

Proposal for the Professional Master's Program

"Sustainability and Smart Cities"

Double degree between Cairo University, Egypt and Ecole Centrale de Marseille, France

Definition of the program:

This is a dual master's program which offers a professional Master's Degree in Sustainability and Smart Cities in Africa and the Mediterranean region. The program is established in collaboration between Cairo University (CU) in Giza, the Arab Republic of Egypt, and Ecole Centrale Marseille (ECM), in Marseille, France.

The program qualifies graduates of practical faculties (Engineering - Science - Agriculture - Pharmacy) and meets the need of the labour market for a highly qualified graduate who is familiar with the mechanisms of urgent global challenges.

Blending science and sustainable development, the program combines analytical rigor, creativity, and research with implementation through internships in laboratories and companies and consultancy firms, in a multicultural environment.

This international program also prepares students and young professionals for the job market in national and international companies.

Registration Conditions:

The conditions of enrollment in the general rules of the regulations of graduate studies at the Faculty of Engineering, Cairo University (CUFE), shall apply with the replacement of item 5-A with the following condition:

- The student must have a Bachelor's Degree with at least a good grade or a B- in various university disciplines (Engineering, Science, Pharmacy, Agriculture) from one of the colleges recognized by the Supreme Council of Universities (SCUs) in Egypt.

Credit Hour (Egypt) = 2 Credits (France)

Table 1. Professional Master's Program in Sustainability and Smart Cities

Fourth Semester	Third Semester	Second Semester	First Semester	Total Credit Hours	Degree Type
ECM 30 Credits 15 Credit Hours	ECM 40 Credit Points 20 Credit Hours	CU 10 Credit Hours	CU 10 Credit Hours	40 Courses + 15 Training	Dual Degree
CU 15 Credit Hours	CU 20 Credit Hours	CU 10 Credit Hours	CU 10 Credit Hours	40 courses + 15 Training	Cairo University's Degree – Egypt

**Table 2. Courses during the First Semester at Cairo University, Egypt
(Total Credit Hours = 10 Credit Hours)**

First Semester Courses (10 Credit Hours)			
Place of Study	Number of Credit Hours	Subjects	Course Code
Cairo University, Giza, Egypt	2	Introduction to the Transport Phenomena and Hydraulics	CHEM 6011
	2	Computer Science, Digital Methods and Geomatics	CHEM 6012
	3	Introduction to Chemical, Environmental and Sustainability Engineering	CHEM 6013
	2	Smart Cities	CHEM 6014
	1	Innovation and Industrial Engineering	CHEM 6015

**Table 3. Courses during Second Semester at Cairo University, Egypt
(Total Credit Hours = 10 Credit Hours)**

Second Semester Courses (10 Credit Hours)			
Place of Study	Number of Credit Hours	Subjects	Course Code
Cairo University, Giza, Egypt	2	Environmental Management and Monitoring	CHEM 6016
	2	Circular Economy and Sustainable Design	CHEM 6017
	1	Contaminants and Wastewater	CHEM 6018
	2	Green Chemistry	CHEM 6018
	1	Renewable energies	CHEM 6019
	2	French language	Year 6011

**Table 4. Courses during the Third Semester at Cairo University for Single Degree
(Number of points - Total Credit Hours = 20 Credit Hours)**

Third Semester Courses (Total Credit Hours = 20 Credit Hours)			
Place of Study	Number of Credit Hours	Subjects	Course Code
Sustainable Environment Studies			
Cairo University, Giza, Egypt	2	Computer Science and Data Science	CHEM 6020
	3	Advanced Fluid Mechanics and Coastal Engineering	CHEM 6021
	3	Bioremediation and water management	CHEM 6022
	3	Geophysical flows , geoeconomics and territorial efficiency	CHEM 6023
	2	Elective Course	CHEM 6024
	4	Industrial Engineering and Energy Efficiency	CHEM 6025
	1	French Language 2	Year 6012
	2	Seminars, industrial topics and project	CHEM 6026
Smart Cities Studies			
Cairo University, Giza, Egypt	3	Smart and Sustainable Cities	CHEM 6027
	3	Urban Design and Sustainability	AR6000
	3	Connected City	ARC6001
	2	Business Challenges	CHEM 6028
	3	Smart Energy	CHEM 6029
	2	Smart Mobility	CHEM 6030
	2	Data and AI	CHE 6031
	2	project	CHE 6032

Table 6. Courses during the Fourth Semester at Cairo University for Single Degree (Total Credit Hours = 15 Credit Hours)

Fourth Semester Courses (Total Credit Hours = 15 Credit Hours)			
Place of Study	Number of Credit Hours	Subjects	Course Code
Industry - Egypt	15	Industrial Training & Graduation Project	CHEM 6033
Engineering Offices & Major Companies - Egypt	15	Vocational Training & Graduation Project	ARC 6002

Table 7. Courses during the Third Semester - Dual Degree at Ecole Centrale de Marseille, France

(Total credit points = 40 equivalent to 20 Credit Curs)

Third Semester Courses (Total Credit Points = 40, equivalent to 20 Credit hours)			
Place of Study	Number of Credit Points (ECTS)	Subjects	Course Code
Sustainable Environment Studies			
Ecole Centrale de Marseille, France	3	Computer Science and Data Science	France
	3	Energy Efficiency	France
	3	Advanced Fluid Mechanics	France
	3	Coastal Engineering	France
	3	Bioremediation	France
	3	Water Management	France
	3	Geophysical Flows	France
	3	Geographical Economy & Efficiency of the Region	France
	3	Elective Course	France
	1	Interdisciplinary Elective Course	France
	6	Industrial Engineering 2	France
	2	French Language 2	France
	2	Project	France
	2	Seminars and Industrial Topics	France

Smart Cities Studies			
Ecole Centrale de Marseille, France	6	Smart and Sustainable Cities	France
	6	Urban Design and Sustainability	France
	6	Connected City	France
	4	Business Challenges	France
	6	Smart Energy	France
	4	Smart Mobility	France
	4	Data and Artificial Intelligence (AI)	France
	4	Project	France

Table 8. Courses during the Fourth Semester – the Dual Degree at Ecole Centrale de Marseille, France

(Total Credit Points = 30 equivalent to 15 Credit Hours)

Fourth Semester Courses (Total Credit Points = 30 equivalent to 15 Credit Hours)			
Place of Study	Number of Credit Points (ECTS)	Subjects	Course Code
Industry/ Engineering Offices & Large Companies, France	30	Industrial/ Vocational Training and Graduation Project	France