EM3ES Agreement - Annex 1
Study Program

I SUBJECT
This document deals with the Study Programme of the EM3ES agreement, academic years 2019-2020 to 2022-2023.

II STUDENT MOBILITY AND ECTS REQUIREMENTS
Students must acquire at least 24 (twenty-four) ECTS credits of taught modules at the Registration University to submit an application for the Double Degree EM3ES.
Student mobility is in the second academic year of the Registration University.
Students must acquire at least 60 (sixty) ECTS credits in the registration University before they move to the hosting University.
The Master Theses will be written and defended in English language; each student will be jointly supervised by two advisors, one by MCI and one by UNIGE.

III CREDIT SYSTEM AND GRADE CONVERSION
Each semester consists of teaching modules for corresponding 30 ECTS credits.
ECTS credits corresponds to a total student work, including lectures (frontal lessons), assisted learning (tutorials), laboratory activities and homework. One ECTS corresponds to about 25-30 hours of student workload including classroom teaching (lectures, tutorials practical work) and independent work.
Each module is validated during the exam (written, oral or both) according to the local regulations and according to each institution local grading system.

Examinations undertaken during the exchange semesters shall be graded using the respective grading system of the Hosting University. The UNIGE and MCI grading systems and their conversion are presented in the Table below.

GRADING CONVERSION SCHEME	
MCI Grade (Assessment)	**UNIGE Grade**
1 (excellent / Sehr gut - 100% - 90%)	29-30cum Laude
2 (good / Gut - 90% – 80%)	26-28
3 (satisfactory / Befriedigend - 80% - 70%)	21-25
4 (sufficient / Genügend - 70% – 60%)	18-20
5 (failed / Nicht genügend - minimum pass mark = 60%)	< 18
sc (successfully completed / mit Erfolg teilgenommen)	superato (successfully completed)
ac (accredited / angerechnet)	-

IV Contents

The UNIGE En2 MSc course is organized according to the following teaching modules, as also described in the Energy Engineering web site (www.en2.unige.it)

UNIGE/En2 semester 1	
Course Title	***ECTS***
Heat Transfer (66382)	6
Mathemathical Modeling for Energy Systems (86630)	6
Chemical Processes and Technologies (86631)	6
Industrial Fluid-dynamics (86641)	6
Combustion Processes and Emissions (80054)	6
UNIGE/En2 semester 2	
Chemical and Biochemical Processes and Plants for Energy (72562)	6
Power Systems Modeling and Control (65887)	6
Power Systems Management (86638)	6
Power Plants for Energy Conversion (80053)	6
Industrial Plants for Energy (86644)	6
UNIGE/En2 semester 3	
Models and Methods for Energy Engineering (86662)	6
Energy and Buildings (86655)	6
Fuel Cells and Distributed Generation Systems (86660)	6
Solar and Geothermal Energy (80043)	6
UNIGE/En2 semester 4	
Hydro, Wind and Micro-gas Turbines (86661)	6
Energy Laboratory (80081)	6
Elective courses (student choice, 2 out of 4 courses here below)	12
Master Thesis (including Traineeship,"Tirocinio", 1 ECTS)	12
Elective Courses	
Remote Sensing (80048) (semester 3)	6
Project Management for Energy Production (86666) (semester 3)	6
Advanced Propulsion Systems for low Environmental Impact (86665) (semester 4)	6
Power Systems Simulation and Optimization (86667) (semester 4)	6

The MCI EP2E MSc course is organized according to the following teaching modules, as also described in the MCI web site (https://www.mci.edu/en/study/master/environmental-process-energy-engineering).

MCI/EP2E semester 1	
Course Title	***ECTS***
Process Control	2
Reaction Engineering	3
Heat and Mass Transfer	4
Matlab in Engineering	1
Revision Course in Process Technology	1
Legal Aspects of Engineering	1
Business Economics	3
Elective Energy Engineering	
Energy Storage	1.25
Electrochemical Energy Storage and Conversion	1.25
Elective Plant Design and Operations	
Strength of materials	2.5

Elective Environmental Engineering	
Waste Engineering	1.25
Noise Control	1.25
Elective Chemical Engineering	
Polymer Chemistry	2.5
MCI/EP2E semester 2	
Academic Writing	1
Design of Experiments	2
Ethics	1
Literature Seminar	1
Conceptual Process Design & Simulation	4
Plantwide Control	3
Apparatus Engineering	3
Solid Process Engineering – Particle Technology	3
Advanced Thermal Process Technology	2
Elective Energy Engineering	
Power and Smart Grids	2.5
Energy Conversion Technologies and Synthetic Bio-Fuels	2.5
Elective Plant Design and Operations	
Process Integration	1
Plant Automation	3
Materials Handling and Logistics	1
Elective Environmental Engineering	
Groundwater, Advanced Water Engineering and Reuse	4
Life Cycle Assesment	1
Elective Chemical Engineering	
Advanced Industrial Chemistry	2.5
Advanced Catalysis	2.5
MCI/EP2E semester 3	
Plant Safety	2
Plant Engineering	3
Computational Fluid Dynamics - Theory	2
Computational Fluid Dynamics - Simulation	3
Interdisciplinary Project	10
Elective Energy Engineering	
Renewable Energy Systems	2.5
Heating and Cooling Technology	2.5
Elective Plant Design and Operations	
Plant Design Project	5
Elective Environmental Engineering	
Membrana Technology	2.5
Flow and Transport in Environmental Engineering	2.5
Elective Chemical Engineering	
Chemical Technology Seminar	1
Chemical Product Design and Development	1
Industrial Scale-Up	2
Field Trip	1
MCI/EP2E semester 4	
Master Seminar	5
Master Thesis	25

V COURSE SYLLABI, PROFESSOR IN CHARGE AND OTHER INFORMATION RELATED SPECIFIC COURSE

The course syllabus, professors, exam organization, references, course schedules are information available at UNIGE and MCI web sites:

www.en2.unige.it

https://www.mci.edu/en/study/master/environmental-process-energy-engineering

VI ROAD MAP FOR THE EM3ES DOUBLE DEGREE PROGRAM

(List of courses taken at Registration University and Hosting University)

Road map of courses taken by EM3ES students registered at UNIGE

EM3ES semester 1 for UNIGE students	
Course Title	***ECTS***
Heat Transfer (66382)	6
Mathemathical Modeling for Energy Systems (86630)	6
Chemical Processes and Technologies (86631)	6
Industrial Fluid-dynamics (86641)	6
Combustion Processes and Emissions (80054)	6
EM3ES semester 2 for UNIGE students	
Chemical and Biochemical Processes and Plants for Energy (72562)	6
Power Systems Modeling and Control (65887)	6
Power Systems Management (86638)	6
Power Plants for Energy Conversion (80053)	6
Industrial Plants for Energy (86644)	6
EM3ES semester3 for UNIGE students	
Plant Safety	2
Plant Engineering	3
Computational Fluid Dynamics - Theory	2
Computational Fluid Dynamics - Simulation	3
Interdisciplinary Project	10
Energy Engineering	
Renewable Energy Systems	2.5
Heating and Cooling Technology	2.5
Chemical Engineering	
Chemical Technology Seminar	1
Chemical Product Design and Development	1
Industrial Scale-Up	2
Field Trip	1
EM3ES semeste4 for UNIGE students	
Academic Writing	1
Design of Experiments	2
Ethics	1
Literature Seminar	1
Conceptual Process Design & Simulation	4
Plantwide Control	3
Apparatus Engineering	3
Solid Process Engineering – Particle Technology	3
Advanced Thermal Process Technology	2
Elective Energy Engineering	
Power and Smart Grids	2.5
Energy Conversion Technologies and Synthetic Bio-Fuels	2.5

Elective Chemical Engineering	
Advanced Industrial Chemistry	2.5
Advanced Catalysis	2.5
EM3ES semester 5 for UNIGE students	
Master Seminar	5
Jointly supervised Master Thesis and Traineeship (“Tirocinio“, 1ECTS)	12
TOTAL	**137**

Road map of courses taken by EM3ES students registered at MCI

EM3ES semester 1 for MCI students	
Course Title	***ECTS***
Process Control	2
Reaction Engineering	3
Heat and Mass Transfer	4
Matlab in Engineering	1
Revision Course in Process Technology	1
Legal Aspects of Engineering	1
Business Economics	3
Elective Energy Engineering	
Energy Storage	1.25
Electrochemical Energy Storage and Conversion	1.25
Elective Plant Design and Operations	
Strength of materials	2.5
Elective Environmental Engineering	
Waste Engineering	1.25
Noise Control	1.25
Elective Chemical Engineering	
Polymer Chemistry	2.5
EM3ES semester 2 for MCI students	
Academic Writing	1
Design of Experiments	2
Ethics	1
Literature Seminar	1
Conceptual Process Design & Simulation	4
Plantwide Control	3
Apparatus Engineering	3
Solid Process Engineering – Particle Technology	3
Advanced Thermal Process Technology	2
Elective Energy Engineering	
Power and Smart Grids	2.5
Energy Conversion Technologies and Synthetic Bio-Fuels	2.5
Elective Plant Design and Operations	
Process Integration	1
Plant Automation	3
Materials Handling and Logistics	1

Elective Environmental Engineering	
Groundwater, Advanced Water Engineering and Reuse	4
Life Cycle Assesment	1
Elective Chemical Engineering	
Advanced Industrial Chemistry	2.5
Advanced Catalysis	2.5
EM3ES semester 3 for MCI students	
Models and Methods for Energy Engineering (86662)	6
Energy and Buildings (86655)	6
Fuel Cells and Distributed Generation Systems (86660)	6
Solar and Geothermal Energy (80043)	6
1 elective course	6
EM3ES semester 4 for MCI students	
Hydro, Wind and Micro-gas Turbines (86661)	6
Energy Laboratory (80081)	6
Power Systems Modeling and Control (65887)	6
Power Systems Management (86638)	6
1 elective course	6
EM3ES semester 5 for MCI students	
Master Seminar	5
Jointly supervised Master Thesis	25
Elective Courses	
Remote Sensing (80048) (semester 3)	6
Project Management for Energy Production (86666) (semester 3)	6
Advanced Propulsion Systems for low Environmental Impact (86665) (semester 4)	6
Power Systems Simulation and Optimization (86667) (semester 4)	6
TOTAL	**150**

All students need to complete MCIs course "Master Seminar" (5 ECTS). For Double Degree students this course takes place online and in semester 5 (for regular students this course takes place in semester 4 with attendance requirement).

Master Presentation (Defense Day) will held at both UNIGE and MCI Universities.

Dates to hand in the master thesis at UNIGE (4 attempts):
First attempt = End of March
Second attempt = End of July
Third attempt = End of October
Fourth attempt = End of December

Dates to hand in the Master Thesis at MCI (3 attempts):
First attempt = End of January (Defense day = Beginning or Mid of March)
Second attempt = End of May (Defense day = Mid of July)
Third attempt = End of July (Defense day = Mid or End of September)

EM3ES Agreement - Annex 2
Selection Criteria

I – SELECTION PROCEDURE

Students will upload her/his application in the website provided by the institutions.
Applicant students must upload their application forms and all the required documents no later than February (academic year I). In any case to be admitted to the EM3ESB Master course, students must obtain their first level degree (bachelor or BAC+3) no later than December 31st (academic year I).
Students who have successfully completed 24 ECTS from the first semester at the Registration University are eligible to apply. To move to the Hosting University students have to successfully complete 60 ECTS of the first two semesters at the Registration University.

MCI and UNIGE will evaluate all the EM3ESB candidates locally and will communicate to the partner the list of students and marks.

Each Academic Year up to 2 students for each University will be selected to be admitted in the EM3ESB.

Selection results will be published in March/April (in any case in time for Erasmus+ mobility selection).

II- FORMAL CRITERIA FOR ADMISSION TO THE COURSE:

A. Academic potential (class rank and Grade Point Average): max. 40
B. English level: max. 15
C. Motivation letter: max. 5
D. Other aspects of Curriculum Vitae (multiple degree, work experience, professional qualification): max. 5

III- RULES APPLIED BY THE SELECTION COMMETTEE IN THE EVALUATION:

A. Concerning the Academic potential (max. 40):

Criteria to be applied (one or more from those here below)		
Mark EM3ESB	MCI Marks	UNIGE Marks
35 to 40	1	29≤M≤30L
25 to 35	2	26≤M≤28
20 to 25	3	21≤M≤25

- Students having less than 20 in this criterion will not be selected.

B. English level (max. 15):

i- A student whose native language is English will obtain 15.
ii- A student whose study was in English during classes previous to present MSc): will also take 15.

iii- A student who has the English proficiency with marks equal to the specified minimum: IELTS 6,5; TOEFL: 220 CBT, 550 PBT, 80 IBT; TOEIC: 780): will take 10/15, the mark will be increased in terms of the difference with this minimum limit. Students can obtain 15 if the mark of English test is significantly higher than the required minimum level at Registration University.
iv- A student whose university study was partially in English: will take 10/15 under the condition that his marks in the English language course in his university studies are acceptable.
v- A student with different English certification form the above listed ones can have as maximum 8/15.
vi- A student without any English certification will get 0/15 and not to be qualified for EM3ESB.
C- Concerning the motivation letter:

Standard motivation letter will be evaluated 3. The point 5 will be given for good letters. In this evaluation the EM3ESB committee do not pay attention to the English quality of the letter text.

D- Concerning the CV

Standard student CV will obtain 3, the mark 5 will be given if the student had some unusual performances, including prizes, knowledge of the Hosting University language, participating competition, etc. The quality of the institution or the academic performance will not be taken into account here.