DEGREE PROFILE OF

Laurea Magistrale in INGEGNERIA GESTIONALE

Second Cycle Degree in MANAGEMENT ENGINEERING

TYPE OF DEGREE & LENGTH	Single Degree (120 ECTS-credits), 2 years
INSTITUTION(S)	Università degli Studi dell'Aquila - *University of L'Aquila,* ITALY
ACCREDITATION ORGANISATION(S)	Italian Ministry of Education and Research Register of Engineers (Albo degli Ingegneri)
PERIOD OF REFERENCE	Programme validated for 3 years for cohorts starting in October 2013
CYCLE /LEVEL	QF for EHEA: Second Cycle; EQF level: 7; NQF for Italy: Laurea Magistrale

A	**PURPOSE**
	The objective of the 2nd cycle degree program in Management Engineering specifically is to allow students to become professionals able to cover management roles with high levels of organizational responsibility combining technological knowledge with a solid background in business management. Graduates in Management Engineering have in-depth knowledge of the specific subjects in the fields of operation management, supply chain management, quality management, production engineering and business management and capacity to understand the stakes linking technologies, innovation and management and act as interface. They become leaders able to take creative, ethical and efficient decisions in an international and complex world, to work in a team, to communicate effectively and to continue to learn. The program meets the requirements of European and National laws and Directives. Degree holders, after a national exam, can be enrolled in the Italian Register of the Engineers (Albo degli Ingegneri), established with *D.P.R. 328/2001*.

B	**CHARACTERISTICS**	
1	DISCIPLINE(S) / SUBJECT AREA(S)	The main subject areas of the degree programme are: Manufacturing technologies, Operation & Supply chain management, Cost accounting and financial management (50:30:20)
2	GENERAL / SPECIALIST FOCUS	Specialist on manufacturing and business management with focus on product/process/organizational/marketing innovation
3	ORIENTATION	It is an academic degree with a strong professional orientation, according to International and National Directives on Engineering Professions.
4	DISTINCTIVE FEATURES	This degree has a strong scientific component in an interdisciplinary learning context and is developed in a stimulating research environment. Students have a 3/6-months placement in companies in Italy and/or abroad for on-field working experiences and research activities.

C	**EMPLOYABILITY & FURTHER EDUCATION**	
1	EMPLOYABILITY	Upon successful completion of the Programme and the enrollment in the Italian Register of Engineers, Section A (as established in the D.P.R. 328/2001) graduates are eligible to work as Management Engineers who have fulfilled the requirements of **European Directive 2005/36/EC** for the mutual recognition of professional qualifications (within EU and beyond) and of Italian Register of Engineers. Graduates carry out their professional activities in service and manufacturing companies and public administrations, both as employee or freelance. They manage complex problems through the analysis of technological constraints and opportunities and the application of advanced managerial tools and skills in order to optimize physical, economic, financial and human resources, to assure quality as well as product and process safety, to adopt new technologies assessing the

		organizational and competitive aspects, taking into the due concern the environmental impact.
2	FURTHER STUDIES	The Master Degree in ***Management Engineering*** normally gives direct access to a wide range of PhD degree programs in the fields encompassed on Engineering Professionals. It also gives access to some specializing professional courses.

D	**EDUCATION STYLE**	
1	LEARNING & TEACHING APPROACHES	Lectures, group-work, individual study and autonomous learning, laboratory, self directed study, work placement.
2	ASSESSMENT METHODS	Assessment is normally by means of an oral or written examination. The final exam consists in the discussion of a written text generally related to the project works developed in the 3/6 months placement in companies. Degree holders obtain the credentials for National Certification as Management Engineers.

E	**PROGRAMME COMPETENCES**
1	GENERIC
	During the two-year master, students in ***Management Engineering*** acquire a very broad general and specific education. Upon the successful completion of the degree they become Managerial Engineering. The degree program meets the competences and quality assurance procedures required by *Italian Register of Engineers* and by the National Higher Education Quality Assurance Agency (AVA) for degree courses at second level. This includes the Generic Competences expected for the second cycle graduated, as follows: — **Analysis and synthesis:** Knowledge and understanding of complex issues regarding their profession and capacity to understand the stakes linking technologies, innovation, production and management; ability to critically and systematically integrate knowledge and analyze, assess and deal with complex phenomena, issues and situations even with limited information; — **Creativity:** ability to identify a management and technological problem and to conceive creative solutions that are ethical and socially responsible and that respect the principles of good governance; — **Leadership, Management and Team-working:** ability to assume and hold leading positions in public or private organizations or self-employed, and also to demonstrate awareness of ethical aspects of the own role and capacity to contribute within this; ability to work both independently and in teams with technical and scientific problems of high complexity and to develop a transversal, global vision; — **Communication skills:** Ability to communicate efficiently about their own work to the general public as well as to experts both orally and in writing, in first language and in another European language using appropriate scientific terminology; — **Learning ability:** ability to identify the personal need for further knowledge; Capacity to consult specialized literature, to permanently update knowledge and skills and to be familiar with recent scientific findings and developments and ability to formulate a critical opinion; — **Problem solving**: Ability to identify engineering problems, understand existing requirements and/ or constraints, articulate the problem through technical communication and formulate alternative creative solutions.
2	SUBJECT SPECIFIC
	The Program meets all the Specific Competences as agreed in collaboration with the field stakeholders, taking into consideration the standards for the second cycle recommended by EUR-ACE® for accreditation of engineering program, clustered within the key overarching competences summarized below. The graduates must demonstrate: **Knowledge** of - the operational and methodological aspects of manufacturing engineering, operation and supply management, quality management, and data base management; - management disciplines in order to perform a rigorous economic and financial analysis of a management situation and provide pertinent solutions; - knowledge and understanding of 1 foreign language; **Comprehension** of - project management methods, planning & control tools which are useful in management professions;

	- managerial issues linked to technologies and innovation in order to integrate them in professional practice; **Application** - ability to apply logical reasoning and quantitative calculation, and to use mathematical language; - ability to integrate autonomously researched information, tools, knowledge and context to build and propose, either individually or as part of a team, original, creative and viable solutions to concrete complex problems whether real or simulated; - ability to apply skills pertinent to the entrepreneurial management of both existing and emerging technologies; **Analysis** -- capacity to identify and use appropriate analysis tools of an economic, financial and organizational nature applied to highly complex specific technological problems and contexts, - ability to provide concrete solutions to a management problem, integrating simulation tools and/or a dimension of technology, innovation or production; - capacity to research autonomously and methodically the information needed to solve a complex, transversal management problem; **Synthesis** - ability to design innovative solutions for the integration and optimization of technical, financial, economic and human resources management; - ability to critically use appropriate methodologies for establishing the performance of technological and production systems to support the main management processes and to develop innovative solutions; - ability to identify and implement research, development and engineering programs for innovative products or services and the relative technological and organizational processes. **Evaluation** - Ability to assess the need to implement changes in management processes by improving unit operations in terms of product quality, technical and human resources optimization and environmental impacts; - Ability to estimate and control engineering cost, including planning and scheduling, labor productivity, alternative methods for project delivery, and computer applications, such as e-business solutions..

F	**COMPLETE LIST OF PROGRAMME LEARNING OUTCOMES**
	The graduates of the 2nd cycle in ***Management Engineering*** will: - have in-depth knowledge of the methodological and operational aspects of mathematical disciplines, physics and chemistry and information technologies in order to analyze data and make decisions; - be able to use the acquired knowledge to interpret and describe complex technological, managerial and organizational problems typically encountered in both industrial and service companies; - have developed the learning skills required to cope with problems of high complexity and to develop a transversal, global vision in terms of industrial technologies applied to management and manufacturing processes; - be able to use economic and organizational methods to manage product and process innovation programs; - know the management of production, quality and supply chain systems in terms of technological, organizational, financial and economic components, and will have developed innovative development skills; - have developed knowledge and specific skills to identify and use appropriate analysis tools of economic, financial and organizational nature applied to highly complex specific technological problems and contexts, with particular focus on cases which require innovative solutions for the integration and optimization of management of technical, economic, financial and human resources; - be able to critically use appropriate methodologies for establishing the performance of technological and manufacturing systems to support the main management processes and to develop innovative solutions; - be able to manage research, development and engineering programs for innovative products or services; - be able to identify, formulate and solve problems linked to the management of production technology, quality assurance and control and technical-commercial processes; - be able to gather, integrate and interpret technical and economic data and information in order to formulate an autonomous opinions and formulate original and innovative solutions; - be able to communicate data, information, ideas, problems and solutions of a technical and economic nature effectively in writing and orally also in English to both specialist and non-specialist interlocutors.