



The announcement

Starting from the Academic Year 2010/2011, the Master Degree in Engineering & Management of the University of Padova becomes international hosting foreign students, in the frame of Erasmus agreements and of other students exchange programs.

A brief history of the Engineering & Management College

The College of Engineering & Management of the University of Padova was established in Vicenza in 1991, as a campus of University of Padova (www.unipd.it), the second oldest University in Europe, founded in 1222.

The mission of the Engineering & Management College was (and still is) that of setting up professional skills, with strong capabilities of integrating, in several industrial scenarios, various management and technological competencies.

The graduate in Engineering & Management, educated within a multidisciplinary perspective, is able to analyse and manage complex systems and processes both in the industrial and services economic fields.

The competencies built in the area of design and decision making make the graduate in Engineering & Management able to operate and deal with contexts where economic, managerial, organisational and technological variables interface.

The reliability of this approach is acknowledged by some figures:

- 1500 students, both graduates and undergraduates, are enrolled in the Engineering & Management Classes in Vicenza campus
- since 1995, more than 2500 students graduated in Engineering & Management: according to statistics, they typically found a job in the first three months after graduation in industries, research centres, institutions, service companies, Public Administrations, universities, in Italy and abroad.

The education program carried out in Vicenza has an intrinsic value and offers a well assessed set of knowledge and tools to students. Companies and organisations appreciate their competences in managing project works and assessing business plans, balancing both technological and economic and financial aspects.

The Graduate Programme in Engineering & Management offers also an excellent education for further Master or PhD programmes, both national and international, in close subjects.

The location of the Engineering & Management College

The College is hosted within the Department of Engineering and Management of Industrial Systems (DTG, www.gest.unipd.it), in Vicenza, a town in the North-East of Italy (30 min by train from Venice, less than 2 hours by train from Milan).

Vicenza is well-known as the "City of the Gold and Andrea Palladio" (see www.guide.vicenza.com). An ancient publication defined Vicenza "The Gorgeous City". Still today, after centuries, Vicenza remains a true and genuine jewel, indissolubly bond to the aesthetic and creative genius of the great Andrea Palladio, the Architect "par excellence" who, in the XVI century, has left his most precious inheritance to his city of adoption, Vicenza. His works of art are so extraordinary to make Vicenza deserve the title of Universal Patrimony of the Humanity, as attributed by the Unesco.

The path to Internationalisation

Levering on the peculiarities which made the "Vicenza model" so successful in Italy, starting from the next Academic Year the Board of the Engineering & Management College decided to offer a complete set of Classes, taught in English. This way, the Board wishes to provide relevant opportunities for foreign students motivated towards Engineering & Management Disciplines.

The following table shows the details of the Classes that will be offered in English, during the next academic year, 2010-2011, while the specific programs are given in the next pages:

		ECTS	Period
1	Business Strategy	6	2 nd
2	Industrial Electrical Applications	6	2 nd
3	Innovation in Metallurgical Production	6	1 st
4	Model Identification and Data Analysis	6	1 st
5	Operations Research Applications	6	1 st
6	Quality and Metrology in Manufacturing	6	2 nd
7	Service Operations Management	6	1 st
8	Statistical Methods and Applications	6	1 st

The duration of each teaching period is 13 weeks, with 4 hours of lessons every week for 6 ECTS Classes.

1st Period: from October 1st 2010, to January 20th 2011 (two weeks breaks during Christmas holidays), with final examinations from 21st January 2011 to 20th February 2011

2nd Period: from February 22nd 2011, to June 10th 2011, with final examinations from 15th June to the end of July.

Opportunities

Several opportunities will be offered to foreign students, including the organisation support from:

- JEST (Junior Enterprise Association of Management Engineers graduated in Vicenza),

- ESU (for accommodation and boarding in Vicenza),
- Job Placement Office,
- Foundation for University Studies in Vicenza.

The possibility of carrying out stages, internships and master degree theses in cooperation with companies thanks the Industrial Association of Vicenza support will be explored.

Further information

For any further information, please feel free to contact:

- prof. Andrea Vinelli (andrea.vinelli@unipd.it)
- prof. Franco Bonollo (franco.bonollo@unipd.it)

or check on the website

www.gest.unipd.it/international

Programs of Classes taught in English

Business Strategy Prof. Anna Nosella - mailto:anna.nosella@unipd.it	6 ECTS	2nd Period
Course Description This course focuses on business strategy and on the creation of competitive advantage. It develops students' ability to analyze the internal and external factors essential for crafting and executing a firm's strategy as well as strategies for sustaining success. The central questions addressed in this course are: What allows certain firms in certain industries to earn positive economic profits while others deliver negative returns? Why can certain firms sustain their economic profits over long periods of time, while for other firms these profits quickly disappear? How can advantage be sustained through time? Course objectives are accomplished through exposure to cases from a range of industries. Through cases analyses and team exercises, students perform industry and firm level assessments to identify competitive strengths as well as factors necessary to sustain success. Students are also involved in developing a project work based on business plan writing.		
Programme The concept of strategy, mission and vision. Tools for the Analysis of Firm's Strategy (as is): Five Forces Analysis -Analysis of the forces affecting competition in a market; Positioning Analysis; Generic competitive strategies; Value Chain analysis; Resource Based View of the Firm - Determination resources significant in generating firm profits and the extent to which resources are adapted to the firm's external environment; Organization structure and management system Strategies for growth (to be): Direction of growth: market penetration, globalization, vertical integration, horizontal integration; External growth vs. internal growth: Corporate finance, M&A, the Private Equity support; Blue Ocean Strategy; Balanced score Cards Business plan Strategy tools: Negotiation Strategy		

Industrial Electrical Applications Prof. Nicola Bianchi - mailto:nicola.bianchi@unipd.it	6 ECTS	2nd Period
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Course Description

Acquisition of expertise in the field of electrical machines and drives.
Knowledge of working principles of electromechanical systems, choice criteria and utilization manners.
Particular care is given to specific issues such as the optimal choice of mechanical gearbox, thermal cooling, fault-tolerance, high efficiency operations, flux-weakening operations, etc.

Programme

Recall of electromechanical energy conversion. Analysis of the more used electrical machines: DC motor, induction motor, synchronous machine. Classification and machine design criteria. Motors with very high dynamics. Power electronics: components, static converters, rectifiers, chopper, inverter, PWM technique. Criteria for the choice of electrical machines and drives: load characteristics, mechanical characteristics of the electrical machines, choice of the proper type of drive and control. Design criteria, magnetic computation, losses computation, thermal computation.
Outline of the design of the drive control with speed loop and position loop, according to some electrical machine topologies, block scheme, regulator gains choice.
Solutions of electrical motors and converters suitable for fault-tolerant applications (temporary or permanent faults).

Innovation in Metallurgical Production Prof. Giulio Timelli - mailto:giulio.timelli@unipd.it	6 ECTS	1st Period
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Course Description

This course focuses on the main innovation recently introduced in metallurgical production. Attention is paid both to ferrous and non-ferrous products. New processes and engineering solutions are reviewed and compared (technically and economically) to conventional ones. Some visits to innovative metallurgical plants are also scheduled.

Programme

The impact of innovation in the iron and steel industries, in the blast furnaces and electric furnaces. Innovative processes in cast iron foundry (austempering ductile iron). Innovative thin rolled metal products for automotive applications (High Strength Steels, Advanced High Strength Steels, Ultra High Strength Steels). Powder metallurgy: mechanical, chemical and electro-chemical methods for powder production. Cost analysis of products realized by powder metallurgy and comparison with traditional processes. Innovative processes in aluminium foundry: vacuum die casting, thixocasting, rheocasting, squeeze casting, lost foam. Innovative treatments of metal surfaces (coatings production with flame and plasma techniques, PVD and CVD processes, painting and anodizing). Metal Matrix Composites (MMC). Nanomaterials: characteristics and properties. Material and process selection. Practice with the use of the Cambridge Engineering Selector. Life Cycle Assessment and Life Cycle Costs. Assessment of costs in metallurgical processes. Numerical simulation of metallurgical processes.

Statistical Methods and Applications Prof. Luigi Salmaso - mailto:luigi.salmaso@unipd.it	6 ECTS	1st Period
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Course Description

The course's objectives are to provide students with advanced methodological tools, supported by the relative statistical software, to deal with statistical quality control in production, in research and development and improvement of a product or more generally in a production system. The course also provides the advanced tools of multivariate statistics for the analysis and study of the associations between sets of variables.

Programme

The course programme includes descriptive statistics and statistical inference, statistical methods for quality improvement, statistical process control, statistical design of experiments, multiple linear regression and conjoint analysis.

Model Identification and Data Analysis Prof. Alessandro Chiuso mailto:alessandro.chiuso@unipd.it	6 ECTS	1st Period
Course Description Learning the basic statistical methods for: <ol style="list-style-type: none"> 1) Prediction and filtering for dynamical systems. 2) Identification of dynamical models from experimental data 		
Programme Basic probability and statistics (density and joint density, second order description, covariance function, estimator and their properties. Central limit theorem and ergodicity. Discrete time systems. Bayesian estimation: Gaussian case, Linear minimum variance estimators. Second order processes: covariance and spectrum. Discrete time dynamical systems for stochastic processes (ARMA, ARMAX, ARX, etc) predictors. Kalman filter. Nonparametric estimation: spectral estimation, periodogram and smoothed versions. Parametric methods: Least squares, Prediction error methods, Maximum Likelihood. Order estimation (AIC, BIC, MDL...). Asymptotic variance, model validation. Closed loop identification. Applications: identification of mechanical systems, modal analysis, fault detection and monitoring. Modeling trends and seasonalities; volatility models (ARCH, GARCH)		

Service Operations Management Prof. Andrea Vinelli - mailto:andrea.vinelli@unipd.it	6 ECTS	1st Period
Course Description The class is about the management of operations in service organisations. Objective is to help students to build competences to understand and manage service operations to improve service performance. The class examines the operations decisions to manage resources and deliver service to customers. Through case study discussions, the class provides tools, frameworks and techniques for operational analysis and improvement within service management.		
Programme Service Operations Management: an introduction. Challenges facing service operations managers. Different types of service processes. The nature and the power of the service concept. Focused and unfocused service operations. Customer and supplier relationships. Customer segmentation and retention. Customer Relationship Management. Key Account Management. Service Quality: defining expectations and service quality factors. Customer satisfaction. Managing through intermediaries. The nature of service processes: volume and variety; commodity and capability. The customer experience. Service people: managing and motivating service providers. The role of scripts and levels of employee discretion. Resource utilisation: service capacity management. Defining capacity strategies. The coping zone. How network technology and information are transforming services.		

Operations Research Applications Prof. Giorgio Romanin Jacur - mailto:romjac@dei.unipd.it	6 ECTS	1st Period
Course Description Elementary queueing theory knowledge of principles and applications. Discrete simulation knowledge of principles and applications. Graph Theory knowledge of principles and advanced applications. Ability of building up models of actual problems and of obtaining related solutions by computer. Ability of building up models of small dimension actual problems and of obtaining related solutions by hand.		
Programme Elementary queueing theory, theory and actual applications. Discrete simulation, general principles and applications by means of a specific software. Network programming techniques, theory and actual applications. Graph Theory: maximum flow problem, knapsack problem, location problems, euler circuits and chinese postman problem, travelling salesman problem.		

Quality and Metrology in Manufacturing Prof.Simone Carmignato - mailto:simone.carmignato@unipd.it	6 ECTS	2nd Period
Course Description The course is aimed at giving the fundamentals of quality assurance methods for manufacturing processes and dimensional measuring systems. In particular, the course focuses on: introduction to quality management systems, measurement management systems, requirements for measurement processes and measuring equipment, geometrical products specifications & verification, dimensional & geometrical metrology, coordinate metrology, surface metrology.		
Programme Introduction to quality management systems. Accreditation and certification. Measurement management systems, requirements for measurement processes and measuring equipment. Calibration of measuring systems. Traceability of measurements. Quality assurance, statistical process control, process capability. Geometrical products specifications and verification. Methods for determination of measurement uncertainty. Dimensional and geometrical metrology: simple and advanced measuring systems. Coordinate metrology: coordinate measuring systems, tactile probing, optical methods and x-ray methods. Metrological rooms. Surface metrology: roughness end surface texture characterization, 3D surface characterization, micro- and nano-measuring systems.		