

CURRICULUM MODEL

I. PERSONAL DATA

NAME AND SURNAME: Raquel Delgado-Aguilera Jurado COUNTRY: Spain

UNIVERSITY: Universidad Politécnica de Madrid (UPM)

FACULTY: Faculty of Aeronautical Engineering (ETSIAE)

DEPARTMENT: Department of Aerospace Systems, Air Transport and Airports (SATAA)

CURRENT CATEGORY: Assistant Professor and Researcher

2. ACADEMIC QUALIFICATIONS

PhD in Aerospace Engineering	Universidad Politécnica de Madrid (UPM) – ETSIAE	27/11/2023
MSc in Air Transport Systems (MUSTA)	Universidad Politécnica de Madrid (UPM) – ETSIAE	26/03/2021
BSc in Aerospace Engineering	Universidad Rey Juan Carlos (URJC)	23/07/2019

3. TEACHING ACTIVITY CARRIED OUT

Qualification: MSc in Air Transport Systems (MUSTA)

University: Universidad Politécnica de Madrid (UPM)

Faculty: Faculty of Aeronautical Engineering (ETSIAE)

Subject: Analysis and Mitigation of Operational Safety Risks

Qualification: MSc in Aeronautical Systems Management

University: Universidad Politécnica de Madrid (UPM)

Faculty: Faculty of Aeronautical Engineering (ETSIAE)

Subject: Management of Air Navigation Systems

Qualification: BSc in Aerospace Engineering (GIA)

University: Universidad Politécnica de Madrid (UPM)

Faculty: Faculty of Aeronautical Engineering (ETSIAE)

Subject: Meteorology

Qualification: BSc in Air Transport Management and Operations (GYOTA)

University: Universidad Politécnica de Madrid (UPM)

Faculty: Faculty of Aeronautical Engineering (ETSIAE)

Subject: Surveillance and Communications Systems

Qualification: BSc in Aerospace Engineering (GIA)
University: Universidad Politécnica de Madrid (UPM)
Faculty: Faculty of Aeronautical Engineering (ETSIAE)
Subject: Communications and Surveillance Systems

Qualification: MSc in Air Navigation Services Management - ENAIRE
University: Universidad Politécnica de Madrid (UPM)
Faculty: Faculty of Aeronautical Engineering (ETSIAE)
Subject: Operational Safety Management

4. RESEARCH ACTIVITY PERFORMED

EICACS: EUROPEAN INITIATIVE FOR COLLABORATIVE AIR COMBAT STANDARDISATION

- Participation: Researcher R1 – Postgraduate non-doctoral researcher
- Funding entity: European Defence Fund (EDF)
- Duration: 01/01/2023 – Currently

ENVIRONMENTALLY FRIENDLY AVIATION FOR ALL CLASSES OF AIRCRAFT (EFACA)

- Participation: Researcher R1 – Postgraduate non-doctoral researcher
- Funding entity: European Commission. SESAR Joint Undertaking H2020
- Duration: 01/01/2023 – Currently

DIGITAL TEACHING AND LEARNING FOR GREEN TRANSPORT AND LOGISTICS (AVIONIC)

- Participation: Researcher R1 – Postgraduate non-doctoral researcher
- Funding entity: Co-funded by the Erasmus+ Programme of the European Union
- Duration: 01/10/2022 – Currently

FARO: saFety And Resilience guidelines for aviatiOn. Competitive research Project of the SESAR2020 Exploratory Research

- Participation: Researcher R1 – Postgraduate non-doctoral researcher
- Funding entity: European Commission. SESAR Joint Undertaking H2020
- Duration: 15/09/2020 – 15/09/2023

ACADIGIA: ACCELERATING ACADEMIAS DIGITAL READINESS FOR ONLINE AND BLENDED AUGMENTED TEACHING (AGREEMENT 2020-1-PT01-KA226-HE-095042)

- Participation: Researcher R1 – Postgraduate non-doctoral researcher
- Funding entity: Co-funded by the Erasmus+ Programme of the European Union
- Duration: De 01/09/2021 - Currently

SHAPING THE WAY HIGHER EDUCATION INSTITUTIONS DO RESEARCH AND INNOVATION WITH AND FOR SOCIETY (R&I LOOP) AGREEMENT 2020-1-PL01-KA203-078366

- Participation: Researcher R1 – Postgraduate non-doctoral researcher
- Funding entity: Co-funded by the Erasmus+ Programme of the European Union
- Duration: 01/09/2021 - Currently

Agreement between UPM, ENAIRE and CRIDA for the development of R+D+I activities of common interest in the field of operational efficiency and automation in air traffic management.

- Participation: UPM Scholarship Holder (Master's extracurricular internship)
- Funding entity: Ente Público Empresarial ENAIRE. Ministerio de Fomento.
- Duration: 15/09/2019 – 31/07/2020

5. PUBLICATIONS (Articles)

INDEXED IN JCR

From Raw Data to Practical Application: EEG Parameters for Human Performance Studies in Air Traffic Control	Aerospace	28/12/2023	27
Methodology of air traffic flow clustering and 3-D prediction of air traffic density in ATC sectors based on machine learning models	Expert Systems With Applications	21/03/2023	22
Prediction of Capacity Regulations in Airspace Based on Timing and Air Traffic Situation	Aerospace	15/03/2023	20
The variables with the greatest influence on ATM safety barriers	Safety Science	27/02/2023	14
Methodology for Determining the Event-Based Taskload of an Air Traffic Controller Using Real-Time Simulations	Aerospace	18/01/2023	22
Determination of Air Traffic Complexity Most Influential Parameters Based on Machine Learning Models	Symmetry-Basel	12/12/2022	26
Assessment of Potential Conflict Detection by the ATCo	Aerospace	17/09/2022	17
Safety Performance Functions to predict Separation Minima Infringements in en-route airspace	Aircraft Engineering and Aerospace Technology (AEAT)	07/04/2022	12
How much workload is workload? A human neurophysiological and affective – cognitive performance measurement methodology for ATCOs	Aircraft Engineering and Aerospace Technology (AEAT)	23/03/2022	12
Dynamic model to characterise sectors using machine learning techniques	Aircraft Engineering and Aerospace Technology (AEAT)	20/01/2022	9

INDEXED IN SCOPUS

Digital skills in Air Transport	EDULEARN23 Conference	03/07/2023	8
Is it possible to evaluate the event-based taskload of an air traffic controller using an air traffic control simulator?	IOP Publishing. Journal of Physics: Conference Series	15/03/2023	9
Machine learning in aviation: Is it possible to predict when an ATC Sector or Air Traffic Flow will be regulated?	IOP Publishing. Journal of Physics: Conference Series	15/03/2023	9
Most influential factors in the detection of potential conflicts between en-route aircraft by ATCO	IOP Publishing. Journal of Physics: Conference Series	15/03/2023	10
Impact of Artificial Intelligence in the Certification of Human-Centered	AHFE Open Access	28/07/2022	11

Aviation Systems

Aviation Human Factors Issues During and Post COVID 19	AHFE Open Access	27/07/2022	8
Safety Performance Functions to predict Separation Minima Infringements in en-route airspace	IOP Conference Series: Materials Science and Engineering	15/02/2022	8
How much workload is workload? A human neurophysiological and affective – cognitive performance measurement methodology for ATCOs	IOP Conference Series: Materials Science and Engineering	15/02/2022	10
Dynamic sector characterisation model with the application of machine learning techniques	IOP Conference Series: Materials Science and Engineering	15/02/2022	9
Aviation human Factors issues during and post COVID 19.	International Conference on Applied Human Factors and Ergonomics	26/10/2022	9
Impact of Artificial Intelligence in the Certification of Human-Centered Aviation systems	International Conference on Applied Human Factors and Ergonomics	26/10/2022	11
Predictive safety models for more autonomous systems in ATM	2022 IEEE/AIAA 41st Digital Avionics Systems Conference (DASC)	02/11/2022	6

6. CONFERENCES

Title	Conference	Place	Date	Organising entity	Character
Safety Performance Functions to predict Separation Minima Infringements in en-route airspace	11 th EASN Virtual International Conference on “Innovation in Aviation & Space to the Satisfaction of the European Citizens”	Virtual	03/09/2021	EASN Association	International
How much workload is workload? A human neurophysiological and affective – cognitive performance measurement methodology for ATCOs	11 th EASN Virtual International Conference on “Innovation in Aviation & Space to the Satisfaction of the European Citizens”	Virtual	03/09/2021	EASN Association	International
Dynamic model to characterise sectors using machine learning techniques	11 th EASN Virtual International Conference on “Innovation in Aviation & Space to the Satisfaction of the European Citizens”	Virtual	03/09/2021	EASN Association	International
FARO project: A systematic framework to characterise the safety of air routes, in terms of Separation Minima Infringements (SMIs).	World ATM Congress 2021	Madrid	28/10/2021	CANSO & ATCA	International
How can machine learning help characterising ATC sectors by their complexity?	World ATM Congress 2021	Madrid	28/10/2021	CANSO & ATCA	International
Which factors determine the	World ATM Congress 2021	Madrid	28/10/2021	CANSO & ATCA	International

complexity of the airspace?

Aviation human Factors issues during and post COVID 19.	AHFE 2022 International Conference	New York	24/07/2022	AHFE International	International
Impact of Artificial Intelligence in the Certification of Human-Centered Aviation systems	AHFE 2022 International Conference	New York	24/07/2022	AHFE International	International
Predictive Safety Models for More Autonomous Systems in ATM	41th Conference on Digital Avionics Systems (DASC)	Portsmouth	20/08/2022	Digital Avionics Technical Comitee	International
Is it possible to evaluate the eventbased task load of an atco using an ATC simulator?	12th EASN Virtual International Conference on “Innovation in Aviation & Space to the Satisfaction of the European Citizens”	Barcelona	20/10/2022	EASN Association	International
Machine learning in aviation: is it possible to predict when an ATC sector or air traffic flow will be regulated?	12th EASN Virtual International Conference on “Innovation in Aviation & Space to the Satisfaction of the European Citizens”	Barcelona	20/10/2022	EASN Association	International
Most influential factors in the detection of potential conflicts between en-route aircraft by ATCO	12th EASN Virtual International Conference on “Innovation in Aviation & Space to the Satisfaction of the European Citizens”	Barcelona	20/10/2022	EASN Association	International
Analysis of patterns and Trends in air traffic Behaviour in different enroute ATC sectors using a Complexity Indicator	13th EASN International Conference on Innovation in Aviation & Space for opening New Horizons	Salerno	05/09/2023	EASN Association	International
Safety and Resilience Bayesian Belief Network (SR-BBN) for ATM	13th EASN International Conference on Innovation in Aviation & Space for opening New Horizons	Salerno	05/09/2023	EASN Association	International
An overview of the possibilities, current status, and limitations of battery technologies to electrify aviation	13th EASN International Conference on Innovation in Aviation & Space for opening New Horizons	Salerno	05/09/2023	EASN Association	International
A step-by-step guide to include key electroencephalography (EEG) parameters in the study of human performance applied to air traffic control	13th EASN International Conference on Innovation in Aviation & Space for opening New Horizons	Salerno	05/09/2023	EASN Association	International

7. COURSES AND SEMINARS RECEIVED

Autocad Training	WorkSmart	Technical skills	14/11/2020
			21/11/2020
Sky 4.0 - Soft Skills4.0 for the new challenges in European Aerospace Industry”	Aviation Valley Association	TRAIN THE TRAINERS online workshop for Sky 4.0 SOFT SKILLS	02/07/2021 28/07/2021
NEST, functionalities and application in airspace studies	Department of Aerospace Systems, Air Transport and Airports	Technical skills	01/10/2019 03/10/2019

(SATAA) of the UPM and Transport
Engineering and Economics
(INECO).

How to improve article acceptance rate and publish quicker: a guide to getting published	Emerald Publishing	Soft skills	9/04/2021
			11/01/2022
Big Data, Aprendizaje Automático e Inteligencia Artificial	CRIDA - ATM R&D + Innovation Reference Center	Technical skills	13/01/2022
			18/01/2022
			20/01/2022
Webinar on How to Avoid Rejections Due to Language Mistakes	German Scholars Organization (GSO) y ENAGO	Soft skills	06/04/2021
Doctoral Thesis: Dynamic Mode Decomposition based Algorithms as Feature Detection Techniques: Application to Large Flow Databases	UPM - ETSIAE	Technical skills	11/02/2022
Doctoral Thesis: Application of ROM Based Methods to Aeroengines Health Monitoring, Performance and Control	UPM - ETSIAE	Technical skills	17/03/2022
Seminar: Space and Science in Stratospheric Balloons	UPM - ETSIAE	Technical skills	17/03/2022
Webinar on how to avoid rejections due to language mistakes	Enago	Technical skills	06/04/2022

8. SCHOLARSHIPS, GRANTS AND AWARDS RECEIVED

Doctoral thesis with honours Cum Laude in Aerospace Engineering from the Universidad Politécnica de Madrid (UPM).

- Organisation: Universidad Politécnica de Madrid (UPM)
- Topic: Safety Performance Functions to predict Separation Minima Infringements in en-route airspace

PhD and research internship at the Department of Air Transport and Operations (ATO). Faculty of Aerospace Engineering. Delft University of Technology (TU Delft).

- Organisation: Delft University of Technology (TU Delft)
- Topic: Aerospace Engineering

CRIDA Award for the best Master's Thesis in the VI Promotion of the University Master's Degree in Air Transport Systems.

- Organisation: Universidad Politécnica de Madrid (UPM) y CRIDA
- Topic: Methodology for classifying air flows according to their complexity in terms of ATFCM system management

9. ACTIVITY IN COMPANIES AND FREELANCE WORK

Instituto Nacional de Técnica Aeroespacial (INTA), Madrid, España - Internship in the Department of Optoelectronics and Missilistics (01/03/2019 – 01/06/2019)

- Functions: Nanosatellite launch vehicle systems and cost engineering
- Sector: Aerospace Engineering

Grupo Aeronáutico Zona Centro (GAZC), Madrid, España – Internship at the Department of Engineering (01/07/2018 – 01/10/2018)

- Functions: Manufacturing process optimisation
- Sector: Aerospace Engineering

10. OTHER MERITS

Languages:

- **Castellano** Nativo
- **Inglés** C1
- **Francés** B1

Engineering and Technical Information:

- **Programming languages:** Python, C++, R, Gams, Matlab, LaTeX
- **Office:** Microsoft Office and OpenOffice
- **CAD:** Catia V5, ANSYS and AutoCAD Civil
- **Others:** Simulink, GlobalMapper, NEST, Arduino Uno and Git