



Ecole Centrale de Lyon

First year course list

MATTER – MATERIALS teaching unit		138 hours ECTS credits : 9
Core courses		
MMb1.1	Structural Materials	26 hours
MMb1.2	Microscopic Physics	26 hours
MMb1.3	Chemistry and matter	26 hours
MMb1.4	Synthesis	4 hours
In-depth courses: one per student		20 hours
MMA1.1	Natural materials	
MMA1.2	Mechanical physics	
MMA1.3	Non condensed matter	
MMA1.4	Aerospace and car materials	
MMA1.5	Characterization of materials	
MMA1.6	Quantum physics	
MMA1.7	Surface thermodynamics	
MMA1.8	Molecular chemistry	
Transfer modules		
MMt1.1	Matter - Photons	20 hours
MMt1.2	Metals	16 hours
MECHANICS – ENERGETICS teaching unit		178 hours ECTS credits : 9
Core courses		
MEb1.1	Solid mechanics 1	32 hours
MEt1.1	Solid mechanics 1 (practical classes)	16 hours
MEb1.2	Fluid mechanics	32 hours
MEt1.2	Fluid mechanics (practical classes)	8 hours
MEb1.3	Design and manufacturing in mechanical engineering	24 hours
MEt1.3	Technological analysis and product design	20 hours
MEt1.4	Product design and manufacturing project	20 hours
In-depth courses: one per student		24 hours
MEa1.1	Acoustics	
MEa1.2	Computational fluid mechanics : an introduction	
MEa1.3	Tools and methodology for mechanical design	
MEa1.4	Aerodynamics and hydrodynamics	
MEa1.5	Vibration of mechanical systems	
MEa1.6	Mechanics of materials : an introduction	
MEa1.7	Mechanics - Robotics	
ELECTRICAL ENGINEERING teaching unit		134 hours ECTS credits : 9
Core courses		
GEb1.0	Introduction to the disciplines of the Electronics – Electrical Engineering – Automatic Control department	2 hours
GEb1.1	Linear control systems	28 hours
GEb1.2	Signal processing	22 hours
GEb1.3	Electronic systems	24 hours
GEb1.4	Power systems and electrical energy conversion	24 hours
Transfer modules		
GET1.1	Practicals : Control Systems	6 hours
GET1.2	AD & DA conversion in audio systems	8 hours
GET1.3	Data Acquisition	6 hours
GET1.4	Control and electric drive	8 hours
GET1.5	Induction heating	6 hours

MATHEMATICS & COMPUTER SCIENCE teaching unit		120 hours ECTS credits : 9
Core courses		
LSb1.1	Partial differential equations, theoretical and numerical analysis 1	32 hours
LSb1.2	Probability theory, Statistics	32 hours
LSb1.3	Computer Science 1	24 hours
In-depth courses: one per student		16 hours
LSa1.1	Introduction to Mathematical Finance	
LSa1.2	Complex analysis	
LSa1.3	Differential calculus, optimization	
LSa1.4	Gateway to advanced course (Computer Science)	
LSa1.5	Client-side web technology	
LSa1.6	Computer science project	
Transfer module		
LSt1.1	Algorithm and data structures lab	8 hours
ECONOMICS AND SOCIAL SCIENCES FOR ORGANISATIONS teaching unit		60 hours ECTS credits : 7
Core courses		
SEb1.1	Macro-economics	30 hours
SEb1.2	Business administration – management science	30 hours
THE ENGINEERING PROFESSION teaching unit		335 hours ECTS credits : 14 (of which 3 for the Industrial Placement)
Information gathering to build a professional project		
PRt1.1	Seminars (5)	5 hours
PRt1.2	Industrial visits (2)	8 hours
Working together		
PRt1.3	Study Project : group work over 15 months	100 hours
PRt1.4	Human and social relationships	12 hours
PRb1.1	Project Management	10 hours
PRt1.5	Physical education and sport	60 hours
Applying knowledge in a company		
PRt1.6	Industrial Placement : 4 weeks	140 hours
MODERN LANGUAGES teaching unit		60 hours minimum ECTS credits : 3 per language
An1	English	60 hours
Al1	German	60 hours
Es1	Spanish	60 hours
It1	Italian	60 hours
Ru1	Russian	60 hours
Ch1	Chinese	120 hours
Ja1	Japanese	120 hours
Po1	Brazilian Portuguese	60 hours
Fr1	French as a foreign language	60 to 240 hours

