3rd/4th Year

Track 6: Industrial Management

55000056 - APPLIED MATHEMATICS

CREDITS:	4.5 ECTS
DEPARTMENT:	Industrial and Applied Mathematics (MAT)
COURSE COORDINATOR:	Carlos E. González Guillén
TYPE:	Common
YEAR AND SEMESTER:	3rd Year / Spring

LIST OF TOPICS

MODULE 1. Forwards and futures contracts

MODULE 2. Options. Financial strategies with options

MODULE 3. Binomial trees

MODULE 4. The Cox-Ross-Rubinstein model

MODULE 5. Continuous time. Black-Scholes formulas

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE:

TOPIC:

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

- Ability to handle with ease the mathematical techniques learned in previous courses
- Ability to raise and solve real problems in mathematical terms

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Ability to understand and manage the mathematical models that are used today to evaluate derivatives of financial assets.
- Ability to design the numerical algorithms and numerical applications in financial derivatives.

STUDENT OUTCOMES

- ABET_1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- ABET_3. An ability to communicate effectively with a range of audiences
- ABET_6. An ability to develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgment to draw conclusions
- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

Lecture notes of the course that include the extended bibliography:

- M. Baxter, A. Rennie, Financial Calculus. An introduction to derivative pricing, Cambridge University Press, 1998.
- G. Grimmett, D. Stirzaker, Probability and Random Processes, Oxford University Press, 2001.
- J.C. Hull, Options, Futures and Other Derivatives, Prentice-Hall, Inc., 10th Edition, 2018.
- P. Lamothe, M. Pérez Somalo, Opciones financieras y productos estructurados, McGraw-Hill Interamericana de Españaa S.L., Tercera Edición, 2009.
- R. L. McDonald, Fundamentals of Derivatives Markets, Pearson International Edition, 2009.
- S.R. Pliska,Introduction to Mathematical Finance. Discrete TimeModels, Blackwell Publishers, 1997
- N. Shiryaev, Essentials of Stochastic Finance. Facts, Models, Theory. WorldScientific Publishing Co., 2003.
- P. Wilmott, S. Howison, J. Dewynne,The Mathematics of Financial Derivatives. A Student Introduction, Cambridge University Press, 1997.

OTHER MATERIALS

55000601 - QUANTITATIVE METHODS FOR ORGANIZATION ENGINEERING 1

CREDITS:	6 ECTS
DEPARTMENT:	Organization Engineering, Business Administration and Statistics (MAS)
COURSE COORDINATOR:	Miguel Ortega Mier
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	3rd Year / Spring

LIST OF TOPICS

MODULE 1. General

MODULE 2. Building linear models

MODULE 3. Basics of linear programming

MODULE 4. Solving techniques linear programming

MODULE 5. Post optimization and sensitivity analysis

MODULE 6. Duality theory

MODULE 7. Solving techniques integer linear programming

MODULE 8. Network optimization

MODULE 9. Metaheuristics

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE:

TOPIC: Decision making in industrial engineering (55000028-Production Systems Organization)

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

- Identifying problems of productive systems
- Performing matrix operations

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Model in linear terms real situations about Industrial Engineering
- Identify a problem, model it and propose solutions; select the best alternative; and resolve, reasoning scientifically and technically the solution adopted and interpreting the results of a reasoned (explaining and, if necessary, correcting, anomalous results and interpreting the results in terms of the decisions of the problem to which they refer)
- Apply the basic tools for solving integer linear programming problems.
- Driving (at an elementary level) professional modeling tool to build and solve linear programming models
- Interpreting solutions from a technical and economic point of view
- Recognize the limits of linear programming and integer linear programming and assume that fail to settle any problem
- Identify the many areas in which linear programming is applicable

STUDENT OUTCOMES

- ABET_1. An ability to identify,formulate,and solve complex engineering problems by applying principles of engineering,science,and mathematics
- ABET_5. An ability to function effectively on a team whose members together provide leadership,create a collaborative and inclusive environment,establish goals,plan tasks,and meet objectives
- ABET_6. An ability to develop and conduct appropriate experimentation,analyse and interpret data,and use engineering judgment to draw conclusions
- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

Investigación de operaciones: una introducción
TAHA, HAMDY A. Editorial Prentice Hall, 2006

Operations Research: Applications and Algorithms
Wayne L. Winston Editorial Duxbury Press, 2003

Revistas de investigación de investigación operativa
muchos Editorial Elsevier, 2013

Optimización lineal: teoría, métodos y modelos
GOBERNA, M.A.; JORNET, V., PUENTE, R. Editorial McGraw Hill, 2004

Programación lineal y flujo en redes
BAZARAA, MOKHTAR S.; JARVIS, JOHN J.; SHERALI, HANIF D. Editorial Limusa, 1999

Introducción a la investigación de operaciones
HILLIER, FREDERICK S.; LIEBERMAN, GERALD J Editorial McGraw-Hill, 1997

OTHER MATERIALS

- Slides with the content of the course
- Notes on various topics made by the professors.
- Collection of problems prepared by the professors.
- Modeling software (AIMMS, CPLEX, Gurobi) in the Lab and with a student licenses.

55000602 – DATA ANALYSIS

CREDITS:	3 ECTS
DEPARTMENT:	Organization Engineering, Business Admnistration and Statistics(MAS)
COURSE COORDINATOR:	Jesús Juan
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Fall

LIST OF TOPICS

1. MODULE I. Multivariate analysis (8 h)
    1.1. Linear regression model: multiple regression, qualitative regressors.
    1.2. Prediction
    1.3. Principal components and factor analysis
2. MODULE II. Classification (10h)
    2.1. K Nearest Neighbors Method
    2.2. Linear discriminant analysis
    2.3. Generalized linear models: binary data, counts, multinomial data
3. MODULE III. Trees (10h)
    3.1. Cross validation and bootstrap
    3.2. Regression trees
    3.3. Classification trees
    3.4. Bagging and Random Forests
    3.5. Boosting

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE: Algebra, Calculus I, Calculus II, Differential Equations, Statistics, Design of Experiments and Regression Models

TOPIC:

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

SPECIFIC OUTCOMES FOR THE COURSE

The subject "Data Analysis" provides statistical knowledge for the detailed study of large databases by applying advanced techniques. The techniques taught in the subject They can be grouped into three main blocks: Regression, Classification, and Trees. The package will be used R / RStudio statistic for solving exercises, using the R Markdown functionality for subsequent generation of technical reports.

STUDENT OUTCOMES

• ABET_1. An ability to identify,formulate,and solve complex engineering problems by applying principles of engineering,science,and mathematics
• ABET_6. An ability to develop and conduct appropriate experimentation,analyse and interpret data,and use engineering judgment to draw conclusions
• ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies.

Course Syllabi. Elective (Profile I)

BIBLIOGRAPHY

TEXT BOOKS

"An introduction to Statistical Learning with applications in R". G. James, D., Witten, T. Hastie y R. Tibshirani. Springer

OTHER MATERIALS

RStudio

55000603 - MARKETING FUNDAMENTALS

CREDITS:	3 ECTS
DEPARTMENT:	Organization Engineering, Business Admnistration and Statistics(MAS)
COURSE COORDINATOR:	T Sánchez Chaparro
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Fall

LIST OF TOPICS

MODULE 1. Definition and processes Marketing

- 1) Marketing: customer management
- 2) Business and marketing strategy

MODULE 2. Market knowledge and consumer

- 3) The marketing environment
- 4) The information management marketing (market research)
- 5) Purchasing behavior of consumers

MODULE 3. Marketing strategies and marketing mix

- 6) Segmentation, targeting and positioning
- 7) Product strategy, services and brand
- 8) Pricing Strategy
- 9) Distribution strategies
- 10) Communication Strategies

MODULE 4. Trends in Marketing

- 11) Online Marketing and Social Networking
- 12) Corporate Social Responsibility

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE:

TOPIC:

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

- None

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Interpretation and understanding of marketing as a business strategy and not just as a promotional strategy (advertising).
- Analysis of human behavior in the purchase of products and services.
- Analysis for market research
- Analysis of market performance products and services final consumers, also of services and industrial products.

STUDENT OUTCOMES

- ABET_1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- ABET_3. An ability to communicate effectively with a range of audiences
- ABET_4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- ABET_5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

Gary A. & Kotler Ph. (2013). "Introducción al Marketing". 3º Ed. Pearson.

OTHER MATERIALS

Videos, Artículos científicos, Informes Web, Páginas Web

55000604 - QUANTITATIVE METHODS FOR INDUSTRIAL ENGINEERING II

CREDITS:	3 ECTS
DEPARTMENT:	Organization Engineering, Business Admnistration and Statistics(MAS)
COURSE COORDINATOR:	M. Pereda
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Spring

LIST OF TOPICS

MODULE 1. Modelling and simulation

MODULE 2. Discrete event simulation

MODULE 3. Simulation projects

MODULE 4. Input and output data analysis

MODULE 5. Model exploitation

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE:

TOPIC: Statistics, introduction to programming.

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

- Independent learning ability
- Analytical capacity

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Identify the characteristics of a problem for which discrete event simulation models is an appropriate approach.
- Identify and perform the essential aspects in the analysis of a system using discrete event simulation.
- Develop and exploit simulation models with professional software for characterizing and improving systems with a reduced degree of complexity.
- Applying analytical models to simple systems queueing problems.

STUDENT OUTCOMES

• ABET_1. An ability to identify,formulate,and solve complex engineering problems by applying principles of engineering,science,and mathematics

• ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health,safety,and welfare,as well as global,cultural,social,environmental,and economic factors

• ABET_5. An ability to function effectively on a team whose members together provide leadership,create a collaborative and inclusive environment,establish goals,plan tasks,and meet objectives

• ABET_6. An ability to develop and conduct appropriate experimentation,analyse and interpret data,and use engineering judgment to draw conclusions

BIBLIOGRAPHY

TEXT BOOKS

Simulation Modelling and Analysis
Averill M. Law, W. David Kelton Editorial McGraw Hill Higher Education, 2000

Discrete-Event System Simulation
Jerry Banks et al. Editorial Wiley, 2009

Simulation Modeling with SIMIO: A Workbook
Jeffrey A. Joines and Stephen D. Roberts Editorial Simio Ltd.

Introduction to SIMIO.
Simio LLC. ISBN: 978-0-9829782-1-4 available online:
https://www.simio.com/downloads/public/academic/IntroductionToSimio_BookForPrint.pdf

Fundamentals of Queueing Theory
Donald Gross et al. Editorial Wiley, 2008

OTHER MATERIALS

Simio simulation software www.simio.com.

Simio youtube channel https://www.youtube.com/user/SimioSimulation#p/u

55000605 - PRODUCTION MANAGEMENT

CREDITS:	6 ECTS
DEPARTMENT:	Organization Engineering, Business Admnistration and Statistics(MAS)
COURSE COORDINATOR:	M. Gutiérrez
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Fall

LIST OF TOPICS

MODULE 1. Introduction: Production Systems and Material Planning and Control Systems

- 1.1 Production system in the Supply Chain
- 1.2 Production as a function, process (Little's law) and value (CODP)
- 1.3 Types of production systems and MPC Systems

MODULE 2. Inventory Management

- 2.1 Stocks and inventory management systems
- 2.2 Deterministic models (EOQ and variants)
- 2.3 Stochastic models (safety stock and service level)

MODULE 3. Demand Forecasting

- 3.1 Introduction to forecasting techniques (qualitative, causal models, neural networks, time series)
- 3.2 Exponential smoothing forecasting models: level, trend, trend-seasonal
- 3.3 Tracking signals

MODULE 4. Sales & Operations Planning (S&OP)

- 4.1 S&OP: Supply and demand balancing
- 4.2 Aggregate planning: pure and mixed strategies
- 4.3 Advanced aggregate planning models

MODULE 5. MPS and MRP Systems

- 5.1 Master Production Schedule (MPS)
- 5.2 MRP Systems
- 5.3 From MRP to APS systems

MODULE 6. Production Activity Control

- 6.1 Production control routines
- 6.2 Production scheduling
- 6.3 Theory of Constraints (TOC)

MODULE 7. Lean Manufacturing

- 7.1 Just In Time principles and techniques
- 7.2 Kanban control system
- 7.3 Lean Manufacturing principles and techniques

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE: Quantitative Methods for Industrial Engineering I, Productive Systems Organization

TOPIC:

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

- Independent learning ability
- Analytical capacity

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Global basic knowledge of modern management techniques industrial production in the different areas within it.
- Selection capability management techniques best suited for producing goods and services.
- Depth knowledge of the different techniques of organization of productive systems of goods and services.
- Application of different methods and techniques to make tactical and operational decisions that appear in production.
- Organizational application to different productive activities to acquire competitive advantages principles.

STUDENT OUTCOMES

- ABET_1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- ABET_6. An ability to develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgment to draw conclusions
- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

- Jacobs, F.R.; Berry, W.L.; Whybark, D.C.; Vollmann, T.E. (2018). Manufacturing Planning and Control for Supply Chain Management: the CPIM reference. McGraw-Hill
- Silver, E.A.; Pyke, D.F.; Thomas, D.G. (2017). Inventory and Production Management in Supply Chains. CRC Press
- Chopra, S.; Meindl P. (2015). Supply Chain Management: Strategy,Planning, and Operation, 6th ed. (Global Edition), Pearson

OTHER MATERIALS

55000606 - INFORMATION AND TELECOMMUNICATION TECHNOLOGIES

CREDITS:	3 ECTS
DEPARTMENT:	Automatic Control, Electrical and Electronics Engineering and Industrial Informatics (AUT)
COURSE	José Andrés Otero Marnotes
COORDINATOR: TYPE:	Track (Industrial Management)
YEAR AND	4th Year / Spring

LIST OF TOPICS

MODULE 1. Introduction

- 1) General concepts
- 2) The OSI model of layers

MODULE 2. Data Networks

- 3) Local Area Networks: Ethernet
- 4) Wide Area Networks; TCP/IP Protocols
- 5) Internet services and applications
- 6) Security in Data Networks

MODULE 3. Telecommunication Systems

- 7) Cellular networks: GSM, UMTS, LTE and 5G
- 8) Other wireless networks and IoT
- 9) Near Field Communication Systems and Electronic tags (RFID)
- 10) Positioning Systems: GPS, GLONASS and Galileo

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE: Fundamentos de Electrónica (3rd year, GITI)

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

STUDENT OUTCOMES

- ABET_1. An ability to identify,formulate,and solve complex engineering problems by applying principles of engineering,science,and mathematics

- ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health,safety,and welfare,as well as global,cultural,social,environmental,and economic factors

- ABET_4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments,which must consider the impact of engineering solutions in global,economic,environmental,and societal contexts

- ABET_5. An ability to function effectively on a team whose members together provide leadership,create a collaborative and inclusive environment,establish goals,plan tasks,and meet objectives

- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

Tanenbaum, A. S. (2003). Redes de computadoras. Pearson education.

Stallings, W., Stallings, W., Tanenbaum, A., Fall, K. R., & Stevens, W. R. (2000). Comunicaciones y Redes de Computadores, 6ªedición. Prentice-Hall.

Kurose, J., & Ross, K. W. (2010). Redes de computadoras (Vol. 5). Pearson educación.

OTHER MATERIALS

55000607 - MANAGERIAL ACCOUNTING

CREDITS:	3 ECTS
DEPARTMENT:	Organization Engineering, Business Administration and Statistics (MAS)
COURSE COORDINATOR:	YM. Núñez
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Fall

LIST OF TOPICS

MODULE 1. Introduction to cost analysis

- 1) Cost accounting and business management

MODULE 2. Types of costs and processes

- 2) cost accounting
- 3) overhead allocation
- 4) Process costing

MODULE 3. Costs and benefits

- 5) cost-volume-profit analysis
- 6) incremental analysis
- 7) Standard Cost Systems

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE: The company and its environment

TOPIC: Economy, Accounting, Management, Business

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

Accounting, management, business

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Assessment of the costs of the company for decision making
- Understanding the purpose of the cost analysis for the efficiency of the company
- Interpretation of financial statements of companies and knowledge of its internal workings

STUDENT OUTCOMES

• ABET_1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

• ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health, safety and welfare, as well as global, cultural, social, environmental and economic factors

• ABET_5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

• ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT

Williams, Haka, Bettner, Carcello. Financial & Managerial Accounting, 18th Edition, McGraw Hill

OTHER MATERIALS:

Harvard Cases on Cost Analysis

55000608 - MARKETING RESEARCH

CREDITS:	3 ECTS
DEPARTMENT:	Organization Engineering, Business Admnistration and Statistics (MAS)
COURSE COORDINATOR:	Teresa Sánchez Chaparro
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Spring

LIST OF TOPICS

MODULE 1. Introduction to Market Research

- 1) Method and Science

MODULE 2. Market Research Techniques

- 2) Quantitative and qualitative techniques

MODULE 3. The survey

- 3) Design and Pretest

MODULE 4. Qualitative Market Research Techniques

- 4) Focus Group In-depth Interview, Observation, Other.

MODULE 5. P & L Report

- 5) Design, lessons learnt, Analysis. Validity
- 6) Trends in market research.

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

Introduction to marketing

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

- Those required for admission of the degree.

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

- Analysis of human behavior in the purchase of products and services.
- Analysis of market information and current company to sell products and services.
- Analysis of other tools of market research, specifically qualitative, not just quantitative.

STUDENT OUTCOMES

Course Syllabi. Elective (Profile I)

- ABET_1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- ABET_3. An ability to communicate effectively with a range of audiences
- ABET_4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- ABET_5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

- Investigación de Mercados. Naresh K. Malhortra. Pearson Prentice Hall. Quinta Edición
- Investigación Cualitativa. Juan Báez y Pérez de Tudela. ESIC. 2ª Edición
- Técnicas cualitativas para investigación de mercados. Rabadán Anta y Ato García. Pirámide
- Cualitativa-mente. Los secretos de la investigación cualitativa. Pepe Martínez. ESIC
- Introducción a los métodos cualitativos de investigación- S.J. Taylor y R. Bodgan. Ed. Paidós
- Diseño y elaboración de cuestionarios para la investigación comercial- Vidal Díaz de Rada. Ed. ESIC

OTHER MATERIALS

Course materials (ppt), articles, web pages

55000609 - ENTREPRENEURSHIP

CREDITS:	3 ECTS
DEPARTMENT:	Organization Engineering, Business Admnistration and Statistics(MAS)
COURSE COORDINATOR:	Jose Antonio Blanco
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Spring

LIST OF TOPICS

MODULE 1. The business idea

- 1) Introduction to Entrepreneurship and venture creation
- 2) Creativity and the business idea development
- 3) The business model
- 4) Pitch Elevator
- 5) IPR Analysis

MODULE 2. Strategy definition

- 6) The business plan: market & customer analysis
- 7) Strategic analysis
- 8) Marketing plan
- 9) Operations plan

MODULE 3. Start-up implementation

- 10) Organization and Human Resources
- 11) The financial plan
- 12) Finntech ecosystem
- 13) Legal aspects

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:

COURSE:

TOPIC:

RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

STUDENT OUTCOMES

- ABET_1. An ability to identify,formulate,and solve complex engineering problems by applying principles of engineering,science,and mathematics
- ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health,safety,and welfare,as well as global,cultural,social,environmental,and economic factors
- ABET_3. An ability to communicate effectively with a range of audiences
- ABET_5. An ability to function effectively on a team whose members together provide leadership,create a collaborative and inclusive environment,establish goals,plan tasks,and meet objectives
- ABET_6. An ability to develop and conduct appropriate experimentation,analyse and interpret data,and use engineering judgment to draw conclusions
- ABET_7. An ability to acquire and apply new knowledge as needed using appropriate learning strategies

BIBLIOGRAPHY

TEXT BOOKS

Entrepreneurship. Emprendedores
Robert D. Hisrich, Michael P. Peters, A. Shepherd. Editorial Mc Graw Hill, 2005

New Venture Creation - Entrepreneurship for the 21st century
Jeffry A. Timmons, Stephen Spinelli. Editorial Mc Graw-Hill Irwin, 2009

The Lean Startup
Eric Ries Editorial Pearson Portfolio Penguin., 2011

OTHER MATERIALS

55000610 - QUALITY, SAFETY AND SUSTAINABILITY MANAGEMENT

CREDITS:	3 ECTS
DEPARTMENT:	Organization, Engineering, Business Administration and Statistics (MAS)
COURSE COORDINATOR:	Carlos Mataix
TYPE:	Track (Industrial Management)
YEAR AND SEMESTER:	4th Year / Spring

LIST OF TOPICS

MODULE 1. theory

- 1) theory of the subject

MODULE 2. Case studies

- 2) Training
- 3) Case studies

MODULE 3. information folder

- 4) Standard Iso 9000 Training
- 5) Practice Deployment Guide

RECOMMENDED COURSES OR KNOWLEDGE

RECOMMENDED PREVIOUS COURSES:
  COURSE:
  TOPIC:
RECOMMENDED PREVIOUS KNOWLEDGE OR ABILITIES:

SPECIFIC OUTCOMES FOR THE COURSE

At the end of the course, the student will be able to (or will have ability for):

STUDENT OUTCOMES

- ABET_1. An ability to identify,formulate,and solve complex engineering problems by applying principles of engineering,science,and mathematics
- ABET_2. An ability to apply engineering design to produce solutions that meet specified needs with consideration fo public health,safety,and welfare,as well as global,cultural,social,environmental,and economic factors
- ABET_3. An ability to communicate effectively with a range of audiences
- ABET_4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments,which must consider the impact of engineering solutions in global,economic,environmental,and societal contexts
- ABET_5. An ability to function effectively on a team whose members together provide leadership,create a collaborative and inclusive environment,establish goals,plan tasks,and meet objectives
- ABET_6. An ability to develop and conduct appropriate experimentation,analyse and interpret data,and use engineering judgment to draw conclusions

BIBLIOGRAPHY

TEXT BOOKS

OTHER MATERIALS

Course Syllabi. Elective (Profile I)