

EMESB Agreement, Annex 2, Study Programme

(20 june 2019)

I – SUBJECT

This document deals with the Study Programme of the EMESB agreement, academic years 2016-2017 to 2018-2019.

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 EMESB.

Student mobility is in the second academic year of the registration university and it is related to the courses held at the hosting university of such an academic year.

USMB students can attend UNIGE courses in the first (Fall) semester of UNIGE second year.

UNIGE students can attend USMB courses in the first (Fall) semester of USMB second year.

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 USMB and one by UNIGE. In any case a representative of the Hosting University will be part (in person or as video phone call) of the Master thesis committee at the Registration University where the thesis will be defended.

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.

The grading system conversion agreed between USMB and UNIGE is described in the following Table.

USMB Local mark	20	16	15	14	13	12	11	10	M<10 Failed
UNIGE Local mark	30	30	29	28	27	25	22	18	M<18 Failed

IV FIRST AND SECOND YEAR ORGANIZATION

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)

FIRST YEAR – 1st (Fall) SEMESTER	ECTS	SECOND YEAR– 1st (Fall) SEMESTER	ECTS
Heat Transfer (66382)	6	Models and Methods for Energy Engineering (86662)	6
Mathematical Modeling for Energy Systems (86630)	6	Energy and Buildings (86655)	6
Chemical Processes and Technologies (86631)	6	Fuel Cells and Distributed Energy (86660)	6
Industrial Fluid-dynamics (86641)	6	Solar and Geothermal Energy (80043)	6
Combustion Processes and Emissions (80054)	6	Elective course	6
FIRST YEAR – 2nd (Spring) SEMESTER		SECOND YEAR – 2nd (Spring) SEMESTER	
Chemical and Biochemical Processes and Plants for Energy (72562)	6	Hydro, Wind and Micro-gas Turbines (86661)	6
Power Systems Modeling and Control (65887)	6	Energy Laboratory (80081)	6
Power Systems Management (86638)	6	Master thesis project (11)+Training and Orientation(1)	12
Power Plants for Energy Conversion (80053)	6		
Industrial Plants for Energy (86644)	6	Elective courses	6 - 12
		ELECTIVE COURSES, SECOND YEAR (student choice, 2 out of 4 among the ones here below)	
		Remote Sensing (80048, 1st semester)	6
		Propulsion Systems for low Environmental Impact (86665, 2nd semester)	6
		Project Management for Energy Production (86666, 1st semester)	6
		Power Systems Simulation and Optimization (86667, 2nd semester)	6
Total ECTS=60		Total ECTS=60	

The USMB ESB MSc course is organized according to the following teaching modules, as also described in the USMB web site (<http://formations.univ-smb.fr/fr/catalogue/master-XB/sciences-technologies-sante-STS/master-energetique-thermique-m1-m2-program-master-energetique-thermique.html>)

FIRST YEAR – 1st (Fall) SEMESTER	ECTS	SECOND YEAR– 1st (Fall) SEMESTER	ECTS
UE1 : Mathematics	7	UE1 : Solar Energy, Storage	8
Numerical methods	3	ENER 914 Solar thermal energy	4
Data analysis and reliability of numerical models	4	ENER 915 Solar photovoltaic	4
UE2 : Building Science and Technology	11	UE2 : Building and renewable energies	7
Heat transfer in buildings	3	ENER 901-ESB District heating and smart grids /practical work	4
HVAC	5	ENER 902-ESB Energy issues, labels, regulation and transient simulations	3
Combustion	3	UE3 : Modeling and optimization	8
UE3 : Experimental methods and Bibliography research	12	ENER 911 Advanced building modeling (heat and mass transfer)	4
ESB Measurements (flows, temperature, pressure...) and experimental methods (database)	4	ENER 912 Numerical tools (CFD, systems, optimization)	4
Thematic bibliographic work (Self-study)	8	UE4 : Project	7
FIRST YEAR – 2nd SEMESTER		PROJ 901-ESB Technical or R&D Project	7
UE1 : Energy	12	SECOND YEAR – 2nd SEMESTER	
Power engineering (thermodynamics and advanced heat transfers)	7	UE1 : Internship	30
Fluid engineering applied to energy (hydraulic and marine)	5	Master thesis project	30
UE2 : Systems	8		
Control for building applications	4		
Innovative energy systems (Fuel cell, CHP)	4		
UE3 : Project	10		
ESB Group research project	10		
Total ECTS=60		Total ECTS=60	

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 USMB and En2 web sites

<https://www.univ-smb.fr>
www.en2.unige.it