POLITECNICO DI MILANO

Protocol number: 98943
Protocol date: 25/12/2013
Register number: 1213-1052

DIPLOMA SUPPLEMENT ATTACHMENT

1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1 Family name(s)
BRUNETTI
1.2 Given name(s)
RICCARDO
1.3 Date of birth (day/month/year)
02/12/1989
1.4 Student identification number or code (if available)
787293

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1 Name of the qualification and (if applicable) title conferred (in original language)
Laurea magistrale in ENGINEERING OF COMPUTING SYSTEMS
Dottore magistrale
2.2 Main field(s) of study for the qualification
LM-32 Computer engineering
2.3 Name and status of awarding institution (in original language)
Politecnico di Milano (State university), Piazza Leonardo da Vinci 32, 20133 Milano

POLITECNICO DI MILANO

Description of curriculum

FUNDAMENTALS OF OPERATIONS RESEARCH

Code: 088698
Credits: 5.00
Grade: 27
Date: 07/02/2012

Subject groups

MAT/09 OPERATIONAL RESEARCH

The Programme

The course covers some of the fundamental methods of Operations Research that play a central role in solving a variety of complex decision-making problems. Particular attention is devoted to modeling and algorithmic issues. The main topics include: graph and network optimization, linear programming, integer programming, and an introduction to non linear programming.

ADVANCED COMPUTER ARCHITECTURES

Code: 088768
Credits: 5.00
Grade: 27
Date: 29/02/2012

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

Performance evaluation: an introduction. benchmarks. Memory hierarchies. Cache levels. Performance evaluation, optimization. Hardware supports for virtual memory systems: memory management unit. CPU architectures: Instruction sets, addressing modes. The register-register architecture. Performance evaluation. Introducing CPI. Pipelining: the scalar machine. Ideal performances. Hazards and their impact on compilation. Instruction-level parallelism: Superscalar architectures. Out of order execution, speculation. VLIW architectures. Multiprocessor systems: Taxonomy. Introduction of some specific architectures.

MECHANICS

Code: 088804
Credits: 5.00
Grade: 25
Date: 17/07/2012

Subject groups

ING-IND/13 APPLIED MECHANICS FOR MACHINERY

The Programme

The first part of the course is dedicated to the study of the kinematics of the rigid bodies in plane motion with geometry and algebra of vector solutions and complex numbers method. Arguments such the phenomenon of the contact between solids, as friction are introduced. The second part of the course deal with the dynamics of rigid bodies system in plane motion. General equations of dynamics are discussed and is introduced the D`Alambert principle. Work-Energy relations are treated in the study of the energy flow in a machine with the characterization of engine, transmission and utilizator. Concepts of steady and transient rate, direct and retrograde motion are discussed. For all the arguments the development of various numerical applications are provided.

POLITECNICO DI MILANO

THERMODYNAMICS AND HEAT TRANSFER

Code: 088805
Credits: 5.00
Grade: 23
Date: 28/06/2012

Subject groups

ING-IND/10 TECHNICAL PHYSICS

The Programme

Fundamentals of Thermodynamics: First Law for closed and open systems: internal energy and enthalpy. Second Law for closed and open systems: entropy. External and internal irreversibilities. Applied thermodynamics: turbine, pump, heater and cooler. Analysis of power generation and refrigeration systems. Heat transfer. Conduction: The Fourier law. Unidirectional steady conduction. Extended surfaces (Fins). The lumped capacitance model for unsteady conduction. Convection: basic principles of convection: forced and natural convection. Dimensional analysis and model theory. Correlations in forced and natural convection. Radiation: black body radiation. Heat transfer between black surfaces. Diffuse-gray surfaces. Application: heat exchanger, electronic cooling.

SOFTWARE ENGINEERING 2

Code: 088883
Credits: 5.00
Grade: 26
Date: 14/02/2012

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

The software process and software standards; lifecycles (waterfall, prototype-based, evolutionary/incremental, spiral, agile); standards (ISO2001, SPICE, CMM); software business models, licensing, intellectual properties, open-source software. Requirements engineering. Software technologies: middleware, componenti models (J2EE and .NET). Design patterns. Software architectures and architectural styles. Methods and notations for specification: FSMs, StateCharts, Petri nets, temporal logics, Alloy. Verification and validation: testing and analysis, model checking.

POLITECNICO DI MILANO

DATA BASES 2

Code: 089075
Credits: 5.00
Grade: 26
Date: 21/02/2012

Subject groups
ING-INF/05 DATA PROCESSING SYSTEMS

The Programme
The course aims to prepare software designers on the effective development of database applications. First, the course presents the fundamental features of current database architectures, with a specific emphasis on the concept of transaction and its realization in centralized and distributed systems. Then, the course illustrates the main directions in the evolution of database systems, presenting approaches that go beyond the relational model, like active databases, object systems and XML data management solutions.

BUSINESS INFORMATION SYSTEMS 2

Code: 089084
Credits: 5.00
Grade: 26
Date: 01/07/2013

Subject groups
ING-INF/05 DATA PROCESSING SYSTEMS

The Programme
The course provides a methodology to align IT design choices with business objectives. The course defines the concept of IT architecture, classifies the fundamental IT design choices and maps these choices onto the IT architecture from both a software and an infrastructural point of view. The IT architecture is then discussed for the manufacturing, utilities and financial services industries, by considering both intra- and inter-organizational processes along the industry value chain (e-business). On this basis, the course provides the methodological tools to support the feasibility analysis of IT projects.

FORMAL LANGUAGES AND COMPILERS

Code: 089164
Credits: 5.00
Grade: 19
Date: 10/07/2012

Subject groups
ING-INF/05 DATA PROCESSING SYSTEMS

The Programme
Theorerical concepts and algorithms for language definition and compiler design. Regular expressions, finite automata, and convertion from one model to the other. Context free grammars, ambiguity, structural adequacy. Linguistic abstraction. Syntax directed transaltion, attribute grammars, and semantic analysis. Principles of dat flow analysis for programs.

POLITECNICO DI MILANO

ECONOMICS OF NETWORK INDUSTRIES I

Code: 089174
Credits: 5.00
Grade: 24
Date: 15/02/2012

Subject groups

ING-IND/35 ENGINEERING AND MANAGEMENT

The Programme

Description of a typical network industrial structure. Barriers to entry and market structure in network industries. Definition of natural monopoly. Public intervention: regulatory mechanisms for monopoly. Regulatory techniques for access pricing (one-way and two-way access) and for final pricing. Direct and indirect network externalities. Typology of networks. Universal services policies. Aggregate demand curve for a network good. Definition of critical mass. Coopetition strategy and the rise of standard wars. Technology replacement: switching costs and lock-in effects. Analysis of some classical case studies: VHS-Betamax; IBM-Apple, DVD-DIVX, CD player.

ENTERPRISE DIGITAL INFRASTRUCTURES AND COMPUTER SECURITY

Code: 089231
Credits: 10.00
Grade: 27
Date: 20/07/2012

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

Unavailable

SERVICE TECHNOLOGIES

Code: 090949
Credits: 10.00
Grade: 25
Date: 27/09/2013

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

Unavailable

POLITECNICO DI MILANO

BUSINESS INFORMATION SYSTEMS 1

Code: 089083
Credits: 5.00
Grade: 26
Date: 09/09/2013

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

The course provides a methodology to align IT design choices with business objectives. The course defines the concept of IT architecture, classifies the fundamental IT design choices and maps these choices onto the IT architecture from both a software and an infrastructural point of view. The IT architecture is then discussed for the manufacturing, utilities and financial services industries, by considering both intra- and inter-organizational processes along the industry value chain (e-business). On this basis, the course provides the methodological tools to support the feasibility analysis of IT projects.

DATA MINING AND TEXT MINING (UIC 583)

Code: 089167
Credits: 5.00
Grade: 27
Date: 24/06/2013

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

Machine Learning techniques are very important tools of Data Mining. This course introduces the many relevant algorithms developed in this area that are applied to extract interesting knowledge from data such as decision and regression trees, classification and association rules, clustering, Bayesian networks, etc. The course also illustrates the steps of a typical Data Mining process.

POLITECNICO DI MILANO

COMPLEX SYSTEMS DYNAMICS

Code: 089195
Credits: 10.00
Grade: 29
Date: 21/02/2013

Subject groups

ING-INF/04 AUTOMATICS

The Programme

The basic elements of nonlinear dynamics (stability, bifurcation theory, catastrophes) are presented, in order to provide some tools for the analysis of complex systems. The theoretical notions are illustrated with the aid of examples taken from various fields of science and engineering. The main topics of the course are: Asymptotic behaviors in nonlinear systems: equilibria, cycles, tori, and strange attractors. Liapunov stability. Structural stability. Local and global bifurcations. Catastrophic bifurcations. Numerical methods for bifurcation analysis.
Applications to collective dynamics and to slow-fast systems.

Deterministic chaos: Chaos in signals and systems. Chaotic attractors. Fractal sets and dimensions. "Routes" to chaos. Applications: Chaos in electric circuits. Measurement in chaotic regime of the inertia tensor of vehicles. Chaos and optimal yield in renewable resources. Chaos in economic and financial models. Chaotic time series analysis: Reconstruction of attractors. Computation of invariants. Short term prediction. Applications: Analysis of biomedical data. Control and synchronization of chaotic systems: OGY control. Reduced models: analysis and control of peak-to-peak dynamics. Synchronization. Applications: Optimal vaccination policies for vaccination control. Analysis and control of a marketing model. Secure transmission on a chaotic carrier. Networks and collective dynamics: CNN (Cellular Nonlinear Networks): basic properties. Applications: Image processing. Collective dynamics and spatio-temporal patterns.

TECHNOLOGIES FOR INFORMATION SYSTEMS

Code: 089202
Credits: 5.00
Grade: 30
Date: 01/02/2013

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

Integration of heterogeneous systems, Data Warehousing, Data Mining, Workflow and Groupware, Information Retrieval, Semi-structured Data

POLITECNICO DI MILANO

FINAL EXAMINATION

Code: 089254
Credits: 20.00
Grade: --
Date: 03/12/2013

Subject groups

Unavailable

The Programme

Unavailable

COMPUTER SYSTEMS PERFORMANCE EVALUATION

Code: 090945
Credits: 5.00
Grade: 26
Date: 31/01/2013

Subject groups

ING-INF/05 DATA PROCESSING SYSTEMS

The Programme

The course addresses the problem of capacity planning of computer infrastructures. The topics considered are: performance modelling concepts and techniques, workload and traffic characterization, simulation of users behavior, measurement techniques and tools for end-to-end response time of web applications.

MULTIMEDIA INTERNET APPLICATIONS

Code: 091036
Credits: 5.00
Grade: 30
Date: 28/06/2013

Subject groups

ING-INF/03 TELECOMMUNICATIONS

The Programme

Unavailable