



TEMPUS PROJECT CD JEP 18046-2003
Management and (e)Business Education in
Computer Studies

Workshop:

Analysis of Applied Informatics and Technology
Management Studies at University of Macedonia

London, March 2005

Applied Informatics Studies at University of Macedonia

The University of Macedonia in Thessaloniki organizes courses in economics and social sciences with a special focus on Information Technology. There are two departments that organize studies in the scope of this project. The Department of Applied Informatics is situated in Thessaloniki and the Department of Technology Management is situated in Nousse.

According to the Establishing act of the Department of Applied Informatics, its mission is to promote and further develop the science of informatics, with special emphasis on the development of systems for managerial and economic applications and the training of high level executives for the country's needs.

In addition to the theoretical education offered to the students, particular attention is paid to their practical training on developing software for economic and managerial applications.

The program of studies includes courses from the disciplines of Computer Science, Economics and Business Administration. The department's graduates are well qualified to meet the demanding requirements of the modern business world

The curriculum leads to a Degree in Applied Informatics after successfully completing 167 credit hours. One credit hour corresponds to one hour of class attendance per week. The 167 credit hours include 121 credit hours of compulsory courses, 16 credit hours of English and 30 credit hours of electives.

The compulsory and elective courses cover 11 areas. With the start of the 7th semester, a research topic is assigned to every student, and under the supervision of a member of the teaching staff. By the end of the 8th semester, the student has to submit for evaluation and present his/her thesis. A successful thesis corresponds to 6 semester-hours.

Course	Semester	Type
Principle of Economics	I	Mandatory
Programming 1	I	Mandatory
English	I	Mandatory
Mathematics	I	Mandatory
Algorithms	I	Mandatory
Introduction to Informatics	I	Mandatory
Data structures	II	Mandatory

Applied Mathematics	II	Mandatory
Programming 2	II	Mandatory
English 2	II	Mandatory
Computer Systems Organization	II	Mandatory
Statistics	III	Mandatory
Microeconomic Analysis	III	Mandatory
Architecture and Evaluation of Computers	III	Mandatory
Computational Mathematics	III	Mandatory
English 3	III	Mandatory
Object-oriented programming	III	Mandatory
International Finance	III	Elective
System Management	III	Elective
Production Management	III	Elective
Special mathematical subjects with computers	III	Elective
Computational theory and automata	III	Elective
Accounting	IV	Mandatory
Macroeconomic policy	IV	Mandatory
Operating systems	IV	Mandatory
English 4	IV	Mandatory
NET programming	IV	Mandatory
Applied economic	IV	Elective
Ethics	IV	Elective
Justice	IV	Elective
Control of Quality	IV	Elective
Digital design	IV	Elective
Data bases	V	Mandatory
Money and markets	V	Mandatory

Data communication and networks	V	Mandatory
Computer graphics	V	Mandatory
Statistics 3	V	Mandatory
Teaching methods	V	Elective
Special topics of accounting	V	Elective
Simulation techniques	V	Elective
Applied economics 2	V	Elective
Law of informatics	V	Elective
Graph theory	V	Elective
Introduction to theory of chaos	V	Elective
Data bases 2	VI	Mandatory
Marketing	VI	Mandatory
Analysis and design of IS	VI	Mandatory
Econometrics	VI	Mandatory
Human-computer interaction	VI	Mandatory
Data analysis	VI	Elective
3D graphic models	VI	Elective
Financial and capital markets	VI	Elective
Computer networks – analysis and design	VI	Elective
European integration	VI	Elective
Categorical data analysis	VI	Elective
Cryptography	VI	Elective
IS Management	VII	Mandatory
Econometrics	VII	Mandatory
Operational Research	VII	Mandatory
Multimedia systems	VII	Mandatory
Teaching methods 2	VII	Elective
Parallel processing	VII	Elective

Information Systems	VII	Elective
Decision support systems	VII	Elective
Computer integrated production systems	VII	Elective
Communication	VII	Elective
Chronological series	VII	Elective
Programming languages	VII	Elective
Theses	VII, VIII	Mandatory
Game theory	VII	Elective
Web services and e-transaction technologies	VII	Elective
Internet programming	VIII	Mandatory
Artificial intelligence	VIII	Mandatory
Software engineering	VIII	Mandatory
Cost accounting	VIII	Elective
Neural networks	VIII	Elective
Distributed systems	VIII	Elective
Management of data processing project	VIII	Elective
Communication	VIII	Elective
IS Logistics	VIII	Elective
Electronic commerce	VIII	Elective
Sound elaboration	VIII	Elective
Network and internet security	VIII	Elective
Multimedia databases	VIII	Elective

Technology Management Studies at University of Macedonia

The Department of Technology Management is formed in 2003. Within the boundaries of a society and economy dependable on knowledge, the technology 'know-how', and particularly the comprehension of new and emerging technologies, technology management underlies a critical part of strategic decision making and thinking within a contemporary business or organization.

Technology Management focuses mainly on enabling businesses and organizations to become reorganized and produce new or better products and services, by acknowledging technology as the starting and referral point. In other words, Technology Management promotes the Management of Innovative Technology Change, so much in products and services that enterprises and organizations offer, as well as to the business itself, in total.

The managerial personnel of a Technology Management Department associate the strategic operations with the managerial or transactional operations of business or organization by forming a bridge between the strategic – enterprising logic on the one hand and the scientific – technological approach- on the other. The major task is to link and to coordinate systematically science and technology with managerial or operational strategy.

The Technology Management Department emphasizes the development of managerial and production executives employed by business and organizations with strong technological orientation so much in their structure and operation, as well as in their products and services being offered, with digital and telecommunication technologies always being at the focal point.

According to the foundation memorandum of the Technology Management Department, the graduates should compound

- organizational and administrative knowledge for business and organizations and
- Technological knowledge with particular emphasis on the areas of telecommunications and digital systems.

Graduates will be particularly suited in the areas of design and standardization, research and development of technological products, marketing, sales and support of corresponding services, administration and quality management of IT department of businesses and organizations, technological innovation and change management, technological and entrepreneurial feasibility studies, etc.

The accurate designation of the Department could be “Department of Production Management and promotion of innovative products and services, management of technological innovation and change into business and organizations, with the support of digital and telecommunication technologies”.

The courses are organized in thematic areas, which aim to coordinate the course content and avoid any overlaps or fragmentation of knowledge. The thematic areas analyze and specialize the knowledge areas, which have been discussed in the previous paragraph, intending to offer a relatively organized subject matter and to accurately determine the expected outcome, explicitly the profile of the Department’s graduate. The thematic orientations do not imply selection of field

studies; scilicet the student does not have to choose among Management and Technology or Digital and Telecommunication Technology. Primarily, all courses are obligatory and the specific goal of the program is the integration of knowledge. Even in the future, whereas with the Department's growth is only natural to include optional modules or even optional courses circle, the main concern will remain the combination of knowledge as being indicated to the foundation memorandum of the Department.

The thematic orientations constitute to the following:

Thematic Direction	General Description
Management and Entrepreneurial Innovation	The student acquires the necessary knowledge that is related to the modern entrepreneurial and administrative environment.
Management and Production Technologies	The student examines the impact of technology in administration of business themselves and manufacturing of products and services.
Technology	The student delves into certain technologies, according to the background and the goal of the Department.

A more specific analysis is presented of the thematic orientations, with emphasis on the final cognitive purposes per direction:

Thematic Direction	Particular Thematic Categories, Goals	%	#
Management and Business Innovation (43%)	Operational Management. Personnel Management, Production Management, Services Management, Quality Management, Strategic and Entrepreneurial Design, Marketing and Sales, Distribution and Support, Legal Enterprises Issues, Technology and Innovation.	26	10
	Entrepreneurial Innovation. Techno-Economic Surveys and basic Financial Management, Evaluation and Financing of Technological Investments, Entrepreneurship and Innovation, Research and Development of Products and Services, Technological Change Management.	17	7
Management and Production Technologies (17%)	Management and Production Technologies. Information Systems in Management and Business, Design of Entrepreneurial Procedures, Electronic Administration and Business, Systems Design and Design of Products and Services.	17	7
Technology (40%)	Digital Technologies. Hardware and Software Management of Digital Systems, Distributed Systems, Embedded Systems.	17	7
	Telecommunication Technologies. Telecommunication Systems, Internet and Applications, Wireless-Mobile-Broadband Telecommunications.	23	9

Special attention in the project analysis was given to the groups of subjects of:

- Business Innovation -Offering initially two modules concerning the inner and outer economic environment of business. Following that, there is a module discussing the financial administration of business and the current forms of financing. The next module studies the methods of business forecasting and business risk assessment. Professional and factual issues of entrepreneurship and implementation of innovative ideas, scilicet the organization; management and initial financing of a small business are covered next. At the last semester, a course discussing cumulatively issues of management and implementation of technological innovation is being offered. Also there is a module that refers to research and development of innovative products and services.

- Management and Production Technology - The introductory module reveals the concepts of information systems, as these are being applied to management and business. The next module studies the design and modeling of information systems in direct interdependence with the overall structure and operation of an enterprise or organization. Following issues of implementation and remodeling or conservation of an information system are discussed. In parallel, there are two modules concerning the principles and technologies of designing products and services (CAD technologies), and afterwards with manufacturing technologies (CAM/CAE). Finally the two remaining modules are dealing with issues of electronic commerce and entrepreneurship the first one, and with electronic business and electronic government the second one.

The program in Technology Management is organized in 8 semesters. The appointed gravity of all courses, from the aspect of credits, is the same, that is 5 credits, so as every semester offers 30 credits and the sum of the program is appointed to 240 credits. The Foreign Language courses do not offer credits, but the student is obliged to be examined successfully in two semester courses. All courses endure three hours, apart from the Mathematics and Information Technology courses that last four hours. The courses per semester are as follows:

Course	Semester	Type
Business management and technology	I	n.a
Accounting and finance for managerial decisions	I	n.a
Digital systems and applications	I	n.a
Telecommunication systems and applications	I	n.a
Mathematics I	I	n.a
Information technology and applications	I	n.a
English I	I	n.a
Products and services marketing	II	n.a

Managerial economics and business decision-making	II	n.a
Microprocessors and microcomputers	II	n.a
Mathematics II	II	n.a
English II	II	n.a
Computer programming	II	n.a
Digital telecommunications	II	n.a
Statistics - probability	III	n.a
Object-orientated design and programming	III	n.a
Human resources management	III	n.a
Management information systems	III	n.a
Operational systems	III	n.a
Computer networks	III	n.a
Operational research	IV	n.a
Data organization and management	IV	n.a
Production and operations management	IV	n.a
Information systems analysis and design	IV	n.a
Internet technology	IV	n.a
Web technology	IV	n.a
Supply chain management	V	n.a
Economic forecasting and planning	V	n.a

Enterprise information architecture	V	n.a
Design technologies	V	n.a
Distributed systems architectures	V	n.a
Telecommunication systems administration and security	V	n.a
Project planning and management	VI	n.a
Financing technological investments	VI	n.a
Production technologies	VI	n.a
Distributed systems applications	VI	n.a
Wireless communications	VI	n.a
Mobile communications	VI	n.a
Total quality management	VII	n.a
Legal and professional issues	VII	n.a
Entrepreneurship and technology innovation	VII	n.a
Electronic business	VII	n.a
Embedded systems	VII	n.a
Broadband communication technologies and services	VII	n.a
Business policy and strategy	VIII	n.a
Legal aspects of technology innovation	VIII	n.a

Technological innovation management	VIII	n.a
Innovative service and product development	VIII	n.a
Electronic government	VIII	n.a
Digital interfaces	VIII	n.a

All the course details can be found on the web address http://www.uom.gr/modules.php?op=modload&name=Mathimata_eng&newlang=eng&file=index&tmima=202&categorymenu=2

The profile of the identical graduate of the Department is a scientist who shall be able to:

- Participate in the process, which relates to the design, production and support of innovative (or the improvement of an existent) technological product or service, where the semantic of ‘technological’ refers to products or services of the digital and telecommunication technologies.
- Compile techno – economical studies, strategic and managerial plans, market research, studies for production cost and configuration, quality control, promotion and support of the product or service of digital and telecommunication technologies.
- Study and reinforce the procedures of technological innovation at the level of the business or organization, by encountering technology change as a combination of administrative and technological factors based on digital and telecommunication technologies.
- Participate to the organization and administration of a business or an organization with strong technological orientation, emphasizing in digital and telecommunication technologies.

To achieve these goals, the graduate of the Department must employ a combination of managerial, scientific and technological skills, in order to comprehend all the parameters being related both with the manufacturing entrepreneurial practice in the lifecycle of an innovative product or service.

Over the years on the European level there has been an ongoing effort to reinforce Technological Innovation and Entrepreneurship. The knowledge of Organization and Administration in the program is being divided in three particular sections which include:

- the prerequisite theoretical knowledge of Organization and Management of Production and Services
- basic techno-economic knowledge of business as well knowledge relevant with entrepreneurship and innovation, and
- the Management and Production Technologies in which the emphasis is given to the contribution of emerging technologies
- business and organizational administration, succeeded by the extended enterprise and the e-business, and also
- The design, production and support of innovative products and services.

The Department concentrates particularly in two new technologies, in particular Digital Systems and Telecommunications. It is inevitable that these technologies not only are the center of the economical and manufacturing activity, but are increasingly being involved in other important aspects of society life such as, education, entertainment, information, health, governance etc. This has resulted in the development of an important infrastructure, which tends to be comparable to similar infrastructures in transportations or in energy production and distribution.

The survey of Career-Space “New ICT Curricula for the 21st Century” is typical of the trends within the European Union. The survey examines the perspectives of labor market by presenting a spectrum of specialties, the existing curricula, by emphasizing the voids that appears in the educational needs of the new specialties. Based on these guidelines the Technology Management Department lays in the area of IT Networks, with a minor in the areas of IT Systems and IT Electrical Engineering. It is evident that the referred specialties include a significant percentage of management, entrepreneurial and innovation courses, which are not included in the survey of Career–Space.

Postgraduate studies at University of Macedonia

The objectives of the Interdepartmental Program of Postgraduate Studies (I.P.P.S.) in Information Systems (**Master in Information Systems – MIS**) are:

- To promote the knowledge in those particular fields.
- To help the evolvement of research in relevant scientific fields.
- To create new scientists capable of pursuing an academic career.
- To fill all requirements of a postgraduate level program for administration trainees in the private and public sector.

- To offer specialized and high standard knowledge, which will lead to a more efficient and effective administration of human and economic resources.
- To motivate administration executives and help them comprehend and confront the challenges of the international business environment.
- To train executives capable of promoting the growth of Greek enterprises locally and abroad.
- To train executives for public sector administration as well as for the administration of State dependant enterprises and services.

The aim of I.P.P.S. is to provide postgraduate students with these principles, knowledge and methods that will show them the way to life-long learning and to further development. Based on this "philosophy", teaching professors use various methods, as applied research, case studies, games, simulations, etc.

It is made clear that in I.P.P.S. programs quality is of primary importance. Therefore, quality and its continuous evolution must characterize the programs of studies, and more specifically, the courses and their teaching methods, the relationships between teachers and postgraduate students, the cooperation within the Departments and the services of the University, the secretarial support and the collaboration on research projects and other events with private enterprises but also with organizations of the wider public sector.

The Program of Postgraduate Study Specialization at the **Department of Applied Informatics** aims at the provision of postgraduate level education in the area of Information Technology. The graduates of PPSS, upon completion of the program, will have acquired powerful scientific background, experience and knowledge on how to engineer optimal solutions and develop high-end applications, in order to help organizations grow within today's highly competitive industrial environment.

The basic aims of the postgraduate program at the Department of Applied Informatics are the following:

- Providing highly competitive technical skills to its graduates.
- Providing knowledge pertaining to the latest developments in the area of Information Technology.
- Teaching a synthetic and systematic approach as far as methodology and software development for the production of completed solutions is concerned.
- Teaching how to successfully manage, rearrange and help organizations grow within the recently established Digital Economy.

- Empowering its graduates with the required qualifications for a successful career in the private, public or academic sector.
- Preparing undergraduate students of high caliber for postgraduate study at the doctoral level.