENERAL RULES CONDITIONS:

1. This plane conforms to the regulation of the general frame of the programs of graduate studies
2. Areas of specialty of admission in this program –Holders of the Bachelor`s degree in:
a- Environmental Science and Management
b- Science
c- Agriculture
d- Engineering

VIII. SPECIAL CONDITIONS: None.

XI. THE STUDY PLANE: Studying (33) Credit Hours as follows:

1. Obligatory courses (24) Credit Hours:

Course No	Course Title	Credit hrs	Theory	Prac.	Prerequisite
0301737	Biostatistics	3	3	-	-
0303715	Advanced Environmental Chemistry	3	3	-	-
0304772	Environmental System	3	3	-	-
0304773	Environmental Management	3	3	-	-
0604706	Environmental Impact Assessment	3	3	-	-
0604733	Environmental Microbiology	3	3	-	-
0905757	Waste-water Treatment Technology	3	3	-	-
1401797	Research Project	3	3	-	-

2. Elective Courses: studying (9) Credit from the following:

Course No	Course Title	Credit hrs	Theory	Prac.	Prerequisite
0303716	Environmental Chemical Analysis	3	3	-	-
0305762	Hydrological Modeling	3	3	-	-
0604701	Soil, Water and plant Analysis	3	3	-	-
0604705	Environmental Soil Chemistry	3	3	-	-
0901772	Air pollution	3	3	-	-
0901774	Solid Waste Management	3	3	-	-
1002791	Environmental Legislation	3	3	-	-

3 . A Comprehensive Exam (1401798)

STUDY PLAN
MASTER IN (Environmental Sciences and Management)
(Thesis Track)

Plane Number		2005	T

VII. GENERAL RULES CONDITIONS:

1. This plane conforms to the regulation of the general frame of the programs of graduate studies
2. Areas of specialty of admission in this program –Holders of the Bachelor's degree in:
a- Environmental Science and Management
b- Science
c- Agriculture
d- Engineering

VIII. SPECIAL CONDITIONS: None.

XI. THE STUDY PLANE: Studying (33) Credit Hours as follows:

1. Obligatory courses (18) Credit Hours:

Course No	Course Title	Credit hrs	Theory	Prac.	Prerequisite
0301737	Biostatistics	3	3	-	-
0304772	Environmental System	3	3	-	-
0304773	Environmental Management	3	3	-	-
0604733	Environmental Microbiology	3	3	-	-
0905757	Waste-water Treatment Technology	3	3	-	-
1401797	Research Project	3	3	-	-

2. Elective Courses: studying (9) Credit from the following:

Course No	Course Title	Credit hrs	Theory	Prac.	Prerequisite
0303715	Advanced Environmental Chemistry	3	3	-	-
0303716	Environmental Chemical Analysis	3	3	-	-
0305762	Hydrological Modeling	3	3	-	-
0604701	Soil, Water and plant Analysis	3	3	-	-
0604706	Environmental Impact Assessment	3	3	-	-
0901774	Solid Waste Management	3	3	-	-
0901775	Air pollution				
1002791	Environmental Legislation	3	3	-	-

3 . A Thesis (1401799) (9) credit hours

Courses description

(0301737) Biostatistics (3 cr)

Prerequisite: None.

Organizing and summarizing data; sampling methods and statistical distributions (binomial, Poisson, normal, x^2 , t, F). Sampling methods and distributions, estimation and hypotheses about means, proportions and variances on large and small samples, analysis of variance (one-way, two way, factorial design; Latin square). Regression analysis (simple and multiple).Chi-square tests, correlation coefficient. And nonparametric methods.

(0303715) Advanced Environmental Chemistry (3 cr)

Prerequisite: None.

The role and importance of environmental chemistry, basic properties of chemicals, transformation and degradation of chemicals in the environment, toxicity, environmental pollutant, chemistry of water, chemistry of atmosphere.

(**0304772**) **Environmental Systems (3 cr)**

Introduction to environmental systems, principles of ecology, atmosphere, lithosphere, hydrosphere and biosphere. Change in environmental systems and impact of man environment.

(0304773) Environmental Management (3 cr)

Concept of environmental management within sustainable development institutional arrangements and tools. Methods to improve environmental performance. Development of programs and procedures, management of documents and records, operational control, the roles of internal and external audits to monitor the delivery of the environmental objectives. Development and application of environment performance indicators. Methods of environmental reporting.

(0604706) Environmental Impact Assessment (3 cr)

Process of EIA: screening, scooping, assessment, mitigation, review and Auditing. EIA of soil pollution and methods of mitigation. EIA of water pollution : sources of pollution, models and evaluation. EIA of air pollution: sources and models of prediction. EIA of noise pollution: models of evaluation standards and their roles in EIA.

(0604733) Environmental Microbiology (3 cr)
The course includes, cell composition, Microbial community in soil, environmental influences, Microbial transport of toxic metals, Transport of pathogens through soils and aquifers, Innovations in biological processes for pollution control, Bio-remediation, Biodegradation, Bio-fertilizers, Microbial control of plant diseases. Microorganisms and biochemical cycles.

(0905757) Waste-water Treatment Technology (3 cr)
Local standards for water and treated waste water, water treatment processes, water quality management, waste water treatment: waste physical, chemical and biological properties, physical treatment, biological treatment, advanced treatment processes, sludge management**.**

(1401797) Research Project (3 cr)
Students will prepare independent research, focusing on a research topic that is selected in consultation with their faculty supervisor. The project will eventually be examined and evaluated by a specialized committee set up for this purpose.

(0303716) Environmental Chemical Analysis (3 cr)
An overview of chemistry of water, atmosphere and soil, environmental pollutants, environmental samples, quality assurance and quality control in environmental sampling, methodologies and treatment of results of water, air, soil, food and biological samples.

(0305762) Hydrological Modeling (3 cr)
Prerequisite: None.
Introduction, thermodynamic of the atmosphere, precipitation, evaporation, runoff, maximization of storms, hydrograph analysis, unit hydrograph, synthetic unit hydrograph, reservoir routing, extreme events, flood design, flow regulation, catchment's yield, sediment yield, hydrological modeling and water resources systems.

(0604701) Soil, Water and Plant analysis (3 cr)
Fundamental of soil, water and plant sampling. Sample treatment, methods of analysis and their scientific foundation: Thermal methods. Emission and atomic absorption spectrophotometer. Radiochemical, chromatographic and paleographic methods. Mass spectrometry.

(0604705) Environmental Soil Chemistry (3 cr)

Soils as a thermodynamic system, Depye-Hukle limiting low. Free ion activity coefficient. Chemical potential of soil components. Chemical and electrochemical equilibrium, Ion exchange theory. Specific anion adsorption. Demixing model for solid liquid interface.

(0901772) Air Pollution (3 cr)

Background and basic definitions, sources of air pollution, atmospheric transport of pollutants of gaseous and particulate matter, sampling, analysis and design (theory, equipment and techniques), physical analysis of particles and specific tests, acid and alkaline rains and their hazards on public health, particulate and gases control methods and their design, odor control, noise pollution.

(0901774) Solid Waste Management (3 cr)

Quantities and composition of refuse, collection and transport methods, principles and design of disposal methods: sanitary landfill, incineration, grinding composting, salvage and reclamation.