



Università
degli Studi di
Messina

DIPARTIMENTO DI GIURISPRUDENZA
"SALVATORE PUGLIATTI"



I Level University Master in "Aviation: Sustainable Development Goals"



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Module I

FUNDAMENTAL OF FLIGHT AND AERONAUTICAL LAW

Specific training contents (60 hours – 10 CFU)

1. Sources of air law and analogy
2. Freedoms of the Air and traffic rights: legal aspects
3. US Airline Deregulation and EU Air Transport Liberalisation Process: legal aspects
4. Civil aviation authorities and organisations
5. Air carriers
6. Licensing of air carriers: regulatory aspects
7. Leasing (contracts, lessor and lessee, liability, acceptance and clauses).
8. Liability for Aircraft Accident, safety position and just culture principles
9. Airport management: legal aspects

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Module I : AERONAUTICAL LAW Details

- International and EU Aviation legislation; hierarchy of the sources of law
- ICAO Annexes to the Chicago Convention; International Standards and Recommended Practices (SARPs)
- So9 law documents
- The 9 Freedoms of the Air; Air TraNc Rights
- US Airline Deregulation and EU Air Transport Liberalisation Process; the third package of air transport liberalization i
- Role and competences of the civil aviation authorities and organisations (ICAO, Eurocontrol, EASA, ENAC, ENAV, A
- Air carriers: Regulation EC 1008/2008; Operation of air services: EU and international rules; Air transport agreements
- Licensing of air carriers: regulatory aspects
- Leasing: legal aspects; lease atrucNre; different types of aircrañ lease agreement; components of a Standard Aircraft L
- Liability for aircraft accident: investigation; safety position; gross negligence; wilful misconduct; acceptable/unaccepti
- Just Culture Principles in the EU Legislation and Relationship with Safety Investigations and Occurences Reporting
- Airport Management: security management; customer service; flight management; commercial operations; managing 1
Resowces; environmental aspects

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Module I : FUNDAMENTALS OF FLIGHT Details

1. Aircraft structure (configurations)
2. Aerodynamics
3. Engines and propulsion systems
4. Materials Science and on-board systems
5. Meteorology
6. EASA Part -145
7. CAMO
8. Aircraft Inspections (A, B, C, D)
9. The maintenance reserves



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Module I : FUNDAMENTALS OF FLIGHT Details

- Aircraft structural components
- Load factor
- Elements and applications of aerodynamic forces
- Maneuvers
- Airworthiness of the aircraft
- Aircraft principal axes



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- Aircraft propulsion systems technology and design
- Basic propeller principles
- Current trends in aircraft design and construction
- Materials used in aircraft: sustainability aspects
- Aircraft software systems
- Aircraft hardware systems
- Flight control systems



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- Aviation Meteorology for Safe , Efficent and Cost-effective air navigation services
- Meteorology and Flyng plannig
- ICAO Annex 3 —Meteorological Service for International Air Navigation
- EASA part 145 - Quality System
- Certification of maintenance
- Personal requirements
- CAMO (Continuing Airworthiness Management Organisation)
- ICAO Annex 8 —Airworthiness of Aircraft
- Regulation (CE) 2042/2003 on Continuing Airworthiness of Aircraft
- Regulation (EU) 1321/2014 on Continuing Airworthiness of Aircraft
- Aircraft maintenance checks
- The different types of aviation maintenance checks (ABCD's System)
- Basics of aircraft maintenance reserve development and managment



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Module II

SUSTAINABLE DEVELOPMENT

Specific training contents (36 hours – 6 CFU)

1. Notion and definitions of sustainability
2. The regulatory evolution of the principle of sustainable development and a pioneering role of transport
3. The pillars of sustainability: Economic Sustainability, Environmental Sustainability, Social Sustainability
4. Sustainability goals in the UN Agenda 2030

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Module II : SUSTAINABLE DEVELOPMENT Details

- Origins and history
- Definition: the Brundtland Report
- Evolution of prevailing concepts and definitions of sustainable development at International Level: the road from Stockholm to Rio; the road from Rio +20 to Johannesburg; UN Agenda 2030
- Evolution of prevailing concepts and definitions of sustainable development at and EU level: the road from the Treaty 1957 to the Single European Act; the road from the Maastricht Treaty to the Treaty establishing a Con, Europe (2004); the Lisbon Treaty 2007
- Different approaches to sustainability
- Sustainability dimensions
- 17 goals and 169 targets of Agenda 2030
- “Sustainable Development Report 2023” by SDSN (Sustainable Development Solutions Network)

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Module III

SUSTAINABLE TRANSPORT ECONOMICS

Specific training contents (21 hours – 3,5 CFU)

1. Fundamentals of Economics (perfect competition, oligopoly, monopoly)
2. Cost factors of an airline (CASK, RASK, pax/km cost, load factor, break even, etc.)
3. Imposed costs (ATC, Airport Taxes, IATA, etc.)
4. Air freedoms and traffic rights: economic aspects
5. Evolution of air transport, US Airline Deregulation and EU Air Transport
6. Liberalisation Process: economic aspects
7. Ecological transition and increased cost of Hights
8. Sustainable prices

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Module III: TRANSPORT ECONOMICS

Details:

- Demand, supply and market balance
- Efficiency and inefficiency of markets
- Flexibility and externality
- Role of the public sector in the economy
- Production and costs
- Different types of market structures
- Monopoly, oligopoly and perfect/imperfect competition
- American and European approaches to air transport: deregulation *versus* liberalization
- Sustainable pricing
- Fuel surcharge and sustainable aviation fuel



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- The Airline Deregulation Act 1978
- The International Air Transportation Competition Act 1979
- Air Transport Liberalization in the EU: Three Packages (1987, 1990 and 1992)
- Third Liberalization Package: *Regulations* (EEC) Nos 2407/92, 2408/92 2409/92
- Regulation (EC) No 1008/2008
- The Freedoms of the Air in the Chicago Convention of 1944: economic aspects
- International Air Services Transit Agreement:
- Technical and Commercial Aviation Freedoms
- Airline Cost Factors and Aviation Business: Available Seat Kilometres (ASK); Cost per Available Seat Kilometers (CASK); Revenue per Available Seat Kilometres (RASK); Revenue Passenger Miles (RPMs) and Revenue Passenger Kilometres (RPKs); Passenger Load Factor (PLF); Break-Even Analysis and Break-Even Point (BEP)
- Air Traffic Control (ATC) Charges
- Airport Taxes & Fees and other Aviation Charges;
- Airline taxes and fees and Impact on the sustainable development of air transport

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Module IV

SUSTAINABLE DEVELOPMENT OF TRANSPORT

Specific training contents (21 hours – 3,5 CFU)

1. Application of sustainability principles to the transport sector
2. European transport policy
3. Sustainable mobility
4. Logistics and intermodality for sustainable development of transport

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Module IV: SUSTAINABLE DEVELOPMENT OF TRANSPORT Details

International Framework

- The role of transport in sustainable development: the 1992 United Nation's Earth Summit and Agenda 21
- The transport sector's targets in the 2002 World Summit on Sustainable Development and the Johannesburg Implementation (JPOI)
- The central role of transportation and mobility in the sustainable development in the 2012 UN Conference on Sustainable Development (Rio +20)
- The 2016 Global Sustainable Transport Conference and the "Mobilizing Sustainable Transport for Development" Report
- Sustainable transport in the 2030 Agenda for Sustainable Development

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European Framework

- Transport policy in the Rome Treaty 1957 (Article 3)
- Transport policy in the Single European Act 1986
- Transport policy in the Maastricht Treaty 1992 in the light of the sustainability principles
- European White Papers on Transport (1992, 2001, 2011)
- Trans-European Networks (TEN) Policy: evolution
- The current transport policy
- Transport Policy: concepts and objectives for a sustainable transport system
- European Transport Policy and Sustainable Mobility
- Intermodality and logistics as sustainable development tools
- From the EU ETS (Emissions Trading System) to the EU's Plan for a Green Transition
- The “Fit for 55” Package

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Module V

SUSTAINABLE DEVELOPMENT OF AIR TRANSPORT

Specific training contents (18 hours – 3 CFU)

1. Aviation Sustainability
2. Air pollution from aircraft
3. Noise pollution from aircraft
4. EU legislation on sustainable development of aviation
5. International legislation on sustainable development of aviation, with special attention to ICAO leg (Annexes) and CORSIA (Carbon Offset and Reduction Scheme for International Aviation) Program

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Module V: SUSTAINABLE DEVELOPMENT OF AIR TRANSPORT Details

- The concept of sustainable development of air transport: evolution and international/EU legislation
- Sustainable development of air transport and ICAO Rules/Annexes
- ICAO Annex 16: Environmental Protection
- The Impact of Commercial Aircraft Activity on Air Quality near Commercial Airports
- Environmental effects of aviation on Air Quality
- Aviation, Air Pollution, and Climate Change
- Aircraft Noise Pollution: How are airports and airlines addressing the issue?
- Aircraft Noise Reduction Strategies and Analysis of the Effects
- CORSIA (Carbon Offset and Reduction Scheme for International Aviation) Program: ICAO Resolution A3!

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Module VI

SUSTAINABLE ECONOMICS AND BUSINESS MANAGEMENT

Specific training contents (27 hours – 4,5 CFU)

1. Aircraft Performance
2. The purchase of aircraft fuel (policy)
3. Supply and tenders
4. How to read the budget of an airline
5. Management control of airlines
6. Environmental management of airlines/ companies operating in the aviation sector

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Module VI: SUSTAINABLE ECONOMICS AND BUSINESS MANAGEMENT Details

- Aircraft performance analysis
- Economic values related to aircraft performance factors
- Economic impact of introducing green aircraft technologies
- Aircraft Fuel
- Regulation (EU) 2021/1296
- Sustainable Aviation Fuels (SAF): current state and challenges

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- Fuel policy and Fuel management: EASA New Rules
- Environmental policy of airline
- Supply market analysis
- The budget of an airline: the low-cost business model and the major airline business model
- How an airline's budget is organized: the budget items
- Management control processes (planning and budgeting, cost management and performance evaluation)
- Environmental Management System (EMS) for airports
- Environmental Management System (EMS) for airlines
- ICAO Report on Environmental Management System (EMS) in Aviation

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Module VII

SUSTAINABLE DEVELOPMENT OF THE COMPANY

Specific training contents (24 hours – 4 CFU)

1. Corporate sustainability approaches: regulatory, ethical and strategic approaches
2. Sustainability and corporate social responsibility
3. Business ethics
4. Social and environmental budget
5. Risk management e operational processes
6. Management Sustainability Strategy
7. Circular Economy

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Module VII: SUSTAINABLE DEVELOPMENT OF THE COMPANY Details

- Sustainable development: a business definition
- Business strategies and policies for sustainable development
- Sustainable development objectives
- Development of a supportive corporate culture
- Development of measures and standards of performance
- European Commission sCategory on CSR (Corporate Social Responsibility)
- Key documents for CSR/RBC (Corporate Social Responsibility/ Responsible Business Conduct) policy
- European Framework

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- A Renewed EU strategy 2011-14 for Corporate Social Responsibility (2011)
- Communication on the next steps for a sustainable European FuNre (2016)
- Rejection paper: towards a sustainable Europe by 2030 (2019)
- EU Action plan on human rights and democracy 2020-2024 (2020)
- Circular economy: definition, importance and benefits
- Development of the circular economy in the EU
- EU Directive 2018/851 and Directive 2008/98/CE on waste
- Strategic Management in a Circular Economy

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Module VIII

SUSTAINABLE STRATEGY AND POLICY OF THE AIR TRANSPORT COMPANY

Specific training contents (24 hours – 4 CFU)

1. The Value Chain of Aviation
2. Airline Management
3. Competitive scenario
4. Business Model and Business Plan
5. Revenue Management
6. Productivity and costs
7. Fuel Hedging
8. The Distribution
9. The network



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Module VIII: SUSTAINABLE STRATEGY AND POLICY OF THE AIR TRANSPORT COMPANY

Details

- Introduction to Airline Management
- Characteristics of Air Transport Industry
- Organizational Structure
- Airline management in a Competitive Environment
- Airline Marketing & Management
- Airline Operating Costs and Productivity
- Competitive Strategies in the Airline Industry
- Airline Industry Analysis

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- Airline Industry/Aviation Value Chain Analysis
- From the Aviation Value Chain to the Aviation System
- Air Transport Policy and Regulation
- Airline Business Plan
- Business Models of the Aviation Industry
- Air Transport and Airline Planning and Policy
- Airline Revenue Management: definition and evolution
- Fuel hedging or fuel risk management
- Management of Aviation Distribution Networks
- Financing for aviation infrastructure



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Module IX

SUSTAINABLE DEVELOPMENT OF THE AIR TRANSPORT COMPANY

Specific training contents (27 hours – 4,5 CFU)

1. Characteristics of the air carrier
2. Fuel policies: alternative fuels
3. Sustainable Aviation Fuel (SAF)
4. Emissions trading (ETS)
5. Climate change and the role of aviation
6. Airline Strategic Alliances
7. Air transport pricing strategy
8. Quality service and customer satisfaction
9. “Green” projects
10. Eco-Management and Audit Scheme (EMAS) Certification
11. Business management system
12. Lobbying against EU environmental policies

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13. Reduced fuel consumption and flight safety
14. Environmental risk management
15. Aviation sustainability of post-pandemic in a post-pandemic world
16. National Action Plans as a voluntary instrument for reducing CO2 emissions
17. ICAO's commitment: Resolution A39-2 *"Consolidated statement of continuing ICAO policies and practices"*
18. National Action Plans as a voluntary instrument for reducing CO2 emissions
19. ICAO's commitment: Resolution A39-2 *"Consolidated statement of continuing ICAO policies and practices relate environmental protection —Climate change"*
20. IATA's role in a sustainable recovery
21. Scrapping/dismantling of aircraft: pollution and circular economy
22. Legislation and consumption

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Module IX: SUSTAINABLE DEVELOPMENT OF THE AIR TRANSPORT COMPANY Details

- Sustainable Development Goals and Aviation Industry
- Decarbonization Reducing Emissions from Aviation
- EU ETS (Emission Trading System) and the “Polluter Pays Principle”
- “Cap and Trade” Principle
- Sustainable Aviation Fuel (SAF) and Alternative Fuels (e-fuels)
- EU Rules for Promotion of Sustainable Aviation Fuels under ‘Fit for 55’
- Regulation (EU) 2023/2405 (ReFuelEU Aviation)
- Low Fuel Consumptions and its Impact on the Cost of Airline Operations
- Fuel Efficiency and Operational Factors Affecting the Rate of Fuel Consumption in Aircrafts
- Technologies and policies for improving Aircraft Fuel Efficiency
- The Growth in Greenhouse Gas Emissions from Commercial Aviation
- EU New Renewable Energy Rules

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- Analysis of Global Airline Alliances as a Strategy for International Network Development
- The Airline Business and Global Airline Alliances
- Dynamic Pricing Strategy for Airlines
- State of the Art of Pricing Policy in Air Transportation
- Impact of Airline Service Quality on Customer Satisfaction
- EU Projects on Sustainable Aviation
- Sustainable Consumption in Commercial Aviation Operations
- EMAS (Eco-Management and Audit Scheme) Certification and Green Business
- State Action Plans for CO2 Emissions Reduction in the Aviation Sector
- Offsetting CO2 emission with CORSIA (Carbon Offsetting and Reduction for International Aviation)
- Fundamentals of Aviation Business Management
- Lobbying and Green Policies
- Flight Safety and Environmental Risk Management



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- The Future of Aviation Post-Pandemic
- Sustainability Recovery of Air Transport as a Priority for Industry: the role of IATA
- Aviation Industry and European Climate Policy
- The Impact of Climate Change on Aviation
- ICAO Assembly Resolution A39-2 “*Consolidated statement of continuing ICAO policies and practices r to environmental protection. Climate change*”
- ICAO Assembly Resolution A39-3 “*Consolidated statement of continuing ICAO policies and practices r to environmental protection —Global Market-based measure (MBM) scheme*” and subsequent resolutions.
- The Implementation of the Circular Economy in Commercial Aviation
- Commercial Aircraft Disassembly, Dismantling & Recycling (Scrapping) Market

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Module X

AIRPORT SYSTEM AND SUSTAINABILITY

Specific training contents (18 hours – 3 CFU)

1. Disposal of waste oils, aircraft washing, noise and air pollution
2. Use of APU (Auxiliary Power Units)
3. Sustainable development of airports

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Module X: AIRPORT SYSTEM AND SUSTAINABILITY Details

- Aircraft Exterior Surface Cleaning: Best Practice
- An Environmentally Approach to Aircraft Washing
- Reducing Aircraft Noise Pollution (Engine Noise *versus* Airframe Noise)
- The Impact of Commercial Aircraft Activity on Air Quality
- Emissions from APU (Auxiliary Power Units) and Ground Power Units
- Sustainability in the Airport Ecosystems
- Airports' Sustainability Strategy



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