Airports

Academic Year: (2017 / 2018) **Review date: 26/04/2017 11:33:27**

Department assigned to the subject: Bioengineering and Aeroespace Engineering Department

Coordinating teacher: ORDÓÑEZ MANJÓN, ISMAEL

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Students are expected to have a basic background on airports, i.e., history, definition, main elements, planning, airport operations.
This could have been easily achieved with any course during the Bachelor's Degree.

OBJECTIVES

COMPETENCES AND SKILLS

C1 Understand properly national and international regulations applicable to conduct Airport Certification in the planning , design and construction of airports.
C2 Understand the characteristics of a master plan for an airport and the ability to write it : a study of the current situation (physical, socio-economic analysis)
C3 Understand the characteristics of a master plan for an airport and the ability to write it : predicting traffic demand
C4 Understand the characteristics of a master plan for an airport and the ability to write it : determine infrastructure needs at different time horizons.
C5 Apply Geodesy , cartography, topography and geotechnic to the airport's environment and its infrastructure
C6 Plan, design and build the infrastructure that constitute an airport facility : tracks
C7 plan, design and build the infrastructure that constitute an airport facility : taxiways
C8 plan, design and build the infrastructure that constitute an airport facility : apron,
D9 plan, design and build the infrastructure that constitute an airport facility : terminal buildings
C10 Plan, design and build the infrastructure that constitute an airport facility : electronics
C11 Plan, design and build the infrastructure that constitute an airport facility : control tower
C12 Plan, design and build the infrastructure that constitute an airport facility : hangars
C13 acquire knowledge in airport management models

ADDITIONAL COMPETENCES AND SKILLS

CA1 know the context in which the activity of the airport is developed and the main current trends both in the field of airport management and airline management
CA2 Acquire basic accounting knowledge to : understand the concept of asset, liability , loss, profit and cash flow
CA3 Acquire basic financial knowledge to understand the concept of : Interest rate , net present value , internal rate of return , Leverage and WACC
CA4 Knowing the most common conditions of the construction and operation of airports on the environment and what mitigation or compensation measures are used.
CA5 Meet the administrative process for dealing with environmental impact studies , project writing and execution of works (in Spain and international examples)
CA6: Identify the main sources of income for the airport (aeronautical and non-aeronautical revenues), understand their dynamics and be able to forecast their behaviour based on the operational drivers.
CA7 know the technical conditions that form a heliport
CA8 Know the different methods of managing the potential demand. Understand the system of IATA slot allocation
CA9: Identify the main sources of cost for the airport, understand their dynamics and be able to forecast

their behaviour based on the operational drivers.
CA10 Understand the concept of EBITDA , EBITDA margin and its importance in the airport sector
CA11 Understand the fundamentals of airport expansion process (CAPEX) project implementation period works
CA12 Teamwork and presentation skills and synthesis of work done

LEARNING OUTCOMES

Upon successful completion of the course the student should be able to:

1) Predict demand and determine the necessary capacity and congestion during operation of an airport.
2) Planning and Designing terminals and airport facilities complying with the certification requirements.
3) A better understanding of national and international regulations applicable to conduct Airport Certification in the planning , design and construction. To evaluate the influence of economic and institutional aspects in airport development .
4) Apply geodesy, cartography, topography and geotechnic to airport's operation and its infrastructure.
5) Understand the key features in the operation of air transport stakeholders; comparative analysis of the different modes of transport globally; aircraft types; cost structure of an airline; environmental impact of air transport.
6) Knowledge and understanding of national and international organizations that provide a leg

DESCRIPTION OF CONTENTS: PROGRAMME

1) Introduction to airports

2) Introduction to airport finance
a. Accounting basics (asset, liabilities, P&L, EBITDA)
b. Financing basics (leverage, cost of debt, cost of equity)
c. Project Valuation & Project Finance Basics

3) Business Plan of the Airport
a. Traffic forecasting
b. Aeronautical Revenues
c. Non aeronautical Revenues
d. Opex
e. EBITDA
f. Capex ¿ Master Planning

4) Airports Engineering
a. Airside Design
    i. Runway
    ii. Taxiways
    iii. Aprons
    iv. Control Tower
    v. Other facilities
b. Landside Design
    i. Terminal Building
    ii. Other facilities

5) Airports Operations
a. Organization
b. Airfield operations (ground handling, etc.)
c. Landside operations (terminal operations, security, etc.)

6) Airports Environment
a. Regulatory environment (international standards, certification, etc.)
b. International Organizations
c. Competitive environment (main operators, market trends)
d. Airlines and how their strategy impact airports
e. Environmental impact of airports activity and development

LEARNING ACTIVITIES AND METHODOLOGY

LEARNING ACTIVITIES

- Lectures
- Practical sessions (cases study, exercises)
- Individual student work
- Group work

TEACHING METHODOLOGIES

Expositions in class with teacher support and audiovisual media, in which the main concepts of the subject are developed and the literature is provided to supplement student learning.

Critical reading recommended by the subject teacher texts: Newspaper articles, reports, manuals, and / or scholarly articles, either for subsequent class discussion, either to expand and consolidate the knowledge of the subject.

Solving practical cases, problems, etc.. posed by the teacher individually or in group

Presentation and discussion in class, under teacher moderation issues related to the content of the material and case studies based on real projects.

Preparation of papers and reports individually or in group

ASSESSMENT SYSTEM

% end-of-term-examination/test:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

Individual exercise 1	10%
Individual exercise 2	10%
Class Participation	5%
Group Project	15%
Final Exam	60%

Final Grade 100%
In order to pass the course, the student should achieve at least 50%.

BASIC BIBLIOGRAPHY

- Horonjeff, McKelvey, Sproule, Young Planning and Design of Airports (5th edition), McGraw-Hill, 2010

- Juan de Dios Ortúzar, Luis G. Willumsen Modelling Transport, Wiley, 2011

- Konstantinos Zografos Modelling and Managing Airport Performance , Wiley, 2013

- Norma Ashford Airport Operations (3rd edition), McGraw-Hill Professional, 2013

- Richard Neufville and others Airport Systems: Planning Design and Management, McGraw-Hill, 2013

ADDITIONAL BIBLIOGRAPHY

- Brealey / Myers / Allen Corporate Finance, McGraw-Hill .

- Francisco Salazar de la Cruz Introducción a la gestión económica de aeropuertos, Fundación AENA, 2003

- García Cruzado Ingeniería Aeroportuaria (2nd edition), ETSI Aeronáuticos, 2010

- Libby / Short Financial Accounting, McGraw-Hill .

- Richard de Neufville Airport Systems: Planning Design and Management, McGraw-Hill, 2013

- Rigas Doganis The Airport Business, Routledge, 1992

- Vicente Cudós Cuadernos de Ingeniería de Aeropuertos, EDITOR Vicente Cudós Samblancat, ISBN 8460796728, 9788460796725, 2004