
















Polytech Marseille engineering school – Mechanics and Energy department















General information:

- Doing engineering school is the same as doing the last year of a bachelor then a Master. In France, it has a special value, while being recognized as a normal Master's in the rest of the world;
- Semesters are numbered from 5 (first semester of the third year of the Bachelor, beginning in September and ending in January) to 9 (first semester of the Master's). The 10th semester is dedicated to a 6-month internship (no Master's thesis but an internship report has to be written)
- Tracks/Options are different possibilities. One student cannot follow more than one track during a semester. The total number of ECTS for a semester with a track is 30, only if the student takes all the common courses, + 1 track.





















PolytechMarseille - Mechanics & Energy
BACHELOR, 3rd Year - 1st Semester (S5) [JME5ST0]

UE	Course	ECTS	Language
JME5U1	MECHANICS AND ENERGY: FUNDAMENTALS	13	
	Continuum Mechanics		
	Thermodynamics		
	Elasticity-Strength of Materials		
	Introduction to Fluid Mechanics		
	Practicals		
JME5U2	TOOLS FOR THE ENGINEERS	11	
	Mathematics for Engineering I		
	Algebra		
	Information and Communication Technologies		
	IT for Engineering		
	Introduction to CAD and BIM		
	Measurement: Pressure, Flow rate, Temperature		
JME5U4	LANGUAGES AND SOCIAL SCIENCE, HUMANITIES, ECONOMICS, LAW I	6	
	English		
	TOEIC		
	MOUV project (Openness project with interdisciplinary teams)		
	Intercultural management		
	Organization and operation of the companies		
	Numerical responsibility		







PolytechMarseille - Mechanics & Energy
BACHELOR, 3rd Year - 2nd Semester (S6) [JME6ST0]

UE	Course	ECTS	Language
JME6U1	ENERGETICS	6	
	Introduction to Heat Transfer Thermodynamics Machines Practicals		
JME6U2	MECHANICS	10	
	Mechanics and Real Fluids		
	Mechanics of Real Fluids		
	Optics and Acoustics		
	Solid and Fluid materials Practicals		
JME6U3	TOOLS FOR THE ENGINEERS	5	
	Numerical Methods		
	Scientific Calculation and programming Technology		
	Mathematics for Engineering II		
	Automation		
JME6U4	LANGUAGES AND SOCIAL SCIENCE, HUMANITIES, ECONOMICS, LAW II	6	
	English		
	TOEIC		
	MOUV project (Openness project with interdisciplinary teams)		
	Corporate financial management Professional Personal project I Sustainable Development and Societal Responsibility		
JME6U5	WORK PLACEMENT I (Internship)	3	




PolytechMarseille - Mechanics & Energy
MASTER, 1st Year - 1st Semester (S7) [JME7ST0]

UE	Course	ECTS	Language
JME7U1B	ENERGETICS: FUNDAMENTALS	12	
	Conduction		
	Convection		
	Radiation		
	Phase Change		
	Semi-transparent media		
	Combustion I		
	Practicals		
JME7U2B	FLUID MECHANICS	8	
	Compressible Fluid Mechanics		
	Hydraulics and Aeraulics		
	Practicals		
JME7U3B	TOOLS FOR THE ENGINEERS	6	
	Computing Tools for Engineering I: Matlab		
	Computing Tools for Engineering II: VisualBasic		
	Process Control		
	Signal Processing		
JME7U5	LANGUAGES AND SOCIAL SCIENCE, HUMANITIES, ECONOMICS, LAW III	4	
	English		
	TOEIC		
	Challenge S7		
	Commercial management and marketing		
	Quality Management		
	Project Management		







PolytechMarseille - Mechanics & Energy
MASTER, 1st Year - 2nd Semester (S8) [JME8ST0]

UE	Course	ECTS	Language
JME8UE1	ENERGY COMPONENTS AND SYSTEMS Energy Systems Heat Exchangers Energy Transition Solar Energy	4	
JME8UE2	ENERGY EFFICIENCY Building energetics and regulations Heating, Ventilation and Air Conditioning Thermal Simulation of Buildings	4	
JME8UE3	MODELLING AND SIMULATION IN MECHANICS AND ENERGY Numerical method for heat transfers Flow Simulation Turbulence Mechanics of granular media Numerical simulation of industrial systems	8	
JME8UE4	DESIGN OFFICE AND RESEARCH PROJECT Design office TAPIR: one week doing research with the teachers	4	
JME8UE5	LANGUAGES AND SOCIAL SCIENCE, HUMANITIES, ECONOMICS, LAW IV English TOEIC Responsible Management Innovation and Entrepreneurship Professional Personal Project II	4	
JME8U6	WORK PLACEMENT II (Internship)	6	


PolytechMarseille - Mechanics & Energy
MASTER, 2nd Year - 1st Semester (S9) [JME9ST0] – Part 1

UE	Course	ECTS	Language
JME9U1	MECHANICS AND ENERGY Nuclear Engineering Industrial Processes (visits) and high temperature materials Finite Elements Modelling Methods and Decision Support Tools Life Cycle Analysis	8	
JME9U2	LANGUAGES AND SOCIAL SCIENCE, HUMANITIES, ECONOMICS, LAW V English TOEIC	3	
JME9U3	TAI: ENDING PROJECT WITH INDUSTRIAL APPLICATION TAI: Ending project with industrial application	3	
OPTIONNAL TRACKS TO BE CHOSEN: 1 out of 3 (see next page)			

PolytechMarseille - Mechanics & Energy
MASTER, 2nd Year - 1st Semester (S9) [JME9ST0] – Part 2

JME9U4A	<p style="text-align: center;">OPTION/TRACK 1: INDUSTRIAL AND NATURAL RISKS I</p> <p style="text-align: center;">Industrial Security Safety of Operation Explosive Materials, Explosions Combustion II Simulation of Detonation Waves Radiation, Monte-Carlo Methods and Flow</p>	8	
JME9U4B	<p style="text-align: center;">OPTION/TRACK 1: INDUSTRIAL AND NATURAL RISKS II</p> <p style="text-align: center;">Propagation of Wildfires and “Small World” Approach Compartmented fires in urban areas Combustion III Simulation of Fires Natural Risks</p>	8	
JME9U5A	<p style="text-align: center;">OPTION/TRACK 2: ENERGY PRODUCTION AND DISTRIBUTION</p> <p style="text-align: center;">Wind Energy and Tidal Energy Waste and Biomass Valorization Fuel Cells and Geothermal Energy Energy Storage Energy distribution network and Markets</p>	8	
JME9U5B	<p style="text-align: center;">OPTION/TRACK 2: OPTIMIZATION OF ENERGY SYSTEMS</p> <p style="text-align: center;">Thermal metrology, processes Dynamics of Energy Systems Heat Exchangers II Methods for the Energy Optimization Sustainable, Bioclimatic and Energy Positive Buildings</p>	8	
JME9U6A	<p style="text-align: center;">OPTION/TRACK 3: ADVANCED NUMERICAL MODELING IN FLUID MECHANICS AND HEAT TRANSFERS I</p> <p style="text-align: center;">Incompressible Fluid Flow I Two-phase flows Interface Tracking method and Algorithm Thermo-Mechanics Instability in Fluid Mechanics: computations (Ritchmyer-Meshkov) High Performance Computing I</p>	8	
JME9U6B	<p style="text-align: center;">OPTION/TRACK 3: ADVANCED NUMERICAL MODELING IN FLUID MECHANICS AND HEAT TRANSFERS II</p> <p style="text-align: center;">Incompressible Fluid Flow II Numerical Modelling of Instabilities Multiphase flow: Gas-Particles High Performance Computing II: parallel computing Finite Volume Method: 1D to multiD</p>	8	

PolytechMarseille - Mechanics & Energy
MASTER, 2nd Year - 2nd Semester (S10) [JME10ST0]

UE	Main course	ECTS	Language
JME10U1	WORK PLACEMENT III (Internship)	30	 / 