

Polytechnic Institute of Coimbra (P COIMBRA 02) Coimbra Institute of Engineering - ISEC Chemical and Biological Engineering Department

ECTS CATALOGUE

The main language of instruction at Coimbra Institute of Engineering is Portuguese. However, some courses from degree and master programs can be offered in English and/or with a tutorial support in English.

The Master Course Engineering and Industrial Management is taught in Portuguese at the moment. Some of the subjects might have tutorial support in English.

The ECTS catalogue includes subject contents in English.

Students can choose subjects from this Catalogue to the study plan proposal (Learning Agreement) to be analyzed carefully by the Departmental Coordinators and to be adjusted if necessary.

This ECTS catalogue contains information which is valid for this academic year. ISEC reserves the right to adjust the courses offered during the academic year and is not responsible for typing errors or printing mistakes.

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Polytechnic Institute of Coimbra (P COIMBRA 02) Coimbra Institute of Engineering - ISEC Chemical and Biological Engineering Department

ECTS CATALOGUE

MASTER Engineering and Industrial Management

Old Code	New Code	Title - Portuguese Title - English		ECTS	Period
1.º ano / 1 st Year	1.º ano / 1 st Y	ear			-
642001	60012167	Logística e Cadeias de Distribuição	Supply Chain and Logistics	6	Fall
642002	60012178	Análise de Dados e Estudos de Mercado Market Research and Data A		6	Fall
642003	60012189	Gestão da Produção	Production Management	6	Fall
642004	60012195	Tecnologias de Fabrico	Manufacturing Technologies	6	Fall
642005	60012204	Métodos de Apoio à Decisão	Decision Support Methods	6	Fall
642006	60012210	Gestão de Energia	Energy Management	6	Spring
642007	60012221	Projeto de Produtos e Serviços	Product and Service Design	6	Spring
642010	60012279	Finanças Empresariais	Corporate finance	6	Spring
642009	60012243	Avaliação e Gestão de Risco	Evaluation and Risk Management	6	Spring
642008	60012232	Ativos Técnicos	Technical Assets	6	Spring
642011	60012285	Gestão de Manutenção	Maintenance Management	6	Fall
642012	60012296	Empreendedorismo e Propriedade Entrepreneurship and Industr Industrial Property		6	Fall
642013	60012303	Projeto	Project	48	Anual
	60012320	Dissertação*	Dissertation*	48	Anual
	60012314	Estágio*	Internship*	48	Anual

*ISEC accept student for works/researches related with these subjects without ECTS attribution. At the end of the work, student will receive an evaluation report within the total of working hours. The presentation and defense will be done at home university.



Signature of Teacher:

Mestrado - MsC Engenharia e Gestão Industrial (Português)

Mestrado - MsC Management and Industrial Engineering (Ingês)

Academic Year: 2017/2018

Program Contents

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Course Unit	PRODUCT AND	SERVICE DESIG	ŝN	
Subject type C	Compulsory	Research A	rea Management and Industrial E	ingineering
Year 1 Semes	ster 2		ECTS	6.0
Working Hours			Unaccompanied Working Hour	'S
Activity Type	Working Hours Per Week	Total Hours	Activity Type	Total Hours
Theoretical Lectures	2.0	28.0	Study	
Theoretical-Practical Lecture	s 2.0	28.0	Works / Group Works	30.0
Practical-Laboratoty Lectures	S		Project	66.0
Tutorial Orientation			Evaluation Additional	4.0
Total of Working Hours		156		
Lecturer				
Activity Type		Name	Qualifications	Category
Theoretical Lectures	Belmiro Dua	arte	PhD.	Adjunct Prof.
Theoretical-Practical Lecture Practical-Laboratoty Lecture Tutorial Orientation	s Belmiro Dua s	arte	PhD.	Adjunct Prof.
Responsible(s) Lecturer (s) Belmiro Dua	arte		

Goals / Skills

Provide the students with the ability: (i) to set a product portfolio and design a strategy for product planning; (ii) to generate product and service concepts, select them and test them; and (iii) to search for robust solutions.

Program Contents

- 1. Product portfolio development processes organization dependency aspects
- 2. Processes of development of product portfolio and organizations
- 3. Planning of product development timing and strategies
- 4. Identification of customer needs market research tools
- 5. Product specifications
- 6. Generation of concepts
- 7. Selection of concepts
- 8. Test of concepts
- Robust design via Taguchi Methods Introduction to experiments design
 Estimation of production costs

Work Done

Development of the concept for a product or service following a systematic approach in groups of 4 to 6 students. The product or service to develop may be proposed by students.

Signature of Teacher:

Teaching Methododoly

In classes the theoretical aspects of the methodology will be addressed using common teaching material. Some of the classes are dedicated to intermediate presentations of project components, and discussion of strategies to follow. At the end a summative presentation of the project will occur.

Bibliography

- Ulrich, K.T., Eppinger, S.D. Product Design and Development, 4th. Ed. McGraw-Hill (2008)
- Otto, K., Wood, K. Product Design Techniques in Reverse Engineering and New Product Development, Prentice Hall (2001)
- Rosenau Jr., M.D. The PDMA Handbook of New Product Development, John Willey & Sons (1996)
- Pires, A.R. Inovação e Desenvolvimento de Novos Produtos, Edições Sílabo (1999)
- Mitra, A. Fundamentals of Quality Control and Improvement, 3rd. Ed., Willey (2012)
- Raghavarao, D., Wiley, J.B., Chitturi, P. Choice-based Conjoint Analysis Models and Designs, CRC Press (2011)
- Kotler, P., Keller, K. L. Administração de Marketing, 12.ª Ed., Pearson (2006)
- Malhotra, N. Pesquisa de Marketing: Urna Orientação Aplicada, 6.ª Ed., Bookman (2012)

Evaluation Method

The assessment is done based on the intermediate presentations, final presentation, and writting material, with emphasis on the final report. No exam will be considered for assessment.

Conditions for Exam Admission

The students are required to attend at least 75% of the classes, and no student can be enrolled in the course after the third week as the work groups are already developing the projects.

Access Conditions and Attendance Excuse

Not applicable.

Conditions for Results Improvement

The students are allowed to improve the project and require a new assessment.

Date

11.02.2019

Signature from the lecturer responsible for the course Elingerenge Stafaite



Instituto Superior de Engenharia de Coimbra www.isec.pt

Signature of Teacher:

Mestrado em Engenharia e Gestão Industrial

MsC in Industrial Engineering and Management

Academic Year: 2018/2019

Program Contents

Course Unit	ENERGY MANA	AGEMENT		
Subject type	Engineering Scien	ces Research Are	a Electrical Engineering	
Year 1 st Seme	ester 2 nd		ECT	S 6
Working Hours			Unaccompanied Working Hou	Irs
Activity Type	Working Hours Per Week	Total Hours	Activity Type	Total Hours
Theoretical Lectures	2	28	Study	60
Theoretical-Practical Lecture	es 2	28	Works / Group Works	37
Practical-Laboratoty Lecture	es		Project	
Tutorial Orientation			Evaluation Additional	3
Total of Working Hours		156		
Lecturer				
Activity Type		Name	Qualifications	Category
Theoretical Lectures	Dulce Heler	na de Carvalho Coelho	PhD	Prof. Adjunta
Theoretical-Practical Lecture Practical-Laboratoty Lecture Tutorial Orientation	es Dulce Helen es	a de Carvalho Coelho	PhD	Prof. Adjunta
Responsible(s) Lecturer (s	s) Dulce Heler	na de Carvalho Coelho		

Goals / Skills

The main aims of this course unit are:

To familiarize students with the basic concepts of energy management

To know the tariff legislation

To learn the methodology, phases and expected outputs of energy audits in industry

To learn about technologies and systems for improving energy efficiency

To help students to develop the knowledge and analytical skills needed for a successful career in the energy sector, in terms of energy policy analysis and energy management

Program Contents

Introduction to Energy Management. Energy: energy sources; Global, European and National energy trends: by fuel and by sector. National Energy Characterization. Portuguese Energetic Balance . The policy background to energy efficiency. Electric rate structures - Understanding Electric Rate Structure and Billing. Price simulator - ERSE (Portuguese Energy Services Regulatory Authority).

Energy Audit in Industrial Facilities. Objectives; Types of energy audits; Methodology and energy audit equipment; Energy Audit results. Energy analysis - Sankey diagrams. Preparing an energy audit report. The Energy-Intensive Consumption Management System (SGCIE). Energy Consumption Rationalization Plan (PREn). PREn Report structure. Rational Use of Energy (RUE). Strategies for Energy Savings in Industry. Power reduction; Power factor correction;

Signature of Teacher:_

Lighting systems; Electric Motors; Compressed Air; Steam and Process Heating Systems; Heat Recovery. Renewables in Industry. ISO 50001 – Energy Management System. Overview of ISO 50001 Standard.

Work Done

Laboratory case studies

Teaching Methododoly

Lectures, case-studies presentation, work/work Group, case-studies analysis.

Bibliography

- · Teaching support material
- · UE and Portuguese Legislation (energy field).
- Dulce Coelho. Energy Audits, February 2000, ISEC 1-9-20 (in Portuguese).
- Dulce Coelho. Electric Motors, ISEC 2005 (in Portuguese).
- OECD/IEA. Energy Management Programmes for Industry (2012).
- IEAG, Guidelines for Conducting an Energy Audit in Industrial Facilities (2010).
- Thollander, P. and J.Palm. Improving Energy Efficiency in Industrial Energy Systems (2013).
- S. U. Kulkarni, and Kalpana Patil. Energy Audit of an Industrial Unit- A Case Study (2013).
- R. Saidur. A review on electrical motors energy use and energy savings (2010).
- US DoE. Department of Energy. A Guide to Energy Audits (2011).
- OECD/IEA .The multiple benefits of energy efficiency improvements (2012).
- ADENE. Energy Efficiency in Industry (2004). (in Portuguese).
- OECD/IEA. Tracking Industrial Energy Efficiency and CO2 Emissions (2007).
- IIASA. Energy End-Use: Industry (2014).
- World Energy Council. World Energy Resources (2013).
- OECD/IEA. Assessing Measures of Energy Efficiency Performance and their Application in Industry. (2008).
- World Energy Council. Energy Efficiency Potentials and Barriers for Realization in the Industry Sector (2013).
- UNIDO. Energy efficiency in developing countries for the manufacturing sector (2011).
- AlMinho A Guidebook for the Use of Renewable Energy in Companies (2010). (in Portuguese).
- HKEIA. Guidebook for ISO 50001 Energy Management System (2013).

Evaluation Method

Final exam

Conditions for Exam Admission

Access Conditions and Attendance Excuse

Conditions for Results Improvement According to the legislation

Date

Signature from the lecturer responsible for the course

somple Artice. Carlo

06/02/2019



Instituto Superior de Engenharia de Coimbra www.isec.pt

Mestrado – MsC em Engenharia e Gestão Industrial

Mestrado - MsC in Engineering and Industrial Management

Academic Year: 2018/2019

Program Contents

Course Unit	1	DEC	SION SUPPO	ORT METHODS		
Subject type	9	Basic	Science	Research Area	Mathematics	
Year	1st	Semester	1st		ECTS	6
Working Hou	rs				Unaccompanied Working Hours	
Activity Type			Working Hours Per Week	Total Hours	Activity Type	Total Hours
Theoretical Le	ctures		2	30	Study	82
Theoretical-Pr	actical	Lectures	2	30	Works / Group Works	10
Practical-Labo	oratoty	Lectures			Project	
Tutorial Orient	tation				Evaluation Additional	4
Total of Work	cing Ho	ours		156		
Lecturer						
Activity Type				Name	Qualifications	Category
Theoretical Le Theoretical-Pr Practical-Labo Tutorial Orient	ectures actical pratoty tation	Lectures Lectures	Maria do Céi Maria do Céi	u Lourenço Marques u Lourenço Marques	PhD	Prof. Adjunto
Responsible(s) Lec	turer (s)	Maria do Céi	u Lourenço Marques		

Goals / Skills

To present the potential of decision support methods for linear, nonlinear and stochastic cases in the context of monitoring, research and operational management, with particular emphasis on formulation/troubleshooting decisions within the Industrial Engineering and Management, and also to introduce and work with the existent useful tools to obtain optimal solutions.

Program Contents

I. Deterministic models: formulation and model development. Models based on linear programming. Sensitivity analysis. Analysis of large variations. Integer programming based models. Non-linear models. Formulation of problems. Optimization without restrictions on one or more variables. KKT conditions to nonlinear optimization with constraints. Programming: separable convex quadratic, non-convex.

II. Nondeterministic models: decision theory. Probabilistic and non-probabilistic methods. Decision criteria in uncertainty.
 Value of information. Exponential utility functions. Utility, indifference and risk. Risk premium. Decision criteria with risk.
 III. Decision trees: decision nodes, states and alternatives. Selection, qualification and assessment of alternatives. Bayes analysis in estimating probabilities. Information value. Sensitivity analysis. Contingency plans. Utility theory.

Work Done

One work (with written report and oral presentation) of application/research in the area of Decision Support Methods (30% weighting).

Teaching Methododoly

The teaching methodologies are the followings: Lectures by the teacher; Practical exercises by students (whenever possible applied to Industrial Engineering and Management).

Bibliography

- L. Valadares Tavares, "Investigação Operacional", 1996, McGraw Hill.
- F. Hillier, G. Lieberman, "Introduction to Operations Research", 2004, McGraw Hill.
- Operations management, J. Heizer e B. Render, 5 Ed., Prentice Hall, 1999,
- Management Decision Making, George E. Monahan, Cambridge Univ. Press, 2000
- Carlos Henggeler Antunes, Luís Valadares Tavares, (coordenadores), Casos de Aplicação da Investigação Operacional, McGraw-Hill, 2000.
- R. K. Ahuja, T. L. Magnanti, and J. B. Orlin, Network flows theory, algorithms, and applications, Upper Saddle River, Prentice-Hall, 1993.
- Material de apoio às aulas (textos e exercícios práticos) (available in moodle).

Evaluation Method

Evaluation consists of one written exam (70% weighting), with a minimum of 7 values out of 14, and one work with written report and oral presentation (30% weighting). Alternatively, the evaluation can be made through a final written exam (100%).

Conditions for Exam Admission

The student must be officially enrolled in the course unit (Secretaria Virtual).

Access Conditions and Attendance Excuse

Not applicable.

Conditions for Results Improvement

Rules of REACTA

Date

Signature from the lecturer responsible for the course

8/10/2018

Maria do Cen Lovens Maques



Instituto Superior de Engenharia de Coimbra www.isec.pt Mestrado - MsC Mestrado em Engenharia e Gestão Industrial

Mestrado - MsC Master in Industrial Engineering and Management

Academic Year: 2018/2019

				Prog	ram Contents
Course Unit M	ANUFACTURI	NG TECHNOLOGI	ES		
Subject type Spo	ecialty Sciences	Research Arc	ea Mechanical Er	gineering	
Year 1 Semest	er 1			ECTS	6
Working Hours			Unaccompanied	Working Hours	i
Activity Type	Working Hours Per Week	Total Hours	Activity Type		Total Hours
Theoretical Lectures	2	30	Study		68
Theoretical-Practical Lectures	2	30	Works / Group Wo	orks	30
Practical-Laboratory Lectures			Project		
Tutorial Orientation			Evaluation		2
			Additional		
Total of Working Hours		160			
Lecturer					
Activity Type		Name	Qu	alifications	Category
Theoretical Lectures	João Miguel	Maia Carrapichano		PhD	Coord. Prof.
Theoretical-Practical Lectures Practical-Laboratory Lectures Tutorial Orientation	Vítor Manuel	Maranha Lopes		MSc	Assistent

Responsible(s) Lecturer (s)

João Miguel Maia Carrapichano

Goals / Skills

To know the main forming processes by plastic deformation, the main technologies used and the products obtained; to know the casting process, the main technologies used and the products obtained; to know the main technologies used in the manufacture of prototypes.

To select tools and cutting parameters for machining operations; to build manually CNC programs for basic milling operations; to use Computer Aided Manufacturing software programs to create CNC programs for advanced machining operations; to use measuring devices.

Program Contents

Materials and processing. Classes of materials. Metallic materials: properties and plastic deformation mechanisms. Technological processes of forming and manufacturing (general designations and characteristics). Conformation by plastic deformation processes: rolling mill, extrusion, drawing and deep drawing processes.

Conformation by plastic deformation processes: rolling mill, extrusion, drawing and deep drawing processes. Casting systems.

Composite materials processing. Contact molding, vacuum, compression, injection, and autoclave. Filament winding. Pultrusion. Approach to laminated composites.

Additive Manufacturing Technologies. Exposition of the main additive manufacturing systems used in the production of components associated with mechanical systems.

Reverse Engineering. From the physical model to the 3D CAD file - generation conceptual models from physical models. Digitization of mechanical components; 3D scanning and 2D profiles. Different types of digitizers and main applications; Using a Roland Laser Scanner, model LPX 600. The Roland EZ Studio program and the selection of scanning parameters. The Geomagic Software and its connection to Solidworks. The Mimics Software and its application in the context of

segmentation of radiological images. Experimental execution of an application example.

Dimensional Metrology. Operation of devices used in the measuring of mechanical parts. Dimensional and geometric tolerances. Adjustments. Surface roughness parameters. Roughness evaluation. Interpretation of technical drawings with manufacturing specifications. Execution of measurement operations with different instruments.

Machine tools. Conventional and CNC Machine tools. How to operate machine tools. Procedure to operate 3 and 5-axis CNC machine tools.

CAD/CAM technologies. CAD/CAM methodology to create a machining program. Machining strategies used in CAM programs. Post-processing and execution of manufacturing mechanical parts.

Work Done

In the theoretical-practical classes will be carried out demonstrative works related to different technologies of manufacture. The following demonstrations of practical work are highlighted: use of CAD / CAM technology to create machining cycles; manufacture of mechanical components in CNC machine tools; manufacture of components in additive manufacturing equipment; dimensional characterization of mechanical components; characterization of the roughness of mechanical components; reverse engineering - from physical model to 3D geometry; reverse engineering - from radiological examination to 3D model; use of model production technologies in medical context.

Teaching Methodology

Theoretical classes use the lecture method, were main contents are transmitted at those theory classes used expositive techniques by PowerPoint support. At theoretical-practical classes students take contact with the main tasks and operations that take place in a machining center and elaborate programs in CNC language, either manually or using CAM software. Different mechanical measuring instruments are used. *The evaluation of the theoretical and theoretical-practical components is carried out by individual or group work, involving technologies available in ISEC. Guest specialist can be invited to expose some parts of the program contents.*

Bibliography

Carlos Relvas - Controlo Numérico Computorizado - Conceitos Fundamentais, Edições Técnicas, 2000. ISBN: 9729579466

L. Veiga da Cunha - Desenho Técnico, Fundação Calouste Gulbenkian, 2000

A. Completo e outros - Tecnologias de Fabrico, Publindústria, 2009. ISBN: 9789728953317

A. Silva, J. Dias e L. Sousa - Desenho Técnico Moderno, Lidel, 2001. ISBN: 9727571891

P. Guedes - Metrologia Industrial, ETEP, 2011. ISBN: 9789728480271

Paulo Amaro e Fernando Simões - Controlador Fanuc Series O-M, Manual do utilizador, ISEC 2009

Mastercam, Geomagic, Mimics tutorials

Manuais e tutoriais do Software

LASCOE, O.D. - Handbook of Fabrication Processes, ASM International Metals Park, Ohio

CHIAVERINI, Vicente - Tecnologia Mecânica, Vol II, Makron Books86042

Supporting texts (by course unit teachers).

Evaluation Method

Final written exam grade (0-20) according to official school calendar (50% to theoretical lessons and 50% to theoreticalpractical instructions and developments). Students coming from undergraduate courses who have demonstrated in-depth part of the contents taught in the theoretical-practical classes, may be exempted from the corresponding classes. To Erasmus student's progress assessment can be established by lectures as complementary meetings in English language, to develop parallel written project work in a predefined subject, with individual final presentation and discussion.

Conditions for Exam Admission

According to general rules used in the school.

Access Conditions and Attendance Excuse

Without conditions.

Conditions for Results Improvement

Improving grades or retaking exams is allowed, according to general rules of the course and used in the school.

Date

Signature from the lecturer responsible for the course

09.10.2018

Jon Ayel Raic Copilio



Instituto Superior de Engenharia de Coimbra www.isec.pt

Signature of Teacher: <

Mestrado - MSc Engenharia e Gestão Industrial (Português)

Mestrado - MSc Engineering and Industrial Management (Ingês)

Academic Year2018/2019

Program Contents

Course	e Unit	PRO	ODUCTION	MANAGEMENT			
Subjec	ct type			Research A	rea Engineerin	g and Industria	il Management
Year	1st	Semester	' 1st			ECTS	6
Workin	g Hours				Unaccompanied	I Working Hours	
Activity	Туре		Working Hours Per Week	Total Hours	Activity Type		Total Hours
Theoret Theoret Practica Tutorial	ical Lectur ical-Practik II-Laborato Orientation	es cal Lectures ty Lectures n	2 2	30 30	Study Works / Group W Project Evaluation Additional	/orks	90 6
Total of	f Working	Hours		156			
Lecture	r						
Activity	Туре			Name	Q	ualifications	Category
Theoret	ical Lectur	es	David José F	Rocha Domingues		MSc	Ad. Prof
Theoret Practica Tutorial	ical-Practic Il-Laborato Orientatio	cal Lectures ty Lectures n	David José F	Rocha Domingues		Msc	Ad.Prof
Respon	sible(s) L	ecturer (s)	David José F	Rocha Domingues			

Goals / Skills

In specific terms, it is intended that, with this curricular unit, the student master the knowledge and tools necessary for the planning, programming and control of operations, in order to optimize industrial management.

The aim is to develop the ability to understand and apply complex models describing the planning and scheduling of production operations, as well as the following generic competences:
ability to apply the knowledge gained in solving new problems with increasing complexity;

capacity for lifelong learning on an autonomous basis;
Oral and written communication skills for different audiences.

Signature of Teacher:

Program Contents

1. Production and Operations Strategy The Decision Process From Enterprise Strategy to Functional Strategies Competitive Priorities in Operations Strategy From Strategy Models to Operations Strategy

2. Flexibility Aspects Involved in Flexibility Global Determinants and Framework for Flexibility Direct Determinants of Flexibility Flexibility, Planning and Programming

3. Capacity Capacity Concepts and Calculation Capacity Planning Theory of Constraints Capacity in Services

4. Implementation of productive facilities Basic Layout Settings Rational Procedure for Preparing alayout (SLP) Quantitative Methods in Layout Determination Assembly Lines Deployment and Material Handling

5. Aggregate production planning

The aggregate planning process, variables and costs

Basic techniques of aggregate production planning: adjustment of production by looking for changes in labor, extraordinary labor or dead time, inventory changes and subcontracting (simple and optimized) Advanced models of aggregate planning:

Holt's linear decision rule, Bowman's transport model, Goal Programming model, Vergin heuristic model, search decision rule, parametric production planning, heuristic model of production levels, and integrated production-marketing-finance model.

6. Inventory management
Characteristics, costs and classification of stocks.
Supply models with continuous demand:
economical lot with instant replacement, with continuous replacement, with quantity discounts and with rupture
Supply models with discrete demand:
periodic ordering, Silver-Meal, Periodic Amount (IPPA) and Wagner-Within algorithms.
Stochastic supply models and the security stock: random search and replacement period
Supply models by cyclical review.
Purchasing process: the buying cycle, trading and risk.

7. Schedule Operations Sequencing with heuristics: simple and combined heuristic rules, performance-criteria evaluation Complex heuristic algorithms Dynamic programming Methods of assignment: the Hungarian method Programming with finite capacity Programming in Continuous Environments: Johnson algorithm, simple and global weighted flow rate

8.Materials Requirement Planning MRP / Just-in-Time Materials Requirement Planning (MRP) Capacity Programming MRP and Programming Heuristics Just-in-Time Approach Lean and JIT Kanban and Visual Production Control Systems Sequencing in JIT environment

Work Done

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Signature of Teacher:_

Teaching Methododoly

Bibliography

ROLDÃO, V.S., RIBEIRO, J.S.; Gestão das Operações-Uma abordagem Integrada; Ed. Monitor, 2007 LISBOA,J. V., GOMES,C.F.; Gestão de Operações; Vida Económica; 2ªEd, 2008 COURTOIS, A.;MARTIN-BONNEFOUS. C., PILLET, M.; Gestão da Produção, Lidel, 5ªed, 2007 STEVENSON, W.J., Production / Operations Management, Irwin-McGraw-Hill REIS,L; Manual da Gestão de Stocks- Teoria e prática; Editorial Presença, 2008 GOLDRATT, Eliyahu M., The Goal : A Process of Ongoing Improvement, Gower Publishing KRAJEWSKI, L.J., RITZMAN, L.P., Operations Management ,Addison-Wesley Publishing Company Inc, 1996

CHASE, R.B., AQUILANO, N., Production and Operations Management, Irwin, 1989 RENDER, B., STAIR, R.M., Quantitative Analysis for Management ,Aliyn an Bacon Inc, 1998

Evaluation Method

Two alternatives of assessment methodology are available: distributed and by final exam. In the distributed evaluation there are two tests, with weighting of 2x40% and a set of cases discussed in class with a weighting of 20%.

Conditions for Exam Admission

Acc regulatory terms

Access Conditions and Attendance Excuse

Not applicable

Conditions for Results Improvement

By exam

Date

12-Oct-2018

Signature from the lecturer responsible for the course



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Signature of Teacher:

Mestrado - MsC Engenharia e Gestão Industrial

Mestrado - MsC Engineering and Industrial Management

Academic Year: 2018 / 2019

MATHEMATICS

Program Contents

Course Unit	MARKET RESEARCH AN	ID DATA ANALYSIS
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Subject type

Research Area

Year 1 st Seme	e ster 1 st			ECTS 6
Working Hours			Unaccompanied Work	king Hours
Activity Type	Working Hours Per Week	Total Hours	Activity Type	Total Hours
Theoretical Lectures	2	28	Study	81
Theoretical-Practical Lectur	res		Works / Group Works	16
Practical-Laboratoty Lecture	es 2	28	Project	
Tutorial Orientation			Evaluation	3
			Additional	
Total of Working Hours		156		
Lecturer				
Activity Type		Name	Qualific	ations Category
Theoretical Lectures Theoretical-Practical Lecture	Luís Manue	l Santos Melo Marg	alho Ph	D Adjunct Professo
Practical-Laboratoty Lectur Tutorial Orientation	es Luís Manuel	Santos Melo Marga	iho Ph	D Adjunct Professo

Responsible(s) Lecturer (s)

Luís Manuel Santos Melo Margalho

Goals / Skills

Goals

It is intended that the student acquire the necessary bases to participate in market studies and perform data analysis, using computational tools using the software / programming language R.

Skills

· Acquisition of the essential "language" associated with Data Analysis and Market Studies that allows students to independently develop their future professional projects as well as the ability to integrate multidisciplinary teams involving specialists and clients.

. Know how to write basic code using the R language and interpret the results obtained

Program Contents

1. Data analysis. Review on tests of parametric hypotheses. Test for mean, for variance and for proportion. Test for comparison of means, variances and proportions of two populations. Adjustment tests. Independence tests. Analysis of Variance.

2. Data analysis using multivariate statistical techniques using software / R language, including multiple regression and principal component analysis.

Signature of Teacher

Work Done

Carrying out 4 practical works of data analysis, using software R.

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Teaching Methododoly

Theoretical classes of exposition of the programmatic contents. Laboratory classes to solve theoretical-practical exercises, mainly using statistical software.

Bibliography

- Class notes
- Ross, S. Introduction to Probability and Statistics for Engineers and Scientists, Elsevier
- Ryan, T. Modern Engineering Statistics, Wiley
- · Hill, M. & Hill, A. Questionnaires, Sílabo Editions
- Reis, E. Applied Multivariate Statistics, Sílabo Editions

Evaluation Method

Distributed Assessment or Final Exam Evaluation.

The Distributed Evaluation consists in the accomplishment of four practical works of data analysis, each of them quoted to 5 values. The final classification will be the sum of the notes of the works, provided that the note of each one is greater than or equal to 2.5 values.

The Final Exam Assessment (normal and appeal period) consists of a 20-item exam.

The student is approved if he has a minimum final mark of 10 points.

In any of the assessment methods, if the grade is higher than 18 points, the student must undergo an additional test. Otherwise, the grade of 18 values will be assigned.

Conditions for Exam Admission

Access to the exam is allowed to all students duly enrolled in the course unit.

Access Conditions and Attendance Excuse

Conditions for Results Improvement

In accordance with the conditions in use in ISEC.

Date	Signature from the lecturer responsible for the course				
03/10/2018	Durs Manual Sento Hayalles				



www.isec.pt

Signature of Teacher:

Mestrado - MsC Engenharia e Gestão Industrial (Português)

Mestrado - MsC Industrial Engineering and Management (Ingês)

Academic Year: 2018/2019

Program Contents

Course	e Unit	nit LOGISTICS AND DISTRIBUTION CHAINS					
Subje	ct type	Spec	ialty Sciences	Research A	rea I ndustrial	Engineering and Man	agement
Year	1st	Semester	1st			ECTS	6
Workin	g Hours				Unaccompa	nied Working Hours	
Activity	Туре		Working Hours Per Week	Total Hours	Activity Type	9	Total Hours
Theoret	tical Lectures		2	28	Study		56
Theoret	tical-Practical	Lectures	2	28	Works / Grou	up Works	20
Practica	al-Laboratoty	Lectures			Project		
Tutorial	Orientation				Evaluation		6
					Additional		
Total of	f Working H	ours					
Lecture	er						
Activity	Туре			Name		Qualifications	Category
Theoret	tical Lectures		Silvino Dias (Capitão		PhD	Coordinator Professor
Theoret	ical-Practical	Lectures	Silvino Dias	Capitão		PhD	Coordinator Professor
Practica Tutorial	al-Laboratoty Orientation	Lectures					
Respor	nsible(s) Lec	turer (s)	Silvino Dias (Capitão			

Goals / Skills

The objective of the curricular unit is to develop knowledge related to management of logistics chain (planning, transportation, warehousing and handling of goods), including management of services in the supply chain.

It also aims to raise the students' awareness of the importance of issues related with supply chain management in an integrative perspective of all actors and flows involved in the chain, taking into account the requirements placed to logistics, management and monitoring decision-making process.

The curricular unit also intends to give the students a conceptual support that gives them a comprehensive view of the supply chain, the logistics function, the transport and distribution mechanisms, as well as an adequate perception of the proposed methodologies to plan and manage of the supply chain's operation.

Program Contents

LOGISTICS AND SUPPLY CHAIN: Logistics and Logistics Management; The Supply Chain; Fundamental Aspects of a Logistics System; The Theory of Transition Costs and Network Theory; Logistic Attributes; Logistic Activities; The Value Im-13-78_A1 Page 1 of 3

Signature of Teacher:

Chain and the Logistic Value Creation; Collaborative Management in the Supply Chain; Supply Chain Typologies

TRANSPORT: Role of Transport in the Supply Chain; Relevant Factors in the Choice of Transport; Transport Systems; Logistics Platforms; Planning of Routes; Flow Models.

MANAGEMENT OF WAREHOUSES IN THE SUPPLY CHAIN: Typologies of Warehouses; Basic Warehousing Operations; Warehousing and Handling Systems; Design; Layout; Stock and purchase management.

INFORMATION AND COMMUNICATION TECHNOLOGY IN THE SUPPLY CHAIN: Basic Communication (EDI, barcode, RFID, order processing, ...); Warehouse and Inventory Management Systems; Fleet Management Systems; Routing and scheduling systems; Commerce Using the Internet (e-commerce); IT in Supply Chain Management.

SERVICES MANAGEMENT: The Nature of Services; Flow Management in Services; Location of Infrastructures.

DECISION MODELS IN THE SUPPLY CHAIN: Project of Supply Chains; Location problems (single equipment, multiple equipment, discrete location problems: simple location with and without capacity limits, p-median problem, coverage problem, p-center problem).

Work Done

Practical component:

· Analysis exercises of logistics and supply chain case studies

• Study and application of optimization models, from a perspective of integrated chain management: definition of routes; transport and trans-expedition; flow models; location problems

Groups of 2 students carry out a literature review (and when possible also describing a concrete case study) on logistics topics related to the curricular unit. The oral presentation and discussion of the written articles within the classroom is mandatory.

Teaching Methodology

Case studies: students carry out analysis of solutions in a professional context to solve complex problems;

Group learning: students work in groups to solve a particular problem and learn to work in a team in an efficient way; Discussion: there is an exchange of ideas in groups of approximately 5 to 20 students;

Practical work: students develop solutions to practical problems or develop practical projects;

Written and oral presentation of reports: students present certain topics, reports or projects, in written and / or oral form; Seminars: experts present certain topics followed by question and answer sessions.

Lecturing method; Problem solving; Learning by project development; Laboratory practice.

Bibliography

- Carvalho, J. (Coordenador) & outros (2012). Logística e Gestão da Cadeia de Abastecimento, Edições Sílabo, 1ª Edição (ISBN: 978-972-618-598-7.
- Costa, J. Dias, J. Godinho, P. (2010). Logística, Imprensa da Universidade de Coimbra (ISBN: 978-989-26-0040-6).
- Capitão, S. (2015). Logística e Cadeia de Distribuição. Elementos de apoio às aulas. ISEC (disponibilizados através de plataforma eletrónica).

Evaluation Method

Practical work

This project is mandatory and should be carried out in groups of 2 elements. The project will have a weight of 30% in the final grade.

• Exam

Written test at the end of the semester, weighing 70% in the final grade. Minimum grade of 8/20.

Conditions for Exam Admission

Only students who have delivered the mandatory project in the established dates can access the exam.

Signature of Teacher

Access Conditions and Attendance Excuse

Not applicable, except in the specific cases defined by law.

Conditions for Results Improvement

The student who enrolls for classification improvement will do the exam to 20 points (minimum 8 points).

The component of the classification obtained for practical work cannot be improved in the academic year in which the work is carried out.

Date

2018/20/08

Silvino Dras Refiter

Signature from the lecturer responsible for the course

Rúbrica Docente: _



Mestrado em Engenharia e Gestão Industrial Ano Lectivo 2018/2019

Ficha de Unidade Curricular

Unidade Curricular	Projeto ou Estágio o	u Dissertação		
Natureza Curricular	Unidade Curricular da Especialidade	Área Científica	Engenharia e Gestão Industria	à
Ano 2º Sem	estre 1º/2°		ECTS	48
Horas de Contacto			Horas de Trabalho não Acompa	nhado
Tipo de Actividade	Horas Semanais	Total de Horas	Tipo de Actividade	Total de Horas
Ensino Teórico Ensino Teórico-Prático Ensino Prático e Laborato	riad		Estudo Trabalhos / Trabalhos de Grupo Projecto	1092
Orientação Tutória		120	Avaliação Outra	2
Total de Horas de Trabal	ho			
Docentes			1 J. 4. Jargen tempten vongenst. 5° ja	
Tipo de Actividade		Nome	Habilitações	Categoria
Ensino Teórico Ensino Teórico-Prálico Ensino Prático e Laborato Orientação Tutória	rial			
Docente (s) Responsável (els)	Vários docentes		650	
Objectivos / Competênci	28		X	
 Desenvolver a cap através da definiç conducente à con Facultar ao aluno Aplicar os conheci Completar a forma Engenharia e Gea 	pacidade do aluno para ão de objectivos parcela clusão com sucesso de a oportunidade de dem imentos e as técnicas a ação do aluno, com as o tão Industrial.	planear e organizar u ares, bem definidos n uma tese ou projecti onstrar a sua autonoi dquiridas ao longo do competências necess	uma tese ou projecto ao longo de u no tempo, com um cronograma prag o; mia e criatividade; o curso; sárias à prossecução de uma carrei	m ano lectivo, gmático, ra profissional de

Conteúdo Programático

Três opções:

- Projecto de produto, processo, ou sistema numa organização externa ao ISEC, que pode incluir dois supervisores (um da empresa e o outro do ISEC);
- 2. Estágio (numa empresa), que se consubstancia num relatório de estágio;
- 3. 3. Dissertação (I&D), que se consubstancia numa Tese de Mestrado.

Trabalhos Realizados

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Página 1 de 2

Rúbrica Docente:_

Metodologias de Ensino

\$

As metodologias de ensino a utilizar ao longo das diferentes fases do projeto, estágio ou dissertação deverão ser definidas pelos docentes orientadores, em correspondência com os objetivos pretendidos e o perfil do aluno.

Bibliografia e Elementos de Estudo Facultados

A bibliografia e outros elementos de estudo específicos para cada projecto, estágio ou dissertação serão indicados pelos respetivos docentes orientadores e ainda resultado da pesquisa realizada pelo aluno.

Método de Avaliação

Apresentação oral pública e discussão do relatório de projeto, relatório de estágio ou dissertação, com uma duração máxima de duas horas, perante um júri de três a cinco membros, incluindo os docentes orientadores.

Condições de Acesso a Exame

Condições de Obtenção e Dispensa de Frequência

Condições de Melhoria de Classificação

Data

12.10.2018

Assinatura do Docente Responsável pela Unidade Curricular

e 1

Im-13-79_A2

Página 2 de 2

Instituto Superior de Engenharia de Coimbra www.isec.pt

Signature of Teacher:



Mestrado - MsC Engenharia e Gestão Industrial

Mestrado - MsC Industrial Engineering and Management

Academic Year: 2018/2019

Program Contents

Course Unit ENTREPRENEURSHIP AND INDUSTRIAL PROPERTY

Subject type

Research Area Industr

Industrial Engineering and Management

Year	2 Ser	nester 1		ECTS	6
Working	g Hours			Unaccompanied Working Hou	rs
Activity	Туре	Working Hours Per Week	Total Hours	Activity Type	Total Hours
Theoreti	cal Lectures	3	42	Study	
Theoreti	cal-Practical Lect	tures		Works / Group Works	98
Practica	I-Laboratoty Lect	ures		Project	
Tutorial	Orientation			Evaluation	2
Seminar		1	14	Additional	
Total of	Working Hours		156		
Lecture	r				
Activity	Туре		Name	Qualifications	Category
				DHD	Destaces Aduate

Theoretical Lectures	José Luís Ferreira Martinho	PhD	Professor Adjunto
Theoretical-Practical Lectures	José Luís Ferreira Martinho	PhD	Professor Adjunto
Practical-Laboratoty Lectures			
Tutorial Orientation			

Responsible(s) Lecturer (s)

José Luís Ferreira Martinho

Goals / Skills

The overall objective of the course is to develop knowledge and skills in the area of Entrepreneurship and Industrial Property, backing up on classroom lessons and research in specific papers performed by students and guided by the teacher.

In order to successfully complete the curricular unit, students should be able to:

- Apply the acquired knowledge in solving specific problems of business life, supported by own arguments;
- Collect, select and interpret relevant information in the area of entrepreneurship, coupled with the capacity for analysis, synthesis and formulation of opinions;
- Collect, select and interpret relevant information in the field of Industrial Property, managing to interpret a patent application;
- Create a business plan and all necessary steps to create a new business, such as the legislative framework; fiscal framework and bureaucratic procedures.
- Evaluate different alternatives and justify the proposed solutions
- Communicate written and oral, in the context of group work.

Signature of Teacher:

Program Contents

Innovation and Entrepreneurship. Technological Ideas and Business Opportunities. The Process of Creating New Business. Market, Competition and Competitive Advantage. Analysis Methodologies of Business Opportunities. Databases and searching patenting entities. International Patent Classification. Examination of Patent Application. Portuguese Industrial Property Law. Intellectual Property. Drafting of Patent Application. Understanding the Business Model and Strategy. The Financial Assessment of Business. The Business Plan. Create a company: types of businesses; legislative framework; fiscal framework; bureaucratic procedures.

Work Done

See evaluation method

Teaching Methododoly

The lectures serve to present the subjects taught, as well as, the study materials. Workshops lessons serve to invite experts to give lectures on topics related to the course and also to carry out the business model, patent search, progress meetings with the teacher and clarification of the work progress.

Bibliography

- Código da Propriedade Industrial 2010 (Anotado), Luís Couto Gonçalves e António Campinos, Edições Almedina, ISBN:9789724040882
- Criar Modelos de Negócio (5ª Ed.), Alexander Osterwalder & Yves Pigneur, Publicações Dom Quixote, 2010.
- Empreendedorismo e Inovação (2ª Ed.), Soumodip Sarkar, Escolar Editora, ISBN:9789725922699
- Empreendedorismo e Planeamento financeiro. Transformar oportunidades em negócios. Criar micro, pequenas e médias empresas, José Paulo Esperança, Carlos Duarte, Edições Silabo, ISBN:9789726186700
- Estratégia Sucesso em Portugal, Adriano Freire, Editorial Verbo, 1997
- Gestão das Organizações, Sebastião Teixeira, Mc Graw Hill, 2001.
- Marketing Management (8th Ed), Philip Kotler, Prentice Hall International, 1994
- · Mercator 2000 Teoria e prática do Marketing, Dionísio, Lendrevie & Jindon. Publicações Dom Quixote, 2000.
- · Patent Searching: Tools and Techniques, John Wiley and Sons, Ltd, 2007.
- Patterns of entrepreneurship management (3^a Ed), Jack M. Kaplan & Anthony C. Warren, Hoboken, NJ : John Wiley & Sons, 2010

Evaluation Method

To have a positive grade, students must accomplish with success five assignments during the semester:

- Organization of a public event 15%
- Analysis and report of patents -20%
- Analysis and report on technology trends (report + presentation) 10%
- Business Plan (report + presentation) 25%
- Bibliographic search (report + presentation) 30%

Average of 50% and minimum of 35% in each assessment component.

Conditions for Exam Admission

See evaluation method.

Access Conditions and Attendance Excuse

See evaluation method.

Conditions for Results Improvement

Those in current rules.

Date

Signature from the lecturer responsible for the course

17/10/2018

Frilm Kerth

Im-13-78_A1

Page 2 of 2



Instituto Superior de Engenharia de Coimbra www.isec.pt Lecturer's signature:

Mestrado - MsC Engenharia e Gestão Industriai

2

Mestrado - MsC Engineering and Industrial Management

			مغمية أهرج وكالمتأ				Prog	gram Contents
Course	Unit	MA	INTENANCE	E MANAGEMEN	т			
Subjec	t type			Research	Area I	Engineering and Ir	idustrial Ma	nagement
Year	2	Semester	• 1				ECTS	6
Working	y Hours				Una	ccompanied Wor	king Hours	5
Activity	Туре		Working Hours Per Week	Total Hours	Activ	vity Type		Total Hours
Theoreti	cal Lecture	3	2	30	Stuc	ty		50
Theoreti	cal-Practica	al Lectures	2	30	Wor	ks / Group Works		40
Practical	-Laboratoty	Lectures			Proj	ect		-
Tutorial (Orientation				Eval	luation		6
					Add	nonal		
Total of	Working H	lours						
Lecture	r							
Activity 1	Гуре			Name		Qualifi	cations	Category
Theoretic	cal Lecture:	S	José Manue	Torres Farinha		P	hD	Prof. Coord. Pr.
Theoretic Practical Tutorial (cal-Practica -Laboratoty Orientation	l Lectures Lectures	José Manue	l Torres Farinha		P	hD	Prof. Coord. Pr.
Respons	sible(s) Le	cturer (s)	José Manue	l Torres Farinha				
Goals / S	Skills							
Goals:								
The overall	goals of the l	Maintenance Ma the art of this Kr	anagement Cours naviadae Area T	se Unit are to give to These overall objective	the graduates	a high level of compe	tence in Main I snecific obie	tenance Management, clives:
*]	To learn the to	ols of Manager	ent of Maintenau	nce of Physical Asset	s that allow to (optimize the costs of t	heir life cycles	, namely in operation;
	To learn the m	anagement tool	is that allow to op	finize the acquisition	s and substitut	ions of the Physical A	ssets;	
• 1	lo ieam i considering th	ne tools to efolionairan	diagnose ti	ne maintenance :	seatus that	neip to organiz	e a main	tenance department
`	o the	basic organizati	ion of maintenan	ce;				
	o the	cross-managen	aent tools;					
. 1	o line To learn how t	new manageme	ant Models. enance standard	s that allow the certify	alion of maint	enance services and r	mviders:	
	THE REPORT OF THE PARTY OF THE	a mark that statements		a an annual the state of the st				r r

To learn how to use dynamic modelling techniques that allow to solve complex problems of maintenance, namely for failure situations.

Skills:

The competences that the student should acquire in this Course Unit are the following:

- To know how to act in a Maintenance Department, at the high management level and related functions;
- · To know how to dialogue with the various departments of the organization that interact with the maintenance department, namely at the level

Im-13-78 A0

Page 1 of 2

Lecturer's signature:

of preparation of documents and processes matched at the top level of the organization;

- To know how to develop a framework of indicators to support the maintenance management activity and of the organization in general, interlinked with the organization's KPIs.
- To know how to ask for real solutions to the real problems of maintenance, at the level of the state of the art in this area of knowledge.

Program Contents

- THE NOWADAYS MAINTENANCE FUNCTION Importance of the maintenance function in the management of the Life Cycle of the Physical Assets.
- MANAGEMENT OF THE LIFE CYCLE OF THE PHYSICAL ASSETS Acquisition of Equipment: Preparation of the Terms of the Reference

 Selection Reception and Installation User Training; Substitution of Equipment: Substitution Calculation Methods Linear Depreciation
 Method Sum of Digits Method Exponential Method; Determination of Replacement Time: Determination of the Replacement Economic
 Cycle Useful Life Method.
- DIAGNOSIS OF THE MAINTENANCE STATUS Holistic Method of Diagnosis; Organization and analysis of information collected; Establishment of an action plan for improvements.
- MAINTENANCE STANDARDS Standard NP 4492: 2010 and Norms constituting: NP 4483: 2009 NP EN 13269: 2007 NP EN 13306: 2001 - NP EN ISO 9000 - NP EN 13460: 2009 - NP EN 15341: 2009 - TR 15628: 2007.
- ASSET MANAGEMENT STANDARDS ISO 55000; ISO 55001; ISO 55002.
- DYNAMIC MODELING Fault Trees: Overview of Method Types of Failures Analysed by Method Application of Method; Markov chains: General description of the method. Petri Nets: General Description of the Method; Elementary Networks of Petri.

Work Done

On each of the main topics of the Program Content will be carried out a practical work, with a maximum of two elements.

Teaching Methodology

- Theoretical exposition by the teacher;
- · Resolution of exercises and analysis of practical cases by students;
- · Presentation of case studies by students.

Bibliography

- FARINHA, J. M. T. (2018): "Asset Maintenance Engineering Methodologies". CRC Press; 1 edition (May 29, 2018). English. Printed in USA. ISBN-10: 1138035890. ISBN-13: 978-1138035898
- FARINHA, J. M. T. (2011): Manutenção A Terologia e as Novas Ferramentas de Gestão. MONITOR, Lisboa, Portugal. ISBN 978-972-9413-82-7.
- François Monchy (1989): La fonction Maintenance. Formation à la gestion de la maintenance industrielle. Paris: MASSON. ISBN: 2-225-85518-8. EAN: 9782225855184.
- Standards NP 4492:2010 and associated standards: NP 4483:2009 NP EN 13269:2007 NP EN 13306:2001 NP EN ISO 9000 NP EN 13460:2009 NP EN 15341:2009 CEN/TR 15628:2007.
- STANDARDS ISO 55000; ISO 55001; ISO 55002
- Artigos científicos indexados, designadamente SCOPUS e ISI.

Evaluation Method

· Elaboration of practical works, with a maximum of two elements, on each about the main topics of the Program Content.

Conditions for Exam Admission

According to the evaluation methodology and the ISEC's rules (REATA).

Access Conditions and Attendance Excuse

· According to the evaluation methodology and the ISEC's rules (REATA).

Conditions for Results Improvement

According to the evaluation methodology and the ISEC's rules (REATA).

Date

Signature from the lecturer responsible for the course

8. October 2018

Im-13-78 AD

Page 2 of 2



Instituto Superior de Engenharia de Coimbra www.isec.pt Signature of Teacher:



Mestrado - MsC Engenharia e Gestão Industrial

Mestrado - MsC Industrial Engineering and Management

Academic Year: 2018/2019

	Program	Contents
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Course Unit	COF	RPORATE F	NANCE			
Subject type			Research /	Area Indu	istrial Engineering and Ma	nagement
Year 1 S	Semester	2			ECTS	6
Working Hours				Unacco	ompanied Working Hours	5
Activity Type		Working Hours Per Week	Total Hours	Activity	Туре	Total Hours
Theoretical Lectures Theoretical-Practical L Practical-Laboratoty Le Tutorial Orientation	ect <mark>ures</mark> ect <mark>ures</mark>	2 2	28 28	Study Works Project Evaluat Addition	/ Group Works ion nal	58 40 2
Total of Working Hours			156			
Lecturer Activity Type			Name		Qualifications	Category
Theoretical Lectures		José Luís Ferreira Martinho			PhD	Assistant
Theoretical-Practical L Practical-Laboratoty Le Tutorial Orientation	.ect <mark>ures</mark> ect <mark>ures</mark>	José Luís Fe	rreira Martinho		PhD	Assistant Professor
Responsible(s) Lecturer (s)		José Luís Fe	rreira Martinho			

Goals / Skills

The main goal of this course is to provide future industrial engineers with the essential knowledge to understand financial management of manufacturing companies. In this context, three main issues were selected: economic and financial performance analysis, budgeting and short and long terms financial planning.

At the end of this course, students should be able to: i) fully understand and combine the information contained in the different financial statements ii) analyze the different kind of information required to report and judge the overall economic and financial status of the company, iii) Build a company's budget iv) prepare the medium and long term financial plan.

Program Contents

Financial accounting and reporting. Economic and financial analysis. Time value of money: present value and future value; fied income and perpetuities; nominal rate and effective rate. Short term and long term financial decisions and the main financing sources. Working capital management. Cash-flow management. Budgeting. Medium and long-term financial plan. Firm taxes and the Portuguese fiscal system.

Work Done

- Financial plan
- Financial analysis report

Teaching Methododoly

The learning process begins with the presentation of the fundamental concepts by the lecturer, followed by the resolution of practical exercises, illustrating the concepts and techniques discussed. During the semester, students should do autonomously two assignments, including written reports and presentations.

Bibliography

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- Lopes, Ilídio Tomás (2013). Contabilidade financeira: preparação das demonstrações financeiras, sua divulgação e análise. Escolar Editora.
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- Nabais, C. e Nabais, F. Prática Financeira I Análise Económica e Financeira, Lidel, 5ª ed., 2009.
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- das Neves, J. C. Análise financeira: métodos e técnicas, Texto Editora, 5ª ed., 1991
- Quelhas, Ana Paula & Correia, Fernando (2009). Manual de matemática financeira. Almedina.
- White, Gerald I.; Sondhi, Ashwinpaul C. & Fried, Dov (2003). The analysis and use of financial statements. Wiley.

Evaluation Method

- Two assigments done during the semester (groups of 3 students)
 - Financial plan (20% + 10% presentation)
 - Financial analysis report (20%)
- Final Exam (50%).
- Average of 50% and minimum of 40% in each assessment component.

Conditions for Exam Admission

See Evaluation method

Access Conditions and Attendance Excuse

Those in the current rules.

Conditions for Results Improvement

Those in the current rules

Date

21/02/2019

Signature from the lecturer responsible for the course

Frilm Kerdel



Mestrado - MsC Engenharia e Gestão Industrial (Português)

Instituto Superior de Engenharia de Coimbra www.isec.pt

Mestrado - MsC Industrial Engineering and Management (Inglês)

Academic Year: 2018 / 2019

Program Contents

Course Unit	urse Unit RISK EVALUATION AND MANAGEMENT							
Subject type	Comp	ulsory	Research /	Area Industrial	a Industrial Engineering and Management			
Year 1 st S	Semester	2 nd			ECTS	6,0		
Working Hours				Unaccompar	nied Working Hours	5		
Activity Type		Working Hours Per Week	Total Hours	Activity Type		Total Hours		
Theoretical Lectures		2		Study		63		
Theoretical-Practical L	.ect <mark>ures</mark>			Works / Grou	ip Works	33		
Practical-Laboratoty L	ect <mark>ures</mark>			Project				
Tutorial Orientation		2		Evaluation Additional		4		
Total of Working Hou	ırs	156						
Lecturer								
Activity Type			Name		Qualifications	Category		
Theoretical Lectures Theoretical-Practical L Practical-Laboratoty L	.ect <mark>ures</mark> ect <mark>ures</mark>	Jorge Alexa	ndre Caldeira Gong	çalves de Almeida	MSc / Specialist	Adjunct Prof.		
Tutorial Orientation		Jorge Alexa	ndre Caldeira Gong	çalves de Almeida	MSc / Specialist	Adjunct Prof.		
Responsible(s) Lectu	ırer (s)	Jorge Alexa	ndre Caldeira Gong	çalves de Almeida				
Goals / Skills								
Goals								
At the end of this Con • Structure complex of • Understand risk fac • Use different mather • Create and evaluate • Making decisions in • Recognize where ri	urse Unit s decision pl stors in a s ematical ap e simple fo n an enviro sk analysi	students sho roblems pecific case oproaches t orecast moc onment of u s can add v	ould be able to: and use the sim allocate resourd lels ncertainty alue	ulation to evaluate ces and analyze p	e and weigh them roblems			

Skills

Generic Competencies:

1- Create and develop the ability to interpret and master basic concepts of Risk Assessment and Management, to communicate topics of the area exposing ideas, problems, information and interconnection with the external environment.

Takes Alixanons Almom

2- Develop personal skills that allow students to learn independently.

3. Provide students with the ability to work in groups, developing interpersonal relationships as a way to improve their insertion in the labor market.

4- Instill the concern for the quality and rigor in the acquisition of the basic concepts of these areas of knowledge, concepts that will allow the development of decision-making capacities towards of uncertainty.

Specific Skills:

 Develop knowledge and understanding skills in the areas of Risk Assessment and Management, based on the knowledge acquired in class, in the texts of the specialty and in research conducted by the students.
 Provide students with the ability to apply the knowledge acquired to solve specific problems and concrete cases of their daily life, thus understanding the world in which they live.

3- Create the capacity to collect, select and interpret relevant information, combined with the ability to analyze, synthesize and formulate own opinions that will allow an active participation in solving problems in these areas of knowledge.

Program Contents

- 1. Uncertainty and Risk
- 1.1. Definition of Uncertainty and Risk
- 1.2. Elements of Uncertainty and Risk in the Structuring of Decisions and in Projects
- 1.3. Nature and the Sources of Uncertainty
- 1.4. Uncertainty and (the role of) Sensitivity Analysis
- 1.5. Uncertainty and (the role of) Risk Management
- 2. Risk analysis
- 2.1. Risk Modeling and Uncertainty.
- 3. Basic Probability Revision
- 3.1. Subjective Probabilities
- 3.2. Theoretical Probability Models
- 3.3. Data-based Probability Models
- 4. Simulation
- 4.1. Information Value
- 4.2. Risk Attitudinal Modeling
- 4.3. Use of Spreadsheet (Excel) and Programming Languages (Matlab and R) in Simulation.
- 5. Risk management
- 5.1. Key Concepts
- 5.2. Reasons for the use of formal risk management processes
- 5.3. Risk Management Processes and its Information Base
- 5.4. Risk Management Initiated at Different Stages of the Project Life Cycle
- 5.5. Effective and Efficient Risk Management
- 5.6. Risk Management in Contracts Perspective
- 5.7. Organization for Risk Management

Signature of Teacher: Takes alixanans Aslucim-

- ESTATÍSTICA / Guimarães, R.C. e Sarsfield Cabral, J.A., Edição Revista. McGraw-Hill 1998
- PROBABILISTIC RISK ASSESSMENT AND MANAGEMENT FOR ENGINEERS AND SCIENTISTS / Kumamoto,H. and Henley, E.J. 2nd Edition, IEEE Press, New York, 1996
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- STATISTICS- A TOOL FOR SOCIAL RESEARCH / Healey, Joseph F. Sixt edition. London: Wadsworth, Thomson Learning – 2002
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Evaluation Method

Assessment: there will be one practical group assignment (ten points/20) and a written test with a total weight of ten points/20.

Students must have at least 30% in all assessment elements (practical assignment and the written exam) in order to pass this course.

Conditions for Exam Admission

Students must be enrolled in the various examination periods (through moodle and through the academic service whenever applicable) and have at least 30% in all the evaluation elements (i.e. practical assignment) to grant access to the exam.

Access Conditions and Attendance Excuse

Those provided by the current legislation. There will be no compulsory attendance in theoretical and theoretical-practical classes, but students are advised to systematically follow classes, as an essential condition for school achievement and for the correct understanding of the subjects

Conditions for Results Improvement

Those provided by the current legislation, and cannot be done in the Normal Season.

Date 17.1.2019 Signature from the lecturer responsible for the course

Takes Alixanons Almom



Academic Year 2018/2019

Course Unit Description

Course Unit	TECHNICAL AS	TECHNICAL ASSETS					
			Sientific Are	a Industrial Engli Manage	neering and ment		
Year 1 Se	emester 2			ECTS	6		
Contact Hours			Self Working Hours				
Type of Activity	Hour per Week	Total of Hours	Type of Activity	Tota	I of Hours		
Theoretical	2	28	Self-study		75		
Theoretical-Practical	2	28	Homework / Group W	ork	25		
Practical / Laboratory			Project				
Tutorial guidance Project			Evaluation Other		3		
Total Working Hours		159					
Teachers							
Type of Activity	Name		Qualifications	Category			
Theoretical	Hugo David Nogueira	Raposo	PhD E	Equip. Prof. Adjunc	t		
Theoretical-Practical Practical / Laboratory Tutorial guidance Project	Carlos Alberto da Ro	cha Lebres	MSc E	iquip. Prof. Adjunct	t.		

Responsible Teacher Hugo David Nogueira Raposo

Learning Objectives / Outcomes and Competences

- Provide a systematic approach to the management of fixed assets or current assets of non-financial nature.
- · Understanding the principles, concepts, methods, criteria and mechanisms related to the process of asset management.
- · Plan and implement the strategic plan for the management of non-current assets.
- Understanding the operational dimensions, economic, financial and property decisions.
- Understanding the relevance of management accounting information in support of the asset management system and supporting decision making. Understand the concepts related to the appreciation and valuation of an asset.
- Understand and support investment decisions and financing instruments.

Study Plan

1. General Introduction

Introduction to Asset Management. The Role of System Asset Management. Norms and Standards for Asset Management PAS-55 and ISO 5500x Family.

2. Acquisition, Developm ent and Asset Management

Cycle Investment. Amortization and depreciation of assets. Assets revaluations. Impairment of fixed assets. Derecognition. Inventory. Elements of Strategy and Asset Management, Definition and Implementation of the Strategic Asset Management.

3. Financial Analysis

Cash-flow concept. Terminology Cash-flows. Evaluation Criteria Economic and Financial Investment Assets. Sensitivity Analysis. Scenario Analysis, and Break-Even Analysis. Decisions Replacement Assets. Application of the method of cost management life cycle (Life Cycle Costs, LCC) asset management.

Method of Teaching and Learning

The teaching methodologies use the lecture method, using the projection of slides, as well as deductive and inductive methods. The methodology also uses educational simulation processes. This means the teaching/learning process is performed in conditions close to business reality. Students will solve practical cases, which are similar to situations they will have in their professional life.

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- Barros, Hélio Análise de Projectos de Investimento, Edições Silabo, 4.ª Edição, 2002
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- Farinha, J. M. T. (2011): Manutenção A Terologia e as Novas Ferramentas de Gestão. MONITOR, Lisboa, Portugal. ISBN 978-972-9413-82-7.
- Farinha, J. M. T. (1997) Manutenção das Instalações e Equipamentos Hospitalares Uma Abordagem Terológica, Livraria Minerva, Coimbra, 1997. ISBN: 972-8318-16-2.
- The slides used in the class will be available for downloading at the course website.

Conditions to attend the Course Unit

According to the evaluation methodology and the general rules of ISEC.

Conditions to Acess Examination

· According to the evaluation methodology and the general rules of ISEC.

Assessment Methodology

 The assessment integrates a final exam (45% "EX"), two individual written works (20% "RI") and a group written works (35% "TG").

CF = 0,20 x RI + 0,35 x TG + 0,45 x EX

- The evaluation of the course unit will be done by Final exam in the form of written test with a maximum duration of three hours.
- He passing of the course implies a minimum CF of 9.5 points.

Work done:

- A preliminary TG report must be submitted and submitted by April 15, 2019.
- TG must be delivered electronically and in paper form by May 13, 2019.
- The presentation and defense of the TG will begin on May 20, 2019.
- The first RI must be submitted by April 1, 2019 and the second RI until the last week of classes

Conditions to Improve Classification

- According to the evaluation methodology and the general rules of ISEC.
- Individual and group written works.

Date

Teacher responsible for the Unit Course

Plac N

Feveruary, 05th 2019

Hugo David Nogueira Raposo