

FEMDP in Embedded Systems

Topic	No. of hours
Semester I	
Project-based Learning IT <ul style="list-style-type: none"> • DBMS: relational and object models, database schema, queries • Software Engineering • WEB architecture: client server, communication protocols • HMI: ergonomics, dynamic contents generation, formatting 	180 hrs
Network Fundamentals <ul style="list-style-type: none"> • Network communication • Layer approach • OSI model • TCP/IP model • Network devices • Network addressing models • Communication channel 	45 hrs
Signal Processing <ul style="list-style-type: none"> • Frequency analysis: FFT • Digital Filtering: filters, linear prediction • Interpolation, Decimation 	25 hrs
Java Programming	50 hrs
Management Training <ul style="list-style-type: none"> • Economic Principles • Intercultural relations • Corporate organization • International sales • Communication, negotiation 	50 hrs
French Language Course	60 hrs
Total	410 hrs

Semester II	
Architecture and VLSI Design <ul style="list-style-type: none"> • Internal architecture of a RISC microprocessor • Digital VLSI circuit design • Labs 	50 hrs
Advanced Operating Systems	25 hrs

<ul style="list-style-type: none"> • Multitask system, process and task scheduler • Memory management • File system 	
Computer Architecture <ul style="list-style-type: none"> • Buses - the address decoding • Interruptions - the start of a system • Exchanges on DMA mode • Cache memory • Virtual memory • Introduction to DSP • Labs • Microcontroller and power consumption optimization 	25 hrs
System Programming <ul style="list-style-type: none"> • Multitask system, process and task scheduler • Memory management • File system 	25 hrs
Project and Introduction to Research <ul style="list-style-type: none"> • The project is composed of a case study. The students will be called upon to use the knowledge, design techniques and tools that they learnt through their course. Students interested in research can join one of ISEP's research team to work directly with faculty members 	60 hrs
Management Training <ul style="list-style-type: none"> • Supply and Demand • Firms and Markets • The Government and the Economy • Macroeconomics: Introduction • Monetary and Fiscal Policy • The Open Economy 	50 hrs
French + English Language course	(60+25) hrs
Total	320 hrs

Semester III	
Automatic Control <ul style="list-style-type: none"> • System model • State space • Optimum command theory • States representation • Consideration of random phenomena 	25 hrs
Embedded Calculators <ul style="list-style-type: none"> • Embedded bus (1553 bus, CAN bus) • Architecture of distributed computing 	50 hrs

<ul style="list-style-type: none"> • Rapid Prototyping • Internal and external bypass, fullpath systems • Embedded calculators and their design 	
Constraints and Systems Implementation <ul style="list-style-type: none"> • Methodology development cycles and systems • Life cycle of software / hardware • System Simulation • Tools for formal proof • Real-time UML 	50 hrs
Safety and Risk Analysis <ul style="list-style-type: none"> • Failure trees - failure density, failure rate • Reliability of components, boards, systems, life duration, physical failure analysis - methods and tests • Redundant systems, serial, parallel, vote, triplication • Coded systems • Standards on quality, standards on safety • Electromagnetic compatibility of systems 	25 hrs
Reliability <ul style="list-style-type: none"> • Reliability of components • Reliability of cards • Life cycle 	25 hrs
System Implementation <ul style="list-style-type: none"> • Algorithm implementation (complexity, specific architectures) • Standards and low consumption communications modules 	25 hrs
Project <ul style="list-style-type: none"> • French Language Course 	50 hrs
French Language course	60 hrs
Total	310 hrs

Semester IV	
Internship <ul style="list-style-type: none"> • The internship with an international company will enable to display valuable professional skills and attitudes developed during the three academic semesters. ISEP will help you in finding an internship. Companies usually give a stipend to the trainees. 	6 months