PhD In
Mechanical Engineering

Research Area n. 3- Manufacturing and Production Systems

Specific Research Subject:
Optimal scheduling in flow shop
Cluster Tecnologico Nazionale_High performance manufacturing

Scholarships and Financial support	
Monthly net income of PhD scholarship (max 36 months)	€ *1200* (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)
Number of scholarships	1
Beginning of PhD	1/5/2015
Deadline for application	*23/03/2015*
Context of the research activity	
Motivations and objectives of the research in this field	The problems of organization in the factory floor limit the maximum achievable production rates and consequently the competitiveness of industries in a challenging and worldwide market. The main goal of the research is to develop a scheduling system that can work with very few assumptions and reach low computational times. Some of the techniques to be investigated are based on the mimic of biological systems.
Methods and techniques that will be developed and used to carry out the research	Scheduling issues will be investigated using both simulation and optimization. Approaches to preemption and continuous refresh will be proposed and validated. Metaheuristic algorithms will be used to optimize an “ad-hoc” objective function. Real case scenarios will be used to analyze scheduling performances

Educational objectives	The Phd student has to develop advanced skills on scheduling and process modeling. Simulation methods will be used to develop new dispatching strategies.
Job opportunities	Cluster is a network of companies and research organizations aimed to develop High Performance Manufacturing systems. Companies are involved in training on the job PhD students who will benefit of the "Cluster CFI" PhD scholarships.
Composition of the research group	Number of Full Professors 5 Number of Associated Professors 3 Number of Assistant Professors 7 Number of PhD students 15
Names of the research directors	Q. Semeraro, A. Matta
E-mail address, phone number and web-page	quirico.semeraro@polimi.it
List of 5 Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	Jiao Tong University Hong Kong University (industrial engineering); AMADA SpA Laboratorio MUSP ITIA CNR
Additional support	
Funding for educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year	2nd year: 1.370 euro per student 3rd year: 1.370 euro per student
Teaching assistanship: availability of funding in recognition of supporting teaching activities by the PhD student	There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.
Computer availability:	1st year: *individual use* 2nd year: *individual use* 3rd year: *individual use*
Desk availability:	1st year: *individual use* 2nd year: *individual use* 3rd year: *individual use*