Savitribai Phule Pune University

Integrated Circuit and Information Technology Pvt. Ltd.,
ISO 9001 : 2008 CERTIFIED

FEMDP in Software Engineering

Topic	No. of hours
Semester I	
Project-based Learning ET • Analog signal: conditioning processes • Fourier series and transform • Analog and Digital filtering • A-D conversion • Complex digital operators	180 hrs
Network Fundamentals • Network communication • Layer approach • OSI model • TCP/IP model • Network devices • Network addressing models • Communication channel	45 hrs
Systems Security • Information systems security • Web application security • Network security • Introduction to Cryptography • Reliability, performance and redundancy of equipment and service	25 hrs
Advanced Database • Relational model: relational algebra, Normal form, PL/SQL language • Integrity and Transaction • Indexation • Queries Optimization • JDBC	25 hrs
Management Training • Economics principles • Intercultural relations • Corporate organization • International sales • Communication, negotiation	50 hrs

French Language Course	60 hrs
Total	**385 hrs**

Semester II	
Web Technologies • Client-side web application • Server-side web application	50 hrs
Advanced Operating Systems • Multitask system, process and task scheduler • Memory management • File system	25 hrs
System Integration • Scope of system integration, software porting, revamping, reverse engineering, mashup • Integration into Information system: portals and SOA • Integration process and activities • Components evaluation and validation • Open source strategy • Integration tools: ERP, ETL, BPM, BI • Integration patterns, Spring integration, Apache Camel • Test and validation • Development frameworks integration/project	50 hrs
System Programming • Multitask system, process and task scheduler • Memory management • File system	25 hrs
Project and Introduction to Research • 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	50 hrs
Management Training • 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	**335 hrs**

Semester III	
Advanced Algorithms • Complexity classes • Heuristics and approximation algorithms for solutions • Linear programming and search for optimum • Graph Theory (flow problems, shortest path, ...) • Genetic algorithms, Probabilistic algorithms • Data mining and classification • Neural networks	42 hrs
Mobile Development • Introduction to the dedicated services for mobiles: what is mobile technology: everywhere and anytime; services by activity field (transports, health, trade, ...) • Handsets capabilities and market overview • Android development basics • Android tutorials • Project	42 hrs
Advanced Web Technologies • Software infrastructures and Web services: Software factories (Maven); JEE (JSP, servlets, Web services and Web apps, REST architecture) • Enterprise and Information systems architecture: SOA (Service Oriented Architecture) and Web services	21 hrs
IT Security • Data security • Secure Programming • Main application vulnerabilities (Cross scripting (XSS), SQL injection, ...) • Risks associated with new technologies: smart phones, cloud, ...	24 hrs
Distributed Programming and Architecture • Typology of distributed systems • Distributed applications properties: Interoperability, scalability/elasticity, load balancing, consistency, fault tolerance • Communication: Protocols, Topologies • Concurrent programming: Concurrency models, Concurrent application patterns • Distributed algorithms • Distributed application patterns	21 hrs
Programming Languages and Compilers • Lexical Analysis • Syntactic analysis and grammar of a language • Semantic analysis	28 hrs

• Abstract Syntax Trees (AST) • Type Inference • Compilation algorithms • Compilers structures (AST visitors) • AST transformation and code generation	
Project	50 hrs
French Language course	60 hrs
Total	**288 hrs**

Semester IV	
Internship • 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