

# DOUBLE DEGREE AGREEMENT

between

## CRANFIELD UNIVERSITY

Cranfield, Bedfordshire, MK43 0AL, UK

Represented by the Vice-Chancellor

Prof Sir John O'Reilly

and

## UNIVERSITA' DI PISA

Lungarno Pacinotti, 43, 56126 Pisa, ITALY

Represented by

Prof Massimo Mario Augello ( Rettore)

**(referred to in the singular as "Party" and in the plural as "Parties")**

### ARTICLE 1: PRINCIPLE

The parties are setting up a common programme aimed at awarding a Double Degree: *"Laurea Magistrale in Ingegneria Gestionale (Università di Pisa) – MSc Engineering and Management of Manufacturing Systems (School of Applied Sciences at Cranfield University)"*. The programme is to be offered to a small number of selected Italian students each year. The programme will award the double-degree title to students that having completed the first year of the Laurea Magistrale<sup>1</sup> in Ingegneria Gestionale at the Università di Pisa will successfully complete the MSc Engineering and Management of Manufacturing Systems at Cranfield University. This includes the completion of the final MSc Project and Thesis. The Thesis will be recognized as equivalent to the Italian Tesi di Laurea. The final examination at Cranfield will be followed by the final examination (Esame di Laurea) in Pisa, which will end the program. The MSc qualification is officially awarded at the Graduation Ceremony at Cranfield University in the June of the calendar year following the completion of Phase 2 at Cranfield as well as the final examination in Pisa (Esame di Laurea).

### ARTICLE 2: SELECTION

Candidates for this programme will be carefully selected among students at the Università di Pisa that have completed the first of the two years of the Laurea Magistrale in Ingegneria Gestionale. Selection will be made on the basis of a duly completed application form and on selection tests and requirements appropriate to the two institutes.

### ARTICLE 3: DURATION

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<sup>1</sup> "Laurea Magistrale" is the Italian post-graduate 2-year course that requires to have successfully completed a 3-year "Laurea" (equivalent to a British BSc)

This convention covers a period of four years from the beginning of the Italian Academic Year (1<sup>st</sup> November) after the date of signing.

Thereafter it will be renewed automatically unless one of the parties gives a two year notice of termination. This time is required to allow any student in the process to complete their studies. In the event that this Agreement is terminated before its natural date of expiry, both Parties will ensure that the enrolled students can complete their studies.

#### **ARTICLE 4: PROGRAMME OF THE COURSE**

The programme of the course encompasses the two phases, each one year in length, described below:

- Phase 1 The programme of the first year of the Laurea Magistrale in Ingegneria Gestionale at the Università di Pisa. Annex A-1 shows the current course contents.
- Phase 2 The programme of the MSc Engineering and Management of Manufacturing Systems of the School of Applied Sciences at Cranfield. Annex A-2 shows the current course contents.

In the event of a change of syllabus taking place at any one institution, the other will be notified immediately. In the event that at any one time this change of syllabus exceeds more than one third of the programme, the agreement will be renegotiated.

#### **ARTICLE 5: LANGUAGE**

The course will be in Italian during Phase 1 and in English during Phase 2.

#### **ARTICLE 6: TIMETABLE OF THE COMMON PROGRAMME**

Normally and for each academic year, Phase 1 starts in late September and ends in late September of the following year. Normally Phase 2 starts at the beginning of October of the same calendar year and ends in September of the following calendar year.

#### **ARTICLE 7: LOCATION OF THE COURSES - RESPONSIBILITY**

Phase 1 is to take place at the Facoltà di Ingegneria of the Università di Pisa (Italy) under Università di Pisa internal regulations.

Phase 2 is to take place in the campus at Cranfield University at Cranfield in the United Kingdom, and Italian students will be treated as students of the School of Applied Sciences at Cranfield, under School of Applied Sciences internal regulations.

Responsibility for each student will rest with the establishment that enrolled him/her in the Double Degree namely Università di Pisa.

## **ARTICLE 8: RULES TO BE APPLIED FO THE SELECTION OF STUDENTS OF UNIVERSITA' DI PISA**

A maximum number of 4 Italian students have to be selected by the Università di Pisa under the responsibility of the Università di Pisa from candidates who have successfully completed the first year of Laurea Magistrale in Ingegneria Gestionale.

The following criteria will apply:

1. The average mark of the overall final results at the end of year one of the Laurea Magistrale will be taken into account to select the candidates.
2. The candidates must be proficient in English. A minimum score of 92 in the internet based Test of English as a Foreign Language (TOEFL) or 237 in the computer based TOEFL, or equivalent examination, will be required.

## **ARTICLE 9: FINAL ASSESSMENT OF THE COURSE**

Credits earned by the students at Cranfield University will be transferred to the Università di Pisa<sup>2</sup>. The rules relating to the final assessment of the course will be those which will apply at the Università di Pisa as far as Phase 1 is concerned and those that apply at the School of Applied Sciences at Cranfield for Phase 2.

The Università di Pisa is therefore fully and exclusively responsible for the award of marks during the first year of the common programme and the School of Applied Sciences at Cranfield will be fully and exclusively responsible for the award of marks during the second year of the common programme.

The final examination at Cranfield will be followed by the final examination (Esame di Laurea) of the project in Pisa. For this purpose the Thesis will be in English, but it will contain a title and an abstract in Italian.

## **ARTICLE 10: ACADEMIC FAILURE**

In the case of Academic failure at the end of Phase 2, the student concerned will be excluded from the common programme and the Università di Pisa will be responsible to decide and judge on how to assess the single specific case and circumstance.

## **ARTICLE 11: DATE OF AWARD OF THE DOUBLE DEGREE**

The award of the Università di Pisa Laurea Magistrale is decided upon the considered advice of the Cranfield School of Applied Sciences in September-October following the completion of Phase 2 and following the examination process of article 9.

The Double Degree title is officially awarded at the Graduation Ceremony at Cranfield University in the Calendar year following the completion of Phase 2 and the final examination in Pisa (Discussione della Tesi). It will be responsibility of the student to provide the Thesis document to the two institutions meeting their standard format requirements.

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<sup>2</sup> 10 credits earned by the students at Cranfield University correspond to 3 credits in the Università di Pisa system.

## **ARTICLE 12: REGISTRATION**

Each student admitted to the common programme must pay the yearly registration fees applicable to each establishment each year. In the first year the fee will be paid to Università di Pisa, in the second year to Cranfield University.

## **ARTICLE 13: STEERING COMMITTEE**

The responsibility for this cooperation will be entrusted to the Presidente del Consiglio Aggregato in Ingegneria Gestionale at the Università di Pisa and *MSc Engineering and Management of Manufacturing Systems* Course Director of the School of Applied Sciences at Cranfield University. The course Directors will be in contact to monitor the progress of the Double Degree programme. This will enable them to improve the course incorporating the lessons of experience.

## **ARTICLE 14: AGREEMENT**

Two copies of this agreement will be signed and one for each institution. Both may be used for reference purposes.

## **ARTICLE 15: RELATIONSHIPS OF THE PARTIES**

This Agreement entered into in good faith by both parties on the basis that it is a fair and honest statement of intentions and that it has no validity as a binding contract under any law or legal system. Nothing in this Agreement will be construed as creating a legal partnership or joint venture. Neither of the Parties will represent itself as being an agent of the other and neither of the Parties is authorized to commit the other.

Signed

For Università di Pisa

Prof Massimo Mario Augello  
( Rettore )

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For Cranfield University

Prof Sir John O'Reilly  
Vice-Chancellor

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Dated:

## ANNEX A-1

### STRUCTURE AND CONTENTS OF THE FIRST YEAR AT THE “LAUREA MAGISTRALE IN INGEGNERIA GESTIONALE” (UNIVERSITA’ DI PISA)

Exam	Aims and contents	Credits <sup>3</sup> (Italian system)
Gestione dell’innovazione ( <i>Management of innovation</i> )	This course gives the analytical skills and the main management models and tools to manage the uncertainty, risk and organizational complexity in innovation projects	6
Gestione integrata della produzione ( <i>Integrated manufacturing systems</i> )	To provide knowledge, methods and applications on modern integrated manufacturing systems, needed to carry out an efficient firm management. The following competences will be provided: 1) components of integrated manufacturing systems, 2) programming methods for the management of manufacturing systems, 3) basics of sizing and balancing of production lines, 4) examples of automated manufacturing processes	12
Logistica integrata e e-commerce ( <i>Supply Chain Management</i> )	To provide knowledge and tools to design and manage the supply chain.	9
Pianificazione e controllo ( <i>Management Control Systems</i> )	General objectives of teaching are to understand the fundamental concepts (characteristics, feasibility, introduction issues) of management control systems, processes and techniques such as enablers of strategy implementation and dynamic re-definition.	9
Statistica II ( <i>Statistics II</i> )	To give methodological knowledge and software ability, concerning the analysis of multivariate data and time series of interest in management	6
Ricerca operativa II ( <i>Operational Research II</i> )	To provide students with knowledge and methods for solving optimization problems arising in managing complex systems, such	6

<sup>3</sup> One credit corresponds to one of the followings:

10 lecture hours

18 tutorial hours

25 laboratory hours or stages

	as industrial production or services management.	
12 credits to be selected among:		
Finanza e organizzazione aziendale ( <i>Corporate finance and organizational change</i> )	To provide the financial tools for decision making in terms of financial structure and strategic choices, while emphasizing the application of corporate finance theory to real business cases. To provide tools and models in order to understand and to interpret the organization life cycle and change management.	6
Marketing	Providing knowledge and applied instruments for the management of the product portfolio of an organization and of the relations with markets and the environment	6
Metodi per la valutazione e miglioramento di una organizzazione ( <i>Methods for the assessment and improvement of an organization</i> )	To provide knowledge about methods and tools for self-evaluation, assessment and improvement of an organization, referring to real cases.	6
Progettazione e sviluppo dei sistemi e dei processi ( <i>Design and development of industrial systems and manufacturing processes</i> )	To provide knowledge and tools for the design of industrial systems, products, services and their manufacturing processes	12

**ANNEX A-2**

**STRUCTURE AND CONTENTS OF THE SECOND YEAR AT CRANFIELD UNIVERSITY – MSc  
Engineering Management of Manufacturing Systems (School of Applied Sciences)**

<b>Exam</b>	<b>Aim and contents</b>	<b>Credits (UK system)</b>	<b>Credits (Italian system)</b>
Operations Management	<p>An introduction to manufacturing and service activities. Capacity, demand and load; identifying key capacity determinant; order-size mix problem; coping with changes in demand. Standard times, and how to calculate them; process analysis and supporting tools; process simplification. What quality is; standards and frameworks; quality tools; quality in the supply chain. Scheduling rules; scheduling and nested set-ups. Roles of inventory; dependent and independent demand; Economic Order Quantity; uncertain demand; inventory management systems and measures. Information systems – at operational, managerial, and strategic levels; bills of material; MRP, MPRII and ERP systems Ohno’s 7 wastes; Just-in-Time systems (including the Toyota Production System, and Kanbans). Class discussion of cases, exercises, and videos to support this syllabus.</p>	10	3
Enterprise Systems	<p>Introduction to business functions, processes and data requirements within an enterprise. Enterprise wide IT systems. Managing Enterprise through ERP. Enterprise Resource Planning (ERP): concepts, techniques and tools. ERP selection and implementation issues. SAP/R3 based hands-on case studies.</p>	10	3
Operations Analysis	<p>Six Sigma, Process capability, common and special cause variability, control charts, acceptance sampling. Mathematical models and simulation techniques. Analysis of systems to</p>	10	3

	<p>produce simple models. IDEF0 and IDEF3 and their application.</p> <p>Business process fundamentals and the process review. Improvement procedures, modelling methods and process models.</p> <p>Performance measurement. Responding to and improving reliability.</p>		
General Management	<p>Management Accounting Principles and Systems; Personal style and team contribution, interpersonal dynamics, leadership, human and cultural diversity; Sustainability in an industrial context and Strategic Innovation Management, Project Management.</p>	10	3
Manufacturing Systems Engineering	<p>Different approaches to factory layout such as process and product layouts.</p> <p>Reasons for choice of cellular manufacturing and benefits. Part classification and coding.</p> <p>Production Flow Analysis. Modelling and analysis using discrete-event simulation.</p> <p>Capacity planning</p>	10	3
Management of Technology and Innovation	<p>Managing strategic innovation, introduction, processes and key concepts. Building innovative organizations. Integrated problem solving teams</p> <p>New product introduction methods and tools. Product life cycle management and sustainability. Technology strategy process, road mapping, tools and techniques.</p> <p>Intellectual property definition, protection, development, exploitation, purchase.</p> <p>Virtual manufacturing including elements of simulation. Emerging technologies including RFID, rapid prototyping and rapid manufacture</p>	10	3
Supply Chain Management	<p>This module will provide the participants with a broad introduction to the challenges that face logistics and supply chain managers today. The participants will be exposed to the importance of developing the right supply chain strategy for your products and the need to align the supply network around the strategy. It will also provide the</p>	10	3

	<p>participants with some tools that can be used systematically to identify areas for improvement in supply chains.</p> <p>Additionally the module will introduce the participants to some of the specific challenges and new thinking in the plan, source and deliver sub-processes.</p>		
Manufacturing Strategy	<p>Concepts of Competitive Strategy and Manufacturing Strategies and development of a strategic improvement programme. Manufacturing strategy in business success. Strategy formation and formulation, leading on to system design. Structured strategy formulation. Approaches to strategy formulation in differing business contexts. Realisation of new strategies/system designs, including approaches to implementation</p>	10	3
Group project	<p>Applying taught material to a real current problem; working with an organisation and its staff (in some cases); developing interpersonal and group-working skills</p> <p>Each project will be supervised by a member/s of academic staff and you will be expected to hold regular group meetings. At the end of the project each student is expected to write a report and there will also be an oral presentation of your work.</p>	40	12
Individual thesis project	<p>The individual thesis tests the ability of the student:-</p> <p>(a) to define the project by reference to the scientific, technical and/or commercial literature, to undertake a critical appraisal of such literature and to provide a justification for the research.</p> <p>(b) to plan and manage the research programme.</p> <p>(c) to define the work to be carried out and to report the results in a clear manner.</p> <p>(d) to analyse the work, relate it to the work of others where appropriate and to be self critical.</p> <p>(e) to communicate the work, its results and analysis in a technical document.</p>	80	24

