BARCELONA SCHOOL OF CIVIL ENGINEERING (UPC) - HEC PARIS

Master in Civil Engineering: itinerary for students with BsC Civil Engineering background

SPECIALIZATION IN COMPUTATIONAL ENGINEERING

1st year	**UPC**	Student must enroll 60 ECTS at Escola de Camins
	30 ECTS	M2. First semester. Mandatory Courses: Computational eng, Structural Eng., Water Eng., Ground Eng., Transportation management and planning
	10 ECTS	M3. Specialization in Computational Engineering. Mandatory specialization subjects taught in the second semester: *Numerical Models in Civil and Sstructural Engineering* and *Machine Learning and Models for Decision Making*
	15-20 ECTS	M3. Specialization in Computational Engineering. Electives from other specializations.
	0-15 ECTS	M1. Professional stage (max. 15 ECTS to enroll in UPC)
2nd year	**HEC PARIS**	Course in general Management - 60 ECTS **(only displayed subjects to be recognized at UPC)**
(optional gap year)		
3rd year	**HEC PARIS**	Specialization Phase. Management. 40 ECTS in courses (10 OBs especialitat) + 20 ECTS Research paper, 60 ECTS in total **(only displayed subjects enrolled at UPC)**
	0-30 ECTS	M Professional stage. Student must enroll (30- X) ECTS, where X is the number of credits of Professional stage done at UPC

Site university	Semester	University where course is undertaken	Course	Academic track Escola de Camins	ECTS at host institution to be recognized	First year. Common track	Business Performance Management	Company Law	Corporate Finance	Decision and Data Modeling	Financial Accounting	Financial Economics	Financial Markets	Leading Organizations	Marketing	Methods of Cost Analysis	Operations & Supply Chain Management	Statistics	Strategy	Electives	OPTIONAL GAP YEAR	Second year. Specialization	Strategic Management	International Finance (Double Degree options: Tsinghua and University of Wisconsin)	Marketing	Quantitative Economics and Finance (joint program with Ecole Polytechnique, ENSAE, ENS Cachan and Paris Sud University)	Managerial and Financial Economics (exchange opportunities with Stockholm School of Economics, Luigi Bocconi University and St.Gallen University)	Corporate Financial Management (exchange opportunities with St.Gallen University, Stockholm School of Economics, Copenhagen Business School, London School of Economics, Bocconi University and Vienna University of Economics and Business)	Entrepreneurship (requires French proficiency; also called "Majeure Entrepreneurs")	Digital (requires French proficiency)	Project Management (requires French proficiency; also called "Majeure Management de Grands Projets")	Research paper
							3	3	6	3	6	3	3	3	6	3	6	3	6	6	60		40								20
UPC	**Q1** (30 ECTS ME courses)	UPC	Computational Engineering	6	-																										
		UPC	Structural Engineering	6	-																										
		UPC	Water Engineering	6	-																										
		UPC	Geomechanical and Geotechnical Engineering	6	-																										
		UPC	Planning and Management of Transportation	6	-																										
UPC	**Q2** (Mandatory/electives of especialization)	UPC	Numerical Models in Civil and Structural Engineering (ME)	5	-																										
		UPC	Machine Learning and Models for Decision Making (ME)	5	-																										
		UPC	Elective 1	5																											
		UPC	Elective 2	5																											
			Elective 3	5																											
		UPC	Elective 4 (optional)	5																											
			TOTAL	60																											
		UPC or HEC	Electives or professional stage (max. 15 ECTS at UPC)	15	**15**			3						3					3	6	15										
HEC	**Q3-Q4** (stage and Mandatory/electives of especialization)	HEC	Electives or Professional stage	15	**15**				6						6	3					15										
		HEC	Models and Tools for Project and Financial Management (ME)	5	**5**		1,5				1,5	1,5	0,5																		
		HEC	Computational Engineering for Design and Operation (ME)	5	**5**												2,5		2,5												
HEC	**Q5-Q6** (TFM)	HEC	Master Thesis (to be defended at UPC)	25	**20**																										20
Total				65	60																										

1) First year of MiM (Master in Management: 60 ECTS general courses). **Only displayed subjects to be recognized at UPC**

2) Sencond year of MiM (Master in Management: 40 ECTS in courses + 20 ECTS Research paper, 60 ECTS in total). **Only displayed subjects enrolled at UPC**

Mandatory of especialization (ME)

The itinerary includes "other related disciplines" track as alternative to professional stage (subjects as displayed in the table).

BARCELONA SCHOOL OF CIVIL ENGINEERING (UPC) - HEC PARIS

Master in Civil Engineering: track for students with BsC Publick Works Engineering ackground

SPECIALIZATION IN COMPUTATIONAL ENGINEERING

1st year **UPC** Student must enroll 60 ECTS at Escola de Camins:
30 ECTS Further training in science and technology
30 ECTS Application of advanced science and technology

2nd year **HEC PARIS** Course in general Management - 60 ECTS **(only displayed subjects to be recognized at UPC)**
(optional gap year)
3rd year **HEC PARIS** Specialization Phase. Management. 40 ECTS in courses + 20 ECTS Research paper, 60 ECTS in total **(only displayed subjects enrolled at UPC)**

Site university	Semester	University where course is undertaken	Course	Academic track Escola de Camins	ECTS at host institution	First year. Common track	Business Performance Management	Company Law	Corporate Finance	Decision and Data Modeling	Financial Accounting	Financial Economics	Financial Markets	Leading Organizations	Marketing	Methods of Cost Analysis	Operations & Supply Chain Management	Statistics	Strategy	Electives	OPTIONAL GAP YEAR	Second year. Specialization	Strategic Management	International Finance (Double Degree options: Tsinghua and University of Wisconsin)	Marketing	Quantitative Economics and Finance (joint program with Ecole Polytechnique, ENSAE, ENS Cachan and Paris Sud University)	Managerial and Financial Economics (exchange opportunities with Stockholm School of Economics, Luigi Bocconi University and St.Gallen University)	Corporate Financial Management (exchange opportunities with St.Gallen University, Stockholm School of Economics, Copenhagen Business School, London School of Economics, Bocconi University and Vienna University of Economics and Business)	Entrepreneurship (requires French proficiency; also called "Majeure Entrepreneurs")	Digital (requires French proficiency)	Project Management (requires French proficiency; also called "Majeure Management de Grands Projets")	Research paper
							3	3	6	3	6	3	3	3	6	3	6	3	6	6	60		40									20
UPC	Q1 (30 ECTS OBs-mandatory courses)	UPC	Mechanics of Continua	9	0																											
		UPC	Numerical Modelling	9	0																											
		UPC	Structural Analysis	7,5	0																											
		UPC	Hydraulic Infrastructure	4,5	0																											
UPC	Q2 (30 ECTS OBs-mandatory courses)	UPC	Computational Engineering	6	0																											
		UPC	Structural Engineering	6	0																											
		UPC	Water Engineering	6	0																											
		UPC	Geomechanical and Geotechnical Engineering	6	0																											
		UPC	Planning and Management of Transportation	6	0																											
HEC[1]	Q3-Q4 (Mandatory and electives of especialization)	HEC	Electives	15	20															20												
		HEC	Machine Learning and Models for Decision Making (ME)	5	5																		2		3							
		HEC	Numerical Models in Civil and Structural Engineering (ME)	5	5																									3	2	
		HEC	Models and Tools for Project and Financial Management (ME)	5	5		1,5				1,5	1,5	0,5																			
		HEC	Computational Engineering for Design and Operation (ME)	5	5												2,5		2,5													
HEC[2]	Q5-Q6 (TFM)	HEC	Master Thesis (to be defended at UPC)	25	20																											20
Total				60	60																											

1) First year of MiM (Master in Management: 60 ECTS general courses). **Only displayed subjects to be recognized at UPC**
2) Sencond year of MiM (Master in Management: 40 ECTS in courses + 20 ECTS Research paper, 60 ECTS in total). **Only displayed subjects enrolled at UPC**