

Module Catalogue

Double Degree Master Program **“Environment and Resources Management”** **Focus Latin American**

Offered at

Multidisciplinary Postgraduate Program for Environmental Sciences (PMPCA),
Autonomous University of San Luis Potosi and
MSc “Maestria en Ciencias Ambientales”

and

Institute for Technology and Resources Management in the Tropics and Subtropics (ITT),
TH Köln - University of Applied Sciences
MSc “Natural Resources Management and Development”

at Winter 2014

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ITT

Institute for Technology and
Resources Management in
the Tropics and Subtropics

1. Course Description

The basic concept of the double degree master program ENREM is built upon the two accredited master programs:

- **Maestría en Ciencias Ambientales** at the Programa Multidisciplinario de Posgrado en Ciencias Ambientales - PMPCA from Universidad Autónoma de San Luis Potosí (UASLP), Mexico
- **Master in Natural Resources Management and Development** at the Institute Technology and Resources Management - ITT from TH Köln University of Applied Science (TH Köln), Germany

Successful graduates of the program receive a degree of each university:

- **UASLP:** *Maestría en Ciencias Ambientales*
- **TH Köln:** *MSc Natural Resources Management and Development*

1.1. Structure of the Double Degree Master Program ENREM at WS2014/2015

The first, second and third semesters consist of mandatory and elective modules, while the fourth semester is focus on the master thesis and defense (colloquium).

The master’s curriculum is a systematic combination of both university programs, based on mutual recognition of the modules.

Table 1: Structure of the Master Program

1 st Semester <i>Mexico</i>	2 nd Semester <i>Mexico</i>	3 rd Semester <i>Germany</i>	4 th Semester <i>Latin America or Europe</i>
Problemática y Gestión Ambiental	Seminario Multidisciplinario	Project III: Implementation	Master Thesis Research
Desarrollo Sustentable	Seminario Propuesta de Tesis	Master Thesis Preparation	
	Trabajo de Tesis 1	Trabajo de Tesis 2	Trabajo de Tesis3
Ecología	Economía Ecológica	Project and Business Management	
Estadística	Four Elective Modules	Four Elective Modules	Master Thesis Defense (Colloquium)
	Intercultural Seminar - Field Visits - Expert Seminars - Tandem Work		
	Mandatory Modules		
	Mandatory module with choice from offered topics and of supervisor(s) (Practice-oriented)		
	Elective module from the module catalogue		
	Extracurricular activities to improve soft and communication skills		

1.2. Mandatory Modules

The mandatory modules during the program are organized in:

- **6 Core Modules:** Problemática y Gestión Ambiental, Desarrollo Sustentable, Ecología, Estadística, Economía Ecológica, and *Project and Business Management*
- **2 Project Modules:** Seminario Multidisciplinario, and *Project III: Implementation*
- **5 Thesis preparation Modules:** Seminario Propuesta de Tesis, *Master Thesis Preparation*, Trabajo de tesis 1, Trabajo de tesis 2, Trabajo de tesis 3
- **Master Thesis and Defense (Colloquium)**

1.3. Elective Modules

The elective modules in the second and third semesters are organized in two blocks, one in the area of "Electives for the double degree master program ENREM" and the other from the "Methods and Tools" catalogues.

The students need to select a **total of eight elective modules** in the second (4 electives) and third (4 electives) semesters:

- A **minimum of 4 modules** are required from the "**Electives for the double degree master program ENREM**" module catalogue from *Programas Multidisciplinarios de Posgrado en Ciencias Ambientales* at UASLP and *Natural Resources Management and Development NRM* at ITT
- A **minimum one (1) module** is required from the "**Methods and Tools**" module catalogue from PMPCA and ITT
- The **remaining 3 modules** can also be selected from the adjoining master programs module catalogues (Integrated Water Resources Management IWRM and Renewable Energy Management REM) ITT/PMPCA or from the module catalogue Methods and Tools ITT/PMPCA or from the module catalogue „Electives for ENREM master program”.

2. Module Catalogues Double-Degree Master Program ENREM at PMPCA and ITT

2.1. Mandatory Modules Catalogue

Table 2. Mandatory Modules

Mandatory Modules + Thesis											
Semester PMPCA				NAME OF MODULE				Semester ITT			
1	2	3	4	<i>PMPCA</i>	<i>ITT</i>	1	2	3	4		
X				Problemática y Gestión Ambiental	<i>Project I</i>						
X				Desarrollo Sustentable	<i>International Cooperation and Development</i>						
X				Ecología	<i>Management of Natural Resources Systems</i>						
X					<i>Ecology (elective for ENREM)</i>						
X				Estadística	<i>Statistics (elective of Methods & Tools)</i>						
	X			Economía Ecológica	<i>Natural Resources Economics and Governance</i>						
	X			Seminario Multidisciplinario	<i>Project II</i>						
	X			Seminario Propuesta de Tesis	-----						
	X			Trabajo de Tesis 1	-----						
				-----	<i>Project and Business Management</i>				X		
				-----	<i>Project III</i>				X		
				Seminario Avance de Tesis	<i>Master Thesis Preparation</i>				X		
		X		Trabajo de Tesis 2	-----						
			X	Trabajo de Tesis 3	-----						
			X	Presentación y Defensa de Tesis	<i>Master Thesis and Colloquium (Defense)</i>				X		

2.2. Elective Modules Catalogue

2.2.1. Module Catalogue “Electives for the double degree master program ENREM”

Table 3. Module Catalogue “Electives for the double degree master program ENREM”

Electives for the double degree master program ENREM:											
Between 2 nd and 3 rd semester need to take a minimum of 4 modules from this catalogue											
Semester PMPCA				NAME OF MODULE¹				Semester ITT			
1	2 ²	3	4	Programas Multidisciplinario de Posgrados en Ciencias Ambientales PMPCA	Natural Resources Management and Development NRM at ITT	1 ³	2	3 ⁴	4		
	X			Biología de la Conservación	-----						
	X			Biotecnología Ambiental II	-----						
	X			Cambio Ambiental Global	-----						
	X			Climatología Aplicada	-----						
	X			Comunicación de Riesgos y Salud Ambiental	-----						
	X			Dendroecología y cambio climático	-----						
	X			Evaluación de Impacto Ambiental y	-----						

¹ Electives with an equivalent in PMPCA and ITT can only be taken once during the second and third semester

² See schedule for the 2nd semester at PMPCA in December every year. All electives are not offered every year

³ Elective course of the first semester is possible to take in the third semester

⁴ See schedule for the 3rd semester at ITT in June every year

			Restauración Ecológica					
X			Ecología Cuantitativa	-----				
X			Ecología de la Producción de Cosechas	-----				
X			Ecología y Cambio Ambiental Global	-----				
X			Ecología y Restauración Forestal	-----				
X			Ecotoxicología	-----				
X			Educación Ambiental	-----				
X			Etnobiología	-----				
X			Farmacognosia Química y Farmacología de Plantas y Medicinas	-----				
X			Fisiología Ambiental Animal	-----				
X			Genética y Biodiversidad	-----				
X			Gestión Ambiental de Operaciones Minerometalúrgicas	-----				
X			Hidrosfera y Medio Ambiente Terrestre	-----				
X			Historia Ambiental : Teoría y Praxis	-----				
X			Ingeniería Ambiental	-----				
X			Manejo de Recursos Naturales en Zonas Secas					
X			Modelos Animales para la Investigación de Compuestos Naturales	-----				
X			Naturaleza y Sociedad una Introducción a las Posiciones Teóricas Recientes	-----				
X			Participación Social	-----				
X			Planeación y Ordenamiento	-----				
X			Relación Agua-Suelo-Planta-Atmósfera	-----				
X			Remediación de Sitios Contaminados	-----				
X			Sistemas de Manejo y Calidad Ambiental	-----				
X			Salud Integral de los Ecosistemas	-----				
X			Toxicología Ambiental	-----				
			-----			X		
			-----				X	
			-----				X	
			-----				X	
			-----				X	
			-----				X	
X			Eco-DRR: Desastres, Medioambiente y Reducción del Riesgo	<i>Ecological and Social Risks</i>				X
X			Biodiversidad, Nutricion y Seguridad Alimentaria	<i>Food Security</i>				X
			-----	<i>Urban, Regional and Community-Based Management</i>				X
			-----	<i>Water Energy Food Security Nexus</i>				X

2.2.2. Module Catalogue “Methods and Tools”

Table 4. Module Catalogue “Methods and Tools”

Methods and Tools:											
Between 2 nd and 3 rd semester need to take a minimum one (1) module from this catalogue											
Semester PMPCA				NAME OF MODULE⁵				Semester ITT			
1	2⁶	3	4	PMPCA	ITT	1⁷	2	3⁸	4		
	X			Evaluación Ambiental y Análisis Espacial Apoyados en PR y SIG	<i>Geographic Information Systems and Remote Sensing</i>	X					
	X			Ecología del Paisaje y Sistemas de Información Geográfica							
	X			Diseño y Evaluación de Proyectos de Investigación	<i>Scientific Work and Research Methods</i>	X					
	X			Metodología de la Investigación en Ciencias Sociales	<i>Empirical Social Research Methods</i>		X				
				-----	<i>Environmental Monitoring</i>		X				
				-----	<i>Eco-Balancing and Decision Support Systems</i>		X				
				-----	<i>Economic Evaluation Methods</i>			X			
	X			Evaluación de Riesgo Ecológico	<i>Environmental Assessment</i>				X		
	X			Impacto y Riesgo Ambiental					X		
				-----	<i>Enterpreneurship</i>			X			
	X			Análisis Probabilístico de Riesgos	-----						
	X			Evaluación de Riesgo en Comunidades Vulnerables	-----						
	X			Evaluación de Riesgos en Salud	-----						
	X			Evaluación y Manejo de Recursos Naturales Renovables	-----						
	X			Introducción al Estudio de la Salud Ambiental desde un Enfoque Multidisciplinario	-----						
	X			Métodos Estadísticos para Investigadores	-----						

⁵ Electives with an equivalent in PMPCA and ITT can only be taken once during the second and third semester

⁶ See schedule for the 2nd semester at PMPCA in December every year. All electives are not offered every year

⁷ Elective course of the first semester is possible to take in the third semester

⁸ See schedule for the 3rd semester at ITT in June every year

2.2.3. Other Module Catalogue “Electives of the adjoining master programs”

Table 5. Module Catalogue of the adjoining Integrated Water Resources Management Master Program

Integrated Water Resources Management IWRM											
Semester PMPCA				NAME OF MODULE⁵				Semester ITT			
1	2⁶	3	4	PMPCA	ITT	1⁷	2	3⁸	4		
	X			Fisicoquímica de Aguas Naturales	-----						
	X			Hidrogeología Ambiental	-----						
	X			Hidrogeoquímica	-----						
	X			Procesos fisicoquímicos para el tratamiento de agua	-----						
	X			Tratamiento de Aguas Residuales	-----						
				-----	<i>Water Resources Management</i>	X					
				-----	<i>Hydrology</i>		X				
				-----	<i>Hydraulic Structures</i>		X				
				-----	<i>Water and Agriculture</i>		X				
				-----	<i>Water Economics and Governance</i>		X				
	X			Ecología y Manejo de Cuencas	<i>Watershed Management</i>		X				
				-----	<i>Water System Analysis</i>		X				
				-----	<i>Sanitation and Public Health</i>			X			
				-----	<i>Flood Management</i>			X			
				-----	<i>Water Scarcity and Drought</i>			X			
				-----	<i>Water Supply</i>			X			

Table 6. Module Catalogue of the adjoining Renewable Energy Management Master Program

Renewable Energy Management REM											
Semester PMPCA				NAME OF MODULE				Semester ITT			
1	2⁴	3	4	PMPCA	ITT	1⁵	2	3⁶	4		
	X			Tipos de Energía	<i>Energy Resources and Energy Systems</i>	X					
				-----	<i>Bioenergy and Geothermal Energy</i>	X					
				-----	<i>Energy Economics and Markets</i>		X				
				-----	<i>Energy Efficiency and Environment</i>		X				
				-----	<i>Photovoltaics and Solar Thermal Systems</i>		X				
				-----	<i>Decentralized Energy Systems Planning</i>			X			
				-----	<i>Energy Policy, Legislation and Management</i>			X			
				-----	<i>Wind Energy and Hydro Power</i>			X			

- 5 Electives with an equivalent in PMPCA and ITT can only been taken once in Mexico or in Germany
- 6 See schedule for the 2nd semester at PMPCA in December every year. All electives are not offered every year
- 7 Elective course of the first semester is possible to take in the third semester
- 8 See schedule for the 3rd semester at ITT in June every year

3. Sample Study Plans

Three examples of an possible study plans in the ENREM program

Table 7. Exemplary study plans for ENREM student, specializing in natural resources management

Semester	1	2	3	4
Core	Problemática y Gestión Ambiental Desarrollo Sustentable Ecología Estadística	Seminario Multidisciplinario Seminario Propuesta de Tesis Trabajo de Tesis Economía Ecológica	ProjectIII: Implementation Preparation of Master Thesis Trabajo de Tesis 2 Project and Business Management	Master Thesis and Defense (Colloquium) Trabajo de Tesis 3
Methods & Tools		Ecología del Paisaje y SIG Diseño y Evaluación de Proyectos de Investigación Evaluación de Riesgo Ecológico	Environmental Assessment Enterpreneurship	
Electives for the double degree master program ENREM		Ecología y Cambio Ambiental Global Educación Ambiental Participación Social Gestión Ambiental de Operaciones Minerometalúrgicas Ecología de la Producción de Cosechas Eco-DRR: Desastres, Medioambiente y Reducción del Riesgo	Food Security Urban, Regional and Community Based Management Water-Energy- Food Security Nexus Ecological and Social Risks	
Electives of the adjoining master programs IWRM		Físicoquímica de Aguas Naturales Ecología y Manejo de Cuencas	Sanitation and Public Health Flood Management Water System Analysis Water Scarcity and Drought Water Supply	
Electives of the adjoining master programs REM		Tipos de Energía	Energy Policy, Legislation and Management Wind Energy and Hydropower Decentralized Energy Systems Planning	

	Mandatory Modules
	Mandatory module with choice from offered topics and of supervisor(s) (Practice-oriented)
	Elective module from the module catalogue Electives for the double degree master program ENREM (minimum of 4) and the module Methods and Tools (minimum of 1)
	Remaining 3 modules from “Electives of the adjoining master programs” or “Methods&Tools” or “Electives for the double degree master program ENREM” catalogues

ENREM

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Table 8. Exemplary study plans for ENREM student, specializing on natural resources management with focus in water management

Semester	1	2	3	4
Core	Problemática y Gestión Ambiental Desarrollo Sustentable Ecología Estadística	Seminario Multidisciplinario Seminario Propuesta de Tesis Trabajo de Tesis Economía Ecológica	ProjectIII: Implementation Preparation of Master Thesis Trabajo de Tesis 2 Project and Business Management	Master Thesis and Defense (Colloquium) Trabajo de Tesis 3
Methods & Tools		Ecología del Paisaje y SIG Diseño y Evaluación de Proyectos de Investigación Evaluación de Riesgo Ecológico	Environmental Assessment Economic Evaluation Methods	
Electives for the double degree master program ENREM		Ecología y Cambio Ambiental Global Educación Ambiental Ingeniería Ambiental Etnobiología Toxicología Ambiental Planeación y Ordenamiento ...	Food Security Urban, Regional and Community Based Management Water-Energy- Food Security Nexus Ecological and Social Risks	
Elective of the adjoining master programs IWRM		Físicoquímica de Aguas Naturales Ecología y Manejo de Cuencas Hidrogeología Ambiental	Sanitation and Public Health Flood Management Water System Analysis Water Scarcity and Drought Water Supply	
Elective of the adjoining master programs REM		Tipos de Energía	Energy Policy, Legislation and Management Wind Energy and Hydropower Decentralized Energy Systems Planning	

	Mandatory Modules
	Mandatory module with choice from offered topics and of supervisor(s) (Practice-oriented)
	Elective module from the module catalogue Electives for the double degree master program ENREM (minimum of 4) and the module Methods and Tools (minimum of 1)
	Remaining 3 modules from “Electives of the adjoining master programs” or “Methods&Tools” or “Electives for the double degree master program ENREM” catalogues

Table 9. Exemplary study plans for ENREM student, specializing on natural resources management with focus in renewable energy

Semester	1	2	3	4
Core	Problemática y Gestión Ambiental	Seminario Multidisciplinario	ProjectIII: Implementation	Master Thesis and Defense (Colloquium)
	Desarrollo Sustentable	Seminario Propuesta de Tesis	Preparation of Master Thesis	
	Ecología	Trabajo de Tesis	Trabajo de Tesis 2	Trabajo de Tesis 3
	Estadística	Economía Ecológica	Project and Business Management	
Methods & Tools		Ecología del Paisaje y SIG	Environmental Assessment	
		Diseño y Evaluación de Proyectos de Investigación	Economic Evaluation Methods	
		Evaluación de Riesgo Ecológico		
Electives for the double degree master program ENREM		Ecología y Cambio Ambiental Global	Food Security	
		Educación Ambiental	Urban, Regional and Community Based Management	
		Ingeniería Ambiental	Water-Energy- Food Security Nexus	
		Gestión Ambiental de Operaciones Minerometalúrgicas	Ecological and Social Risks	
		Participación Social		
		Sistemas de Manejo y Calidad Ambiental		
		...		
Electives of the adjoining master programs IWRM		Fisicoquímica de Aguas Naturales	Sanitation and Public Health	
		Ecología y Manejo de Cuencas	Flood Management	
			Water System Analysis	
			Water Scarcity and Drought	
			Water Supply	
Electives of the adjoining master programs REM		Tipos de Energía	Energy Policy, Legislation and Management	
			Wind Energy and Hydropower	
			Decentralized Energy Systems Planning	

	Mandatory Modules
	Mandatory module with choice from offered topics and of supervisor(s) (Practice-oriented)
	Elective module from the module catalogue Electives for the double degree master program ENREM (minimum of 4) and the module Methods and Tools (minimum of 1)
	Remaining 3 modules from “Electives of the adjoining master programs” or “Methods&Tools” or “Electives for the double degree master program ENREM” catalogues