Master of Science
Management in Information Technology

Courses description

Information security management

This course is an introduction to the broad field of information security in the global technological and modern environment – i.e., the internet (cyberspace). The approach of the course is a systemic approach, with the aim of providing a holistic view of the information security field from four different angles:

- "hard" matters (i.e., matters which can be clearly and precisely defined/ the engineering related matters);
- "soft" matters (i.e., matters which are vague, difficult to be isolated and defined, such as those related to relationships between people, organizations and institutions or to compliance with applicable legislation and standards);
- operating in case of emergency situations when functions critical for the performance of an organization and/or of an equipment become unavailable/non-operational and the survival must be ensured;
- the life cycle of a complex system (i.e., design, implementation, maintenance and decommission.

The course will present the main challenges currently faced by the modern information society in cyberspace, including aspects related to legislation and application of law, main technical standards, and best practices guides.

Also, the course will define the limits and limitations of the information security field in the modern information society.

Human Resource Management

The general objectives of the course are forming abilities of university graduates in the field of manufacturing and service activities, able to manage efficiently and effectively scale transformations that supports human capital in terms more strikingly both affirmation of the knowledge society and changes in information technologies.

Assumed specific training objectives are: understanding the issues specific to human resource management, knowledge and application of methodology for planning, recruitment, selection, evaluation, motivation and remuneration in accordance with the socio-economic constraints and opportunities present, the development of a knowledge rennet and a critical attitude by the proper use of human resources in modern technical systems in various fields, cooperation and communication skills training involvement.

Applications and proposed research themes are based on the concept that HR is a critical business capability through which information technology influences firm performance.

Expectations are: design socio-technical structures, job design, job analysis, recruitment and selection management, employee performance evaluation, using modern tools of IT.

Financial Management

This course shows students how finance help them to understand how firms meet their objectives, emphasizing the financial aspects of management decisions. The focus of this course is on explanation of financial tools and techniques, which can be used to help firms maximize value by improving decisions relating to capital structure, capital budgeting, and working capital management. It touches on all areas of finance, including the valuation of real and financial assets, risk management and financial derivates, the trade-off between risk and expected return, and corporate financing and dividend policy.

Advanced Course on Software Engineering

The course focuses on Software Engineering activities that involve especially managers in the IT field: Requirements Elicitation and Specification, Software Quality Assurance, use of metrics for evaluation and prediction of software product and development process quality. During the lectures are analyzed the quality assurance activities in a software development process, software quality standards and models, verification and validation in software processes, different types of software metrics.

In order to familiarize students with software development in a methodological and systematic framework supported by a set of software engineering tools, the course presents the RUP process framework: RUP and "best practices", iterative development in RUP, disciplines – Business Modeling, Requirements, Analysis and Design, Implementation, Testing, Deployment, Configuration and Change Management, Project Management.

During the laboratory classes, the students can work with some of the RUP software engineering tools (which are free from IBM for the academic community): IBM Rational Method Composer, IBM Rational Requisite Pro, IBM Rational Performance Tester and IBM Rational Functional Tester. The students will learn to use these tools in the development of a software project.

Data Mining and Data Warehousing

This course presents technologies, methods and algorithms for Knowledge Discovery in Databases (KDD, also known as Data Mining). The course presents various classes of problems and their specific algorithms: Data Preprocessing, Association Rules and Sequential Patterns, Supervised Learning, Unsupervised Learning, Partially Supervised Learning, Information Integration, Web Usage Mining.
The last part of the course contains an introduction in Data Warehousing and also describes some techniques for Dimensional Modeling and it use in storing data.
Application hours target the understanding, presenting and testing some data mining algorithms, evaluation of their results for different datasets and different parameter values but also some case studies in Data warehousing.

Information Tools for Entrepreneurship and Technological Management

This course develops students' knowledge and skills required to design and implement a technical project in an entrepreneurial spirit, be it as a start-up or in other organizational forms. The first part of the course clarifies the diversity of present-day entrepreneurial practices, familiarizes students with product vision, with assessing current developments in technology – including limitations, trends, and associated opportunities to position a novel solution for an old or new customer need. In the second part of the course, students develop competencies in understanding and managing emotions for themselves and well as in relation to their team collaborators, in time management, in introductory elements of financial planning, and in computer supported collaborative work – including the study of dedicated information solutions. In the third part of the course students are trained in delivering public presentations for a product, in conceptual, ethical and legal issues concerning intellectual property, in branding approaches and techniques, and in market research and marketing.

The course has an important practical dimension, involving students in laboratory activities for all topics under discussion. Students therefore follow the development of a product from design to public presentation of its various stages, exploring multiple facets of such a project through group and interactive activities, through familiarization with multiple information solutions for communication, design and teamwork, and through public presentations of ideas or projects. Students develop their technical skills in working with current, dedicated information tools, as well as their abilities to communicate directly and in front of an audience, and to work in a team.

After finalizing the course, students will be able to assess the opportunity of developing a specific project in its technological context, they will be able to formulate initial estimates for the requirements of starting an entrepreneurial project, and will master the main concepts and information tools needed to carry through such a project.

Business Process Modeling

This course presents the characteristics of workflow (business) processes and workflow management systems and the main steps followed to achieve an informatics model for a business process.

Gradually, will be introduced: the reference architecture of workflow systems, the value and benefits of Business Process Management (BPM), the key terms and concepts in BPM, the principles of BPM and how to apply them, BPM best practices and methodologies, basic business process management and measurement techniques, business process modeling using Petri nets. All these notions will help to understand process architecture, process analysis, process redesign, process improvement, process automation, and organization design - and how to make them work together.

Students will be able to make a business process model based on an informal description (using a dedicated BPM software package), to apply concepts such as case, task, work item, activity, role, organizational unit, resource etc. to analyze a workflow process (validation, verification, and performance analysis) and redesign it in order to improve it.

Marketing Management

This course is designed to develop a strategically thinking on marketing, its concepts and practices. The course relies upon lectures and game simulation of marketing management activities and decisions making. Content: Marketing management – definition, concepts,

process; Knowing the customers; Marketing research; Marketing strategy; Product strategies; Price strategies; Distribution strategies; Retailing; Promotion strategies; Customer Relationship Management; Marketing activities evaluation; Organizing, implementing and controlling marketing activities; International marketing.

Business Policies and Strategies

This course is designed to develop a strategically thinking on businesses, understanding competitive environments, and decision making implications of industries' approached and competitive strategies used. The course relies upon lectures and analyses of case studies. Content: Introduction in Strategic Management Process; Situation analysis; external (macro-environment, industry life cycle, competitive situation) and internal; Setting strategic direction: vision, mission, strategic objectives; Formulation of strategies at corporate and business levels; Implementation, follow-up and evaluation: management system design and Balanced Scorecard.

Project management

The course aims to provide master students with an understanding of the project management framework. The sessions will focus on project management best practices, tools and techniques to develop and implement the project plan, effectively.

It will be described the project management core concepts within a broader context such as organizational environment, project stakeholders requirements and expectations, and the project life cycle. The importance of the project management life cycle will be highlighted and approaches to key knowledge areas and project management process groups will be reviewed.

The sessions will be focused on developing the project management plan by learning key project management planning tools: project scope statement, project charter, work breakdown structure, project schedule network diagrams, and project scheduling tools. It will be discussed the key aspects of resources planning, financial analysis, risk analysis, and project governance (communication flow and reporting pattern). Consequently, it will be approached the monitoring and controlling aspects of implementing projects with a strong focus on change requests management.

Finally, it will be outlined the professional and social responsibility requirements within the project management context.

Research activities

The research activities are focused on researches in thematic areas related to courses: modern methods of financial management and marketing, information systems for human resources management, business processes optimization using Information Technology, using software tools for entrepreneurship and technological management, advanced software engineering methods, software quality assurance, advanced techniques of data mining, information modeling of complex business processes, policies and strategies in IT companies' management and others.

As a result of research activities, students will acquire a range of specific skills so as to be able:

- To identify, select and apply the right approach for solving management problems in Information Technology related fields.
- To evaluate the advantages and disadvantages of the choice made.
- To learn methods of scientific research, correctly applying the rules of ethics in scientific research
- To create a research report
- To apply methods and tools specific to Software Engineering in software development processes
- To communicate effectively within the work team.
- To adopt the right strategy according to the situation of working
- To use in efficient ways collaborative working tools

Examples of research topics:
- Tools of automatic testing based on graphical user interfaces
- Quality management in IT
- The quality of software services
- The analysis of information systems' impact on organizational innovation
- Process optimization and efficiency of B2B, B2C, C2C business models
- Increasing performance of company management by using information systems to assist decision-making (**DSS**- Decision Support Systems / expert systems, fuzzy systems, artificial intelligence, etc.)
- Analysis of critical success factors specific to ERP systems implementation in an organization.
- IT Service Management

- Research on the Automatic Control and Computers faculty graduate skills required by the labor market in IT. Development of the competitive employee model.
- Information System for Human Resources recruitment and selection.
- Analysis of the competitive strategies of major Romanian and foreign IT companies. Theoretical aspects and case studies.
- Analysis of business models based on the use of Internet and Web technologies (e.g. virtual companies, virtual teams, B2B or B2C).
- Policies and strategies in the public relations of an IT company
- Ubiquitous Data Mining
- Security incident management in computing and communication networks – CERT structures (CSIRT)
- Automated trading on the stock market