



Guia docent (provisional) SMAO - Strategic management for airline operations

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Unitat responsable: Escola d'Enginyeria de Telecomunicació i Aeroespacial de Castelldefels
Unitat que imparteix: 748 - FIS - Departament de Física.

Titulació: MASTER EN ENGINYERIA AERONÀUTICA (Pla 20XX). (Assignatura obligatòria).

Curs: 2021 **Crèdits ECTS:** 5.0 **Idiomes:** Anglès

PROFESSORAT

Professorat responsable: Xavier Prats, Cesar Trapote-Barreira

CAPACITATS PRÈVIES

English (and professional/technical english). Mathematics and statistics. Knowledge related to business course (business models, microeconomics, macroeconomics, international agreements and organizations in civil aviation, air transport industry). Knowledge related to aircraft, airport and air space acquired in other courses of Bachelor degree. Basic and required courses related to calculus and statistics. Business/company, aerospace technology, air transport infrastructure.

REQUISITS

Concepts seen in 220309 - Transport Aeri i Sistemes de Navegació
(https://www.upc.edu/estudispdf/guia_docent.php?codi=220309&idioma=en)

COMPETÈNCIES DE LA TITULACIÓ A LES QUALS CONTRIBUEIX L'ASSIGNATURA

Específiques:

CEEaeronav3: Estructurar organizativamente una aerolínea, incluyendo su modelo de negocio y la estructura de costes y beneficios, y modelar, analizar y diseñar las operaciones de una flota de aeronaves.

Genèriques:

Transversals:

METODOLOGIES DOCENTS

The course combines the following teaching methodologies:

- Theory classes.
- Autonomous learning: students will study using self-learning material.
- Cooperative learning: students will form small group (2-4 people) to fulfill some of the activities of the course.
- Project based learning: students will build a small team project (3-4 people).

Directed learning hours will consist in exercises and practical examples, after the theory classes in which the professor exposes the content of the subject. With the directed learning hours, the students will be motivated to participate actively in their education and to complete the knowledge acquired during theory classes, usually with the help of computers.

OBJECTIUS D'APRENENTATGE DE L'ASSIGNATURA

The aim of this course is to provide students with the fundamentals of the strategic management of the airline operations. Some strategic management concepts and analytical tools to the airline industry will be proposed, as well as modeling and optimization techniques.

On successful completion of this module a student should be able to:

- . appraise key factors affecting demand for air travel,
- . evaluate forecasting methods and interpret the results with confidence,
- . understand the structure of airline revenue and cost,
- . understand the principles of airline network design,
- . describe the functions of flight operations, crewing and scheduling departments and the legal requirements,
- . develop a flight and crew schedule,
- . understand the impact of irregular operations and mechanisms to efficiently handle the disruption,
- . state how maintenance requirements are determined and how the legal requirements are met.

HORES TOTS DE DEDICACIÓ DE L'ESTUDIANTAT

Tipus	Hores	Percentatge
Hores aprenentatge autònom	80,0	64.00
Hores grup gran	30,0	24.00
Hores grup petit	15,0	12.00

Dedicació total: 125 h

CONTINGUTS

Introduction to demand and forecasting for airlines

Descripció:

- Introduction to air travel demand concept
- Introduction to air travel demand forecasting
- Market analysis, trend analysis, time series analysis
- Econometric modelling
- Evaluating forecasting results

Dedicació: 9h

Grup gran/Teoria: 4h

Grup petit/Laboratori: 2h

Aprentatge autònom: 3h

Airline planning and operations

Descripció:

- Airline network design
- Fleet and schedule planning
- Aircraft routing and airline crew pairing and rostering

Dedicació: 31h

Grup gran/Teoria: 8h

Grup mitjà/Pràctiques: 3h

Aprentatge autònom: 20h

Disruption management

Descripció:

- Irregular operations and disruption management
- Basic concepts on airline maintenance

Dedicació: 14h

Grup gran/Teoria: 6h

Aprentatge autònom: 8h

Project

Descripció:

Working in groups, the students will perform a literature review to select current challenges in airline planning and operations (i.e., crew pairing and rostering, fleet planning, etc.) and will develop an algorithm to propose a solution to the identified problem. Focus will be made on identifying the problem, extracting realistic data, choosing the best method to solve it, validating the model and correctly extracting results, statistics and conclusions.

Dedicació: 72h Grup
gran/Teoria: 12h
Grup petit/Laboratori: 11h
Aprentatge autònom: 49h

SISTEMA DE QUALIFICACIÓ

Class participation and class exercises: 15%

Assignments and short presentations: 30%

Project: 55%

BIBLIOGRAFIA

Bàsica:

Doganis, R., 2019. Flying off course – Airline economics and marketing. Routledge, New York (fifth ed.)

Shaw, S., 2011. Airline Marketing and Management. Taylor & Francis

Holloway, S., 2008. Straight and Level: Practical Airline Economics. Taylor & Francis

Bruce, P.J., Yi, G., King, J. M.C., 2018. Airline Operations - A practical guide. Routledge, New York

Clark, P., 2007. Buying the big jets Fleet planning for airlines. Ashgate, Hampshire, England.