

Module Catalogue from ENREM 2023

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

Faculty Spatial Development and Infrastructure Systems (F12),
TH Köln - University of Applied Sciences
MSc “Natural Resources Management and Development”

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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 Faculty Spatial Development and Infrastructure Systems (F12) 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 WS2022/2023

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 and/or Evaluation	Master Thesis Research
Desarrollo Sustentable	Seminario Propuesta de Tesis	Master Thesis Preparation	
	Trabajo de Tesis 1	Trabajo de Tesis 2	Trabajo de Tesis3
Ecología	Diseño y Evaluación de Proyectos de Investigación	Environmental Economics and Governance	Master Thesis (Writing)
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, Diseño y Evaluación de Proyectos de Investigación, and Environmental Economics and Governance
- **2 Project Modules:** Seminario Multidisciplinario, and *Project III: Implementation and/or Evaluation*
- **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 (writing) 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 F12 (See table 3.)
- A **minimum one (1) module** is required from the “**Methods and Tools**” module catalogue from PMPCA and F12. (See table 4.)
- 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) F12/PMPCA” (See table 5. and 6.) or from the module catalogue Methods and Tools F12/PMPCA or from the module catalogue “Electives for ENREM master program”.
- In the **second semester** are required to take a **minimum of 2 elective modules offer be PMPCA**. The remaining 2 elective modules can be selected from this catalog and are offered by IPICYT, IMAREC, Postgraduate Water Technology.

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

2.1. Mandatory Modules Catalogue

Table 2. Mandatory Modules and equivalent at F12 and PMPCA¹

Mandatory Modules + Thesis											
Semester PMPCA				NAME OF MODULE¹				Semester F12			
1	2	3	4	PMPCA	F12	1	2	3	4		
X				Problemática y Gestión Ambiental	<i>Project I: Regional System Problem Definition</i>						
X				Desarrollo Sustentable	<i>International Cooperation</i>						
X				Ecología	<i>Management of Natural Resources Systems</i>						
X				Estadística	<i>Ecology (elective for ENREM)</i> <i>Statistics (elective of Methods & Tools)</i>						
				Economía Ecológica	<i>Environmental Economics and Governance</i>			X			
	X			Seminario Multidisciplinario	<i>Project II: Solution Design</i>						
	X			Seminario Propuesta de Tesis	-----						
	X			Trabajo de Tesis 1	-----						
	X			Diseño y Evaluación de Proyectos de Investigación	<i>Project Management</i>						
				-----	<i>Project III: Implementation and/or Evaluation</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 (writing)</i>				X		
					<i>Master Thesis Colloquium (Defense)</i>				X		

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

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” and equivalent at F12 and PMPCA¹

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 MODULE ¹		Semester F12			
1	2 ²	3	4	Programas Multidisciplinario de Posgrados en Ciencias Ambientales PMPCA	Natural Resources Management and Development NRM at F12	1 ³	2	3 ⁴	4
				Agricultura Urbana (IMAREC)	-----				
	X			Biología de la Conservación (IPICYT)	-----				
	X			Biotecnología Ambiental II (IPICYT)	-----				
	X			Climatología Aplicada	-----				
	X			Comunicación de Riesgos y Salud Ambiental	-----				
				Desarrollos Regionales y Economía (IMAREC)	-----				
	X			Ecología Cuantitativa	-----				
	X			Ecología de la Producción de Cosechas	-----				
				Ecología de Suelos (IPICYT)	Soil management				
	X			Ecología y Cambio Ambiental Global (IPICYT)	-----				
	X			Evaluación de los efectos de la variabilidad y el cambio climático sobre los sistemas de producción de alimentos.	-----				
	X			Ecología y Restauración Forestal (IPICYT)	-----				
	X			Ecotoxicología	-----				
	X			Estrategia para la Apropiación social del Conocimiento	-----				
	X			Farmacognosia Química y Farmacología de Plantas y Medicinas	-----				
	X			Fisiología Animal Ambiental	-----				
	X			Fundamentos Teóricos- Metodológicos para Evaluar la Salud Integral de los Ecosistemas	-----				
	X			Gestión Ambiental de Operaciones Minerometalúrgicas	-----				
	X			Gestión de Residuos y Economía Circular	-----				
	X			Teoría Historia Ambiental	-----				
	X			Ingeniería Ambiental	-----				
				Manejo Adaptativo de Sistemas Socio-Ecológicos (IPICYT)	Ecosystem Management and Conservation				
	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 (PMPCA / IPICYT)	-----				
	X			Participación Social	-----				

	X		Planeación Rural Sustentable	-----				
	X		Relación Agua-Suelo-Planta-Atmósfera (Posgrado Tecnología del Agua)	-----				
	X		Remediación de Sitios Contaminados	-----				
	X		Toxicología Ambiental (IPICYT)	-----				
			-----	<i>Farming Systems – Urban Systems</i>	X			
	X		Biodiversidad, Nutrición y Seguridad Alimentaria	<i>Food Security</i>			X	
	X		Eco-DRR: Reducción del Riesgo de Desastres y Ecosistema	<i>Ecological and Social Risks</i>			X	
			Gobernaza y Participación (IMAREC)	<i>Environmental Governance and Sustainability Transition</i>			X	
			Sistema de Ciudad y Metabolismo Urbano (IMAREC)	<i>Resources Efficient and Resilient Cities</i>				

¹ Electives with an equivalent in PMPCA and F12 can only be taken once in Mexico or in Germany

² See schedule for the 2nd semester at PMPCA in January every year. **The electives are not offered every year. The electives will be available if the responsible professors offer them**

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

⁴ See schedule for the 3rd semester at F12 in June every year

2.2.2. Module Catalogue “Methods and Tools”

Table 4. Module Catalogue “Methods and Tools” and equivalent at F12 and PMPCA¹

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 MODULE ¹				Semester F12			
1	2 ²	3	4	PMPCA	F12	1 ³	2	3 ⁴	4		
	X			Evaluación Ambiental y Análisis Espacial Apoyados en PR y SIG (PMPCA)	<i>Geographic Systems and Remote Sensing</i>	X					
	X			Ecología del Paisaje y Sistemas de Información Geográfica (IPICYT)							
				-----	<i>Scientific Work</i>	X					
				-----	<i>Economic Evaluation Methods</i>			X			
	X			Evaluación del Impacto y Riesgo Ambiental	<i>Environmental Assessment</i> ⁵			X			
				-----	<i>Entrepreneurship</i> ⁵			X			
				-----	<i>Water Energy Food Security Nexus</i>			X			
	X			Evaluación de Riesgos en Salud Humana	-----						
	X			Evaluación y Manejo de Recursos Naturales Renovables	-----						
	X			Métodos Estadísticos para Investigadores	-----						

¹ Electives with an equivalent in PMPCA and F12 can only be taken once in Mexico or in Germany

² See schedule for the 2nd semester at PMPCA in January every year. **The electives are not offered every year. The electives will be available if the responsible professors offer them**

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

⁴ See schedule for the 3rd semester at F12 in June every year

⁴ See schedule for the 3rd semester at F12 in June every year

⁵ The electives will be offered as long lectures resources can be secured

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 and equivalent at F12 and PMPCA¹

Integrated Water Resources Management IWRM											
Semester PMPCA				NAME OF MODULE ¹				Semester F12			
1	2 ²	3	4	PMPCA	F12	1 ³	2	3 ⁴	4		
	X			Fisicoquímica de Aguas Naturales	-----						
	X			Hidrogeología Ambiental	-----						
	X			Hidrogeoquímica	-----						
	X			Procesos fisicoquímicos para el tratamiento de agua	-----						
	X			Sistema de Tratamiento de Aguas Residuales	-----						
				Tecnología y Gestión del Agua (IMAREC)	Water Resources Management	X					
				Agua, Ecosistemas y Sociedad (Posgrado Tecnología del Agua)							
	X			Ecología y Manejo de Cuencas Hidrográfica	Watershed Management						
				-----	Flood Management				X		
				-----	Drought Management				X		
				Hidrología Urbana (Posgrado Tecnología del Agua)	Urban Water Management				X		
				-----	Water System Analysis				X		

Table 6. Module Catalogue of the adjoining Renewable Energy Management Master Program and equivalent at F12 and PMPCA¹

Renewable Energy Management REM											
Semester PMPCA				NAME OF MODULE				Semester F12			
1	2 ²	3	4	PMPCA	F12	1 ³	2	3 ⁴	4		
	X			Tipos de Energía	Energy Resources and Energy Systems	X					
					Introduction to Renewable Thermal Energy Science	X					
				-----	Decentralized Energy Systems				X		
				-----	Energy Policy and Systems Transition				X		
				-----	Wind Energy				X		

¹ Electives with an equivalent in PMPCA and F12 can only be taken once in Mexico or in Germany

² See schedule for the 2nd semester at PMPCA in January every year. **The electives are not offered every year. The electives will be available if the responsible professors offer them**

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

⁴ See schedule for the 3rd semester at F12 in June every year

3. Recognition Curricular Structure Double-Degree

1st semester San Luis Potosí		2nd semester San Luis Potosí		3rd semester Cologne		4th semester Mexico, Germany	
PMPCA (34 CP)	F12 (25 ECTS)	PMPCA (40 CP)	F12 (30 ECTS)	PMPCA (36 CP)	F12 (35 ECTS)	PMPCA (22 CP)	F12 (30 ECTS)
Problemática y Gestión Ambiental (8)	<i>Project I.</i> (5)	Multidisciplinario (5)	<i>Project II.</i> (5)	-----	<i>Project III.</i> (5)	Trabajo de investigación	<i>Thesis Research</i>
Desarrollo Sustentable (6)	<i>International Cooperation</i> (5)	Diseño y Evaluación de Proyectos de Investigación (6)	<i>Project Management</i> (5)	Economía Ecológica (6)	<i>Environmental Economics and Governance</i> (5)		
		Curso optativo (6)	<i>Elective Module</i> (5)	Curso optativo (6)	<i>Elective course</i> (5)		
Ecología (10)	<i>Management of Natural Resources Management</i> (5)	Curso optativo (6)	<i>Elective Module</i> (5)	Curso optativo (6)	<i>Elective course</i> (5)	-----	<i>Master Thesis (25)</i>
		Curso optativo (6)	<i>Elective Module</i> (5)	Curso optativo (6)	<i>Elective course</i> (5)		
	<i>Ecología (Elective Module NRM)</i> (5)	Curso optativo (6)	<i>Elective Module</i> (5)	Curso optativo (6)	<i>Elective course</i> (5)	Titulación (20)	<i>Thesis Defence</i> (5)
Estadística (10)	<i>Statistic (Elective Module of M&T)</i> (5)	Seminario de tesis1 (4)	-----	Avances de tesis (4)	<i>Preparation Master Thesis</i> (5)		
		Trabajo de Tesis 1 (2)	-----	Trabajo de Tesis 2 (2)	-----	Trabajo de Tesis 3 (2)	-----

4. Transfer Grading System

In order to cope with the grading system of the two universities, a common transfer system has been developed and is presented below.

- The TH Köln transfers the grades of Autonomous University of San Luis Potosí according to the following transfer table:
- Autonomous University of San Luis Potosí transfers the grade of the TH Köln according to the following transfer table:

Table 7. Course grades from PMPCA to TH Köln

Mexican Grade	German Grade	Designation
10	1.0	Very good
9.9 - 9.6	1.3	
9.5	1.3	
9.4 - 9.1	1.7	Good
9.0	2.0	
8.9 - 8.6	2.3	
8.5	2.3	Satisfactory
8.4 - 8.1	2.7	
8.0	3.0	
7.9 - 7.6	3.3	Sufficient
7.5	3.3	
7.1 - 7.4	3.7	
7.0	4.0	Failed
6.5	5.0	

Table 8. Course grades from TH Köln to PMPCA

German Grade	Mexican Grade	Designation
1.0	10.0	Approved
1.3	9.5	
1.7	9.0	
2.0	9.0	
2.3	8.5	
2.7	8.0	
3.0	8.0	
3.3	7.5	
3.7	7.0	
4.0	7.0	
5.0	6.5	Failed

5. Sample Study Plans

Three examples of an possible study plans in the ENREM program

Table 9. Exemplary study plans for ENREM student, specializing in natural resources management

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	Diseño y Evaluación de Proyectos de Investigación	Environmental Economics and Governance	
Methods & Tools		Ecología del Paisaje y SIG	Environmental Assessment	
		Métodos Estadísticos para Investigadores	Entrepreneurship	
		Evaluación de Riesgo Ecológico	Water-Energy- Food Security Nexus	
Electives for the double degree master program ENREM		Ecología y Cambio Ambiental Global	Food Security	
		Fundamentos Teóricos- Metodológicos para Evaluar la Salud Integral de los Ecosistemas I	Environmental Governance and Sustainability Transition	
		Participación Social		
		Gestión Ambiental de Operaciones Minerometalúrgicas	Ecological and Social Risks	
		Ecología de la Producción de Cosechas		
		Eco-DRR: Desastres, Medioambiente y Reducción del Riesgo		
			
		Fisicoquímica de Aguas Naturales	Water Resources Management	
		Ecología y Manejo de Cuencas	Urban Water Management	
			Flood Management	
Electives of the adjoining master programs IWRM			Drought Management	
			Water System Analysis	
			Energy Resources and Energy Systems	
			Energy Policy and Systems Transition	
Electives of the adjoining master programs REM		Tipos de Energía	Wind Energy and Hydro Power	

	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 10. 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	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	Diseño y Evaluación de Proyectos de Investigación	Environmental Economics and Governance	
Methods & Tools		Ecología del Paisaje y SIG	Environmental Assessment	
		Métodos Estadísticos para Investigadores	Economic Evaluation Methods	
		Evaluación de Riesgo Ecológico		
Electives for the double degree master program ENREM		Ecología y Cambio Ambiental Global	Food Security	
		Estrategia para la Apropiación social del Conocimiento	Environmental Governance and Sustainability Transition	
		Ingeniería Ambiental		
		Ecotoxicología	Ecological and Social Risks	
		Participación Social		
		...		
		...		
Elective of the adjoining master programs IWRM		Fisicoquímica de Aguas Naturales	Water Resources Management	
		Ecología y Manejo de Cuencas	Urban Water Management	
		Hidrogeología Ambiental	Flood Management	
			Drought Management	
			Water System Analysis	
Elective of the adjoining master programs REM		Tipos de Energía	Energy Resources and Energy Systems	
			Energy Policy and Systems Transition	
			Wind Energy	

	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 11. 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	Diseño y Evaluación de Proyectos de Investigación	Environmental Economics and Governance	
Methods & Tools		Ecología del Paisaje y SIG	Environmental Assessment	
		Métodos Estadísticos para Investigadores	Economic Evaluation Methods	
		Evaluación de Riesgo Ecológico		
Electives for the double degree master program ENREM		Ecología y Cambio Ambiental Global	Food Security	
		Estrategia para la Apropiación social del Conocimiento	Environmental Governance and Sustainability Transition	
		Ingeniería Ambiental		
		Gestión Ambiental de Operaciones Minerometalúrgicas	Ecological and Social Risks	
		Participación Social		
			
Electives of the adjoining master programs IWRM		...		
		Fisicoquímica de Aguas Naturales	Water Resources Management	
		Ecología y Manejo de Cuencas	Urban Water Management	
			Flood Management	
			Drought Management	
Electives of the adjoining master programs REM			Water System Analysis	
		Tipos de Energía	Energy Resources and Energy Systems	
			Energy Policy and Systems Transition	
			Wind Energy	

	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

