COURSE SYLLABUS

INTERNATIONAL ENVIRONMENTAL IMPACT ASSESSMENT

1. CODE AND NUMBER OF CREDITS *(Institutional identification of the course and the relation between academic and practical credits)*

CODE	**CVEN and EVEN 4834/5834**
Number of Credits	**3**
Summer Term	Maymester
Section	100
Class Schedule	9:00-12:00
Instructor	PhD. Paola Almeida Guerra

2. COURSE DESCRIPTION *(This section contains what the course aims to cover; its importance in terms of the professional training in the degree program; and how this course fits into the curriculum of the degree program. The description must be clear and concise. Máximum 10 lines. This information will be published in the institution´s academic catalogue.)*

This course will provide students with the most relevant elements on what is needed to develop an environmental impact assessment (EIA). It seeks to familiarize the student with the terms and definitions used in the environmental practice and with existing environmental regulations. The course also explains the application of well-known methodologies/tools used in EIA studies, taking into consideration the cause-effect relationships between the project activities and the existing environmental components (water, air, soil, society).
The course explores the importance of matrixes development for the evaluation of the environmental impacts and the subsequent elaboration of Environmental Management Plans. A series of exercises will be performed as part of the course where the students are expected to apply their analytical criteria to identify the major impacts of projects and to propose suitable mitigation measurements.

3. CORE TEXT AND OTHER REQUIRED REFERENCES FOR THE TEACHING OF THE COURSE *(The text is the main book to be consulted and studied by the students. Its content ought to correspond to a large extent to the established program for this course and should be up-to-date. Other references may be included as complementary material to enhance the learning of the students. Both the core text and the other references must be listed with the following fields: author, title of the book, number of the edition, year of publication and editorial.)*

CORE TEXT	1. Canter, L.W. (1996). **ENVIRONMENTAL IMPACT ASSESSMENT**. McGraw-Hill. Second Edition. **ISBN-13:** 978-0070097674, **ISBN-10:** 0070097674 2. Canter, L.W. (2012) ENVIRONMENTAL IMPACT ASSESSMENT. Taylor & Francis. Online (2012) http://dx.doi.org/10.1080/07349165.1982.9725447
REFERENCES	1. Espinoza, G. and Richards, B. (2002) **FUNDAMENTALS OF ENVIRONMENTAL IMPACT ASSESSMENT**. Inter-American Development Bank (IDB) and Interamerican Association of Sanitary and Environmental Engineering (AIDIS). Trainer's course on Environmental Management and Assessment for Investment Projects. Available online http://www.iadb.org/sds/doc/ENV-FundofEnvironImpactAssessE.pdf. 2. Green K.M. and Raphael A. (2000), **THIRD ENVIRONMENTAL ASSESSMENT REVIEW**, Environmental Department, World Bank, Report FY 96-00. Available on-line: http://www.worldbank.org/ 3. National Research Council (2007), **ANALYSIS OF GLOBAL CHANGE ASSESSMENTS: LESSONS LEARNED**, National Academies Press. Available on-line: http://books.nap.edu/catalog.php?record_id=11868 4. National Research Council (2007), **ENVIRONMENTAL IMPACTS OF WIND-ENERGY PROJECTS**, National Academies Press. Available on-line: http://books.nap.edu/catalog.php?record_id=11935 5. Harrison M. and Coussens C. (2007), **GLOBAL ENVIRONMENTAL HEALTH IN THE 21ST CENTURY: FROM GOVERNMENTAL REGULATION TO CORPORATE SOCIAL RESPONSIBILITY**. Workshop Summary from a Roundtable on Environmental Health Sciences, Research, and Medicine, National Academies Press. Available on-line: http://books.nap.edu/catalog.php?record_id=11833 6. Brewer G.D. and Stern P.C, Editors, (2005), **DECISION MAKING FOR THE ENVIRONMENT: SOCIAL AND BEHAVIORAL SCIENCE RESEARCH PRIORITIES**. Panel on Social and Behavioral Science Research Priorities for Environmental Decision Making, Committee on the Human Dimensions of Global Change, National Research Council, National Academies Press. Available on-line: http://books.nap.edu/catalog.php?record_id=11186

4. COURSE LEARNING OUTCOMES *(These can cover knowledge, abilities, values and attitudes. It is recommended that there are no more than 8. Ask yourself: what do I want the students to know at the end of the course? And, what do I expect the students to be able to do with what they know? It should be clear here the level (Bloom´s taxonomy) to which the students are to be exposed.)*

At the end of the course, the student will be able to:

1. Analyze the diverse types of impacts related to any project
2. Recognize the importance of EIA on engineering projects and proper mitigation of impacts
3. Apply environmental methodologies/tools needed for the elaboration of an EIA

5. COURSE PROGRAM*(The general subjects to be covered in the course (chapters) must be listed, and then for each subject the details of the topics to be covered indicating the number of hours per chapter.)*

Chapter I: Principles and Fundamental Concepts (3 hrs)
- Definitions and Concepts: Ecology, Environment, Ecosystem, Biodiversity
- Definitions: Pollution, Sustainable Development, Ecological Footprint, Environmental Impact
- Types of Impacts: positive, negative, direct, etc
- Study cases: Types of impacts and classification. Groupwork.
- Calculation and analysis of the ecological footprint

Chapter II: Introduction to Environmental Evaluation (3 hrs)
- Definition: Environmental evaluation
- Importance and advantages of Environmental Evaluations
- Types of environmental evaluations
- Life cycle of a project
- Project's Environmental Classification according to the World Bank and the Ecuadorian Ministry of Environment
- Study cases: Analysis and Project classification.

Chapter III: Environmental Impact Assessment (EIA) (6 hrs)
- Definition of EIA
- Main components of an EIA
- Baseline: importance, components, background values
- EIA a Multidisciplinary Task
- EIA team: characteristics
- Approval Process of an EIA (Ecuadorian case)
- Study Cases. Class Exercise: Elaboration of a baseline (index). Groupwork

Chapter IV: Alternative Analysis (4 hrs)
- Definitions
- Criteria: Alternatives selection
- Areas of Influence: Direct and Non-direct
- Compensation Analysis (trade-offs)
- Study Cases: Exercises. Groupwork

Chapter V: Impact prediction (5 hrs)
- Existing methodologies for impact prediction: Advantages and Disadvantages
- Criteria to select impact prediction methodology
- Doubt: how to deal with it?
- Social impacts
- Study Cases: Identify and predict environmental impacts. Groupwork
- Study Case: TEXACO social and environmental impacts

Chapter VI: Impact Mitigation (3 hrs)
- Purpose of impact mitigation
- Framework for impact mitigation
- Mitigation as part of the EIA: Environmental Management Plan (EMP)
- Strategies: Minimizing environmental impacts
- Levels of impact compensation
- Study Case: TEXACO and mitigation of impacts

Chapter VII: Legal Framework (3 hrs)
- Environmental Legislation: Different examples (Ecuador, USA)
- Ecuadorian Environmental Regulation (TULSMA)
- Study Cases: Exercise how to apply environmental legislation

Chapter VIII. Environmental Indicators and Environmental Indexes (7 hrs)
- Environmental Indicator: Concept, Application, Importance
- Environmental Index: Concept, Application, Importance
- Most common environmental indexes: AQI, WQI, DRASTIC
- Application of environmental indexes: Exercises. Classwork

Chapter IX: Methodologies for impact valuation (11 hrs)
- Criteria: Valuation of Environmental components
- Methodologies applied for impact valuation: Checklist, Networks, Matrixes, GIS
- Valuation of Importance and Magnitude of the Impact: Concepts and Calculation
- Environmental Index Value (EIV)
- Classification of impacts: Levels
- Study Cases: Exercise valuation, classification and mitigation of impacts. Groupwork

6. EVALUATION IN THE COURSE*(The evaluation methods that have been planned for this course must be marked.)*

Evaluation activities	
Exams	**X**
Homework	**X**
Projects (Groupwork)	**X**
Laboratory/Experiments	
Class exercises	**X**
Other	