

Segretariato Generale della Difesa e Direzione Nazionale degli Armamenti Direzione degli Armamenti Aeronautici e per l'Aeronavigabilità

### REQUIREMENTS FOR THE PROFESSIONAL QUALIFICATION OF DAAA PERSONNEL INVOLVED IN A CERTIFICATION TEAM

NOTE This Regulation supersedes AER(EP).P-1-1 dated February 12th 2016

Edition 31<sup>th</sup> July 2024

### LIST OF EFFECTIVE PAGES

**NOTE:** This standard is valid if it consists of the pages listed below, duly updated. Copy of this Technical Publication may be found at the address:

> https://www.difesa.it/amministrazionetrasparente/segredifesa/armaereo/pubblicazioni-tecniche/34942.html

#### The issue dates of the original and amended pages are:

This regulation consists of a total of 23 pages, as specified below, including 2 Attachments:

Page	Amendment
N°	N°
Frontpage	0
Α	. 0
i	0
1 - 8	0
Att. A pages A1-A8	0
Att. B pages B1-B4	0

INDEX
-------

1.	INTRODUCTION	l
1.1.	General	
1.2.	Scope1	l
1.3.	Applicability1	l
1.4.	Definitions	l
1.5.	Validity1	l
1.6.	References	l
1.7.	Acronymns	2
2.	PROFESSIONAL QUALIFICATION ACHIEVEMENT	2
2.1.	Human qualities	3
2.2.	Basic professional requirements	3
2.3.	Educational profile	3
2.4.	OJT	ł
3.	TEAM LEADER (TL) QUALIFICATION	ł
3.1.	Human qualities	ł
3.2.	Basic professional requirements	ł
3.3.	Educational profile	ł
3.4.	OJT	5
4.	DEPUTY TEAM LEADER (DTL) QUALIFICATION	5
4.1.	Human qualities	5
4.2.	Basic professional requirements	5
4.3.	Educational profile	5
4.4.	OJT	5
5.	SUBJECT MATTER EXPERT (SME) QUALIFICATION	3
5.1.	Human qualities	3
5.2.	Basic professional requirements	3
5.3.	Educational profile	7
5.4.	OJT	7
6.	PROFESSIONAL QUALIFICATION CERTIFICATE	7
7.	UPKEEP OF THE PROFESSIONAL QUALIFICATION	7
8.	TRANSITION	3
9.	CLOSING REMARKS	3
ATTACH	HMENT A Educational profiles for the CT membersA-1	
ATTACH	HMENT B Certificate templatesB-1	l

### 1. INTRODUCTION

### 1.1. General

D.P.R. 90 dated 15th March 2010, article 119, appoints the "*Direzione degli Armamenti Aeronautici e per l'Aeronavigabilità*" (DAAA) as the Italian articulation of the Ministry of Defence responsible for the flight certification, registration and admission to flight of all military aicraft.

The issue of a Military Type Certificate (MTC), Military Type Qualification Certificate (MTQC) and Military System Certificate are carried in accordance with the applicable DAAA norms AER(EP).P-21, AER(EP).P-2 and AER(EP).P-22.

The process followed by the DAAA personnel to achieve and release such certificates, described in the AER(EP).P-16, requires the definition and appointment of the so-called "*Certification Team*" (CT), composed by a Team Leader (TL), a Deputy Team Leader (DTL) and by several Subject Matter Experts (SMEs).

### 1.2. Scope

Scope of the present pubblication is to determine the requirements necessary to fulfill in order to bestow the professional qualification as TL, DTL and SME within a CT.

### 1.3. Applicability

The present norm applies to the following personnel:

1.3.	A Military and civil personnel belonging to DAAA
1.3.	Military and civil personnel employed by DAAA within a CT but belonging
	to other bodies of the IT MoD
1.3.	c Civil personnel employed by DAAA within a CT but belonging to
	consultancy companies contracted by IT MoD

### 1.4. Definitions

Refer to the technical publication AER.Q-2010 for the definitions of the terms adopted in this norm.

In addition, it is specified that:

- A "Professional Qualification" is a credential earned through specific background experience, education and training, that certifies a person having particular skills and knowledge to perform the assigned tasks.

For the sake of this Publication, "Professional Qualification" is recognized to a subject upon fulfillment of all requirements defined in paragraph 2 and the following granting of the "Professional Qualification Certificate" signed by the Deputy Technical Director, as defined in paragraph 6.

### 1.5. Validity

The present norm replaces the previous edition dated 12th February 2016 and becomes effective since the date of its approval and promulgation.

### 1.6. References

AER(EP).P-2 Military Type System Certification, Qualification and Fit-For-Installation

AER(EP).P-3	Flight Simulators – Zero Flight Time. Technical Specification, Homologation, Registration, Configuration Control and Technical Publications
AER(EP).P-6	Criteria for the preparation of Technical Specifications
AER(EP).P-16	Procedure for Military Type Certification
AER(EP).P-18	Autorità Nazionale di Certificazione (ANC) dei Sistemi New Generation Identification Friend or Foe (NGIFF)
AER(EP).P-21	Certification of Military Aircraft and Related Products, Parts and Appliances, and Design and Production Organisations
AER(EP).P-22	Certification of Military Remotely Piloted Aircraft Systems
AER(EP).P-23	Airworthiness Residual Risk Identification and Acceptance
AER(EP).P-516	Airworthiness requirements definition criteria

### 1.7. Acronymns

AD CdO CT	Amministrazione Difesa Certificato di Omologazione <i>Certification Team</i>
СТА	Certification Team Appointment
DAAA	Direzione degli Armamenti Aeronautici e per l'Aeronavigabilità
DTL	Deputy Team Leader
EMACC	European Military Airworthiness Certification Criteria
MTC	Certificati di Tipo Militare / Military Type Certificate
MTQC	Certificato di Qualificazione di Tipo Militare / Military Type Qualification
OJT	On the Job Training
RSV	Reparto Sperimentale di Volo
SME	Subject Matter Expert
TL	Team Leader
TP	Technical Publication
VDT	Vice Direzione Tecnica

# 2. PROFESSIONAL QUALIFICATION ACHIEVEMENT

The responsibilities held by the DAAA Director in terms of Military Airworthiness Authority involves the need to appoint competent personnel within each CT, in terms of moral, technical and professional skills and capabilities.

On this regard, the personnel involved in a CT shall undergo a specific process, covering the following key areas:

- Human qualities;
- Basic professional requirements;
- Educational profile;
- On the Job Training (OJT).

Upon completion of this process, the personnel will receive the Professional Qualification Certificate as described in paragraph 6.

Each chapter regarding a specific role will describe the minimum requirements for each key area a candidate shall demonstrate compliance to, in order to be professionally qualified for that role.

In paragraphs 2.1, 2.2, 2.3 and 2.4 a general description of the key areas requirements is provided.

### 2.1. Human qualities

The standard ISO 19011:2018 is used as guidance for vouching the personnel employed by DAAA as part of a CT.

As far as it concerns all the complex and multi-disciplinary contexts, the personnel involved in a CT shall have the following characteristics:

- Respect for the ethical principles;
- Open-minded attitude;
- Sense of diplomacy;
- Capabilty to observe and report;
- Acumen;
- Versatility;
- Tenacity;
- Ability to be resolute;
- Self confidence;
- Steadiness;
- Sensibility toward cultural diversities;
- Spirit of collaboration.

The search for these qualities shall be carried out at every level and to every member of the CT, whatever the assigned role. For this reason, the requirements defined in ISO 19011:2018 shall be promoted in order to establish a working attitude efficient and effective.

The personnel involved in a CT shall be prone to the teamwork, possess decisionmaking skills and show moral virtues like loyalty, trustworthiness.

The personnel involved in a CT shall be available for duty travels in national and international territories, potentially with short notice.

### 2.2. Basic professional requirements

The basic professional requirements are tailored for each specific role within a CT (TL, DTL, SME). The details are defined in each specific paragraph of this norm. These requirements form the basis for the professional profile and are connected to the relevant educational, professional and technical background and to the past working experience.

As common basic professional requirement, all personnel belonging to a CT shall be proficient in written and spoken English<sup>1</sup>, even though the required level of proficiency will depend on the role.

### 2.3. Educational profile

The educational profile is tailored for each specific role within a CT (TL, DTL, SME). The educational profile required to become professionally qualified as member of a CT shall be initially aimed to give a baseline set of skills sufficient to carry on a standard certification program.

After granting the Professional Qualification, each member of a CT will be appointed to participate to periodic course sessions in order to enlarge his personal knowledge on one side and the overall Office technical Situational Awareness, creating the basis for a "shared knowledge environment" culture<sup>2</sup>.

<sup>&</sup>lt;sup>1</sup> The proficiency level can be certified through the standard language evaluation systems (TOEFL, IEFLTS, CEFR, IEI, T) or it will be up to the condidate to demonstrate his skill at a level that estimates the general requirement.

JFLT) or it will be up to the candidate to demonstrate his skill at a level that satisfies the general requirement

<sup>&</sup>lt;sup>2</sup> The "shared knowledge environment" culture will help to maintain resilience whenever personnel will change positions or assignment.

### 2.4. OJT

In order to achieve the Professional Qualification, it is mandatory to actively participate in a MTC, MTQC or Military System Certification program as part of a CT, under the respective supervision of a "senior" already professional qualified member. The training phase (*On the Job Training -* OJT) may start before the completion of the educational suite and run in parallel, with the supervisor's permission.

# 3. TEAM LEADER (TL) QUALIFICATION

### 3.1. Human qualities

TL will lead the CT during a certification activity, being the primary interface with the external stakeholders (Industry, Technical Division, Service, etc).

The relevant human qualities requirements for TL are:

3.1.a Owning a complete set of human qualities as detailed in ISO 19011:2018, with particular focus on leadership and negotiation skills

### Acceptable Means of Compliance

Compliance to the 3.1.a can be demonstrated throughout the personal professional background of the TL candidate and through the everyday interactions that the TL candidate normally has with his leadership.

TL candidates usually have also a soft skills solid training background, which can be helpful to demonstrate compliance to the 3.1.a.

### 3.2. Basic professional requirements

The relevant basic professional requirements for TL are:

3.2.a	Being compliant to 1.3.a
3.2.b	At least 5 years of experience in technically complex, multi-disciplinary activities within the Ministry Of Defense <sup>3</sup>
3.2.c	Owning a Master Degree in aeronautical, aero-spatial, electronic, electro- technical, mechanical, computer science, telecommunications engineering, or equivalent

### Acceptable Means of Compliance

In case requirement 3.2.c is not satisfied, upon proposal from the Head of the 2<sup>nd</sup> Office, the Deputy Technical Director (VDT) can retain the basic requirements fulfilled based on the following alternative competencies<sup>4</sup>:

3.2.c.l	At least 3 years of experience as SME within a CT
3.2.c.ll	At least experience as DTL in a minimum of 2 programs

### 3.3. Educational profile

3.3.a Being compliant with Annex A-1

<sup>&</sup>lt;sup>3</sup> For instance, the Air Force Flight Test Center, the Maintenance Departments, the Technical Surveillance Offices, the AVES command or the DAAA Technical-Administrative Divisions

<sup>&</sup>lt;sup>4</sup> The TL does not exclusively carry out technical tasks, but rather programmatic/management ones. Therefore, the basic requirements listed in this paragraph should be considered indicative of the TL professional background and his ability to manage certification tasks, rather than mandatory. These measures can be applied on an exceptional basis.

### 3.4. OJT

3.4.a	Perform at least 1 certification program under the supervision of a qualified TL
-------	--

# 4. DEPUTY TEAM LEADER (DTL) QUALIFICATION

### 4.1. Human qualities

DTL will back up the CT during a certification activity, being the primary interface with the SMEs.

The relevant human qualities requirements for DTL are:

4.1.a Owning a complete set of human qualities as detailed in ISO 19011:2018, with particular focus on leadership and negotiation skills

### Acceptable Means of Compliance

Compliance to the 4.1.a can be demonstrated throughout the personal professional background of the DTL candidate and through the everyday interactions that the DTL candidate normally has with his leadership.

### 4.2. Basic professional requirements

The relevant basic professional requirements are:

4.2.a	Being compliant to 1.3.a, 1.3.b or 1.3.c
	At least 5 years of experience in technically complex, multi-disciplinary
4.2.b	activities within aeronautical companies and/or articulations of the Ministry
-	Of Defense
	At least 3 years of experience as SME within a CT, covering a minimum of
4.2.c	2 technical panels/disciplines

### Acceptable Means of Compliance

A professional qualified TL can be nominated DTL without demonstrating compliance to 4.2 requirements.

### 4.3. Educational profile

4.3.a Being compliant with Annex A-1
--------------------------------------

### 4.4. OJT

### Acceptable Means of Compliance

In case the candidate DTL has already been qualified as TL, the OJT is not required.

# 5. SUBJECT MATTER EXPERT (SME) QUALIFICATION

### 5.1. Human qualities

CT SMEs will interacts with industry SMEs and will report to the DTL and TL as appropriate.

The relevant human qualities requirements for DTL are:

5.1.a Owning a complete set of human qualities as detailed in ISO 19011:2018, with particular focus on teamworking and trustworthiness

### Acceptable Means of Compliance

Compliance to the 5.1.a can be demonstrated throughout the personal professional background of the DTL candidate and by means of the professional interviews he will be subjected to before becoming SME.

### 5.2. Basic professional requirements

The relevant basic professional requirements are:

5.2.a	Being compliant to 1.3.a, 1.3.b or 1.3.c
5.2.b	Owning a Master Degree in aeronautical, aero-spatial, electronic, electro- technical, mechanical, computer science, telecommunications engineering, or equivalent

For the SME qualified in *"Human Machine Interface"*, the following additional requirement applies:

For the SME qualified in "*Materials*", the following requirement alternative to 5.2.b and 5.2.b.I/5.2.b.II applies:

5.2.b.III Owning a Degree (Master or Bachelor) or Diploma in chemistry or coherent subject

### Acceptable Means of Compliance

As alternative AMC to 5.2.a, the following requirements apply:

5.2.b.l	Owning a Bachelor Degree or High School Diploma in aeronautical, aero- spatial, electronic, electro-technical, mechanical, computer science, telecommunications
5.2.b.ll	At least 4 years of experience in technically complex, multi-disciplinary activities in technical articulations of the Ministry Of Defense <sup>5</sup>

As alternative AMC to 5.2.c, the following requirement applies:

	The candidate SME shall complete a compensative specific OJT through
5.2.c.l	witnessing activities to flight test tasks at the Air Force Flight Test Center
	or at specific aeronautical companies

For the personnel compliant to 1.3.c, the same basic requirements apply, with the exception of requirement 5.2.b.II. The following alternative requirement is applied:

5.2.b.II.i At least 1 year of professional experience in the design, production or certification of aeronautical products

<sup>&</sup>lt;sup>5</sup> i.e. Air Force Flight Test Center, the Technical-Administrative Divisions of the DAAA, the Vice-Technical Directorate

### 5.3. Educational profile

### 5.3.a Being compliant with Annex A-2

The educational profile, as shown in Annex A-2, is articulated in a number of mandatory common basic courses and some courses, specific for each discipline, taken from the European Military Airworthiness Certification Criteria (EMACC). Additional profiles, more strictly linked to the performance evaluation and emergent aspects (i.e cyber security) are also included.

### 5.4. OJT

5.4.a At least 6 months in a CT under the supervision of a qualified SME

During this period, the candidate shall be formally included in a CT, with the attribute "OJT".

The OJT is required for each individual technical panel/discipline.

# 6. PROFESSIONAL QUALIFICATION CERTIFICATE

Upon completion of the above-described process, the Professional Qualification Certificate of TL/DTL/SME will be prepared by the 2<sup>nd</sup> Office of the Vice-Technical Directorate and signed by the Deputy Technical Director (templates in Annex B).

The Certificate shall identify the achieved role and, when applicable, the specific technical panel/discipline.

The 2<sup>nd</sup> Office is also responsible to keep a record of the certificates, along with the evidence in support of each TL/DTL/SME certificate.

Upon the owner's authorization, this documentation can be used by DAAA and viewed by third parties during the auditing tasks of a Recognition process with foreign Military Airworthiness Authorities or International Organizations.

# 7. UPKEEP OF THE PROFESSIONAL QUALIFICATION

As described in AER(EP).P-16, each CT includes only personnel who has been professionally qualified through this norm (AER(EP).P-1-1). However, the gathered professional qualification shall be kept current and enhanced in order to perform always at the expected level.

This can be ensured through:

- a continuous employment in certification activities;
- the attendance to other courses (among those listed in Annex A for the specific technical panel/discipline).

For this reason, the Head of the 1<sup>st</sup> Office shall hold a Register of all the CTs, so to adequately track the currency of each specialist.

The currency verification is carried at the beginning of each year for all the personnel included in the Register. In case of personnel inactivity for longer than 18 months, the Head of the 1<sup>st</sup> Office shall carry out a professional interview, so to evaluate the personnel awareness of any technical critical element emerged during the inactivity. If necessary, the following options can be pursued:

- definition of a specific compensative educational profile, (check Annex A for each specific technical panel/discipline);
- repetition of the OJT.

### 8. TRANSITION

Upon entry into force of the present norm, the extant professional qualifications are recognized.

Moreover, the VDT, upon proposal from the Head of the 1<sup>st</sup> Office, can apply grandfathering rules based on the experience gained at the DAAA and grant professional qualification even in absence of one or more requirements.

### 9. CLOSING REMARKS

Any waiver to the present norm shall be approved by the DAAA Director.

# ATTACHMENT A Educational profiles for the CT members

# A-1 TEAM LEADER AND DEPUTY TEAM LEADER

### **COURSES**<sup>6</sup>

In order to gather the Professional Qualification as TL/DTL, it is mandatory to attend at least one of the following courses:

- 1. "Processo di certificazione nell'ambito della normativa aeronautica"
- 2. "Airworthiness of military aircrafts"
- 3. "System safety assessment of aircraft"
- 4. "Project Manager"
- 5. "Master in materia di Airworthiness"

The Head of the 1<sup>st</sup> Office is responsible to approve the mandatory initial educational plan required for each TL/DTL candidate.

Such plan shall consider:

- former education;
- professional background as TL/DTL;
- complexity of the programs managed in the past experiences.

The Head of the 1<sup>st</sup> Office is also responsible to approve every year the plan for the maintaining of the TL/DTL professional qualifications<sup>7</sup>, which can be based both on the courses listed in this Annex A-1, and on the courses listed in Annex A-2 for the SMEs. Such plan shall consider:

- former education;
- professional background as TL/DTL;
- complexity of the programs managed in the past experiences;
- upcoming programs potentially to be assigned to the TL/DTL.

<sup>&</sup>lt;sup>6</sup> The name of these courses is indicative of the topics to cover and can be replaced by equivalent titles upon the approval of the Head of the 1<sup>st</sup> Office

<sup>&</sup>lt;sup>7</sup> It is not required for each TL/DTL to take courses every year, as long as a continuous employment in certification activities is ensured.

# A-2 SUBJECT MATTER EXPERT

The Head of the 1<sup>st</sup> Office is responsible to approve the mandatory initial educational plan required for each SME candidate.

The Head of the 1<sup>st</sup> Office is also responsible to approve every year the plan for the maintaining of the SME professional qualifications<sup>8</sup>, which can be based both on the "Basic Courses" and "Specific Courses", as described below.

### **BASIC COURSES**<sup>9</sup>

In order to gather the Professional Qualification as SME, all the SMEs, with no regard to the specific area of interest, shall attend at least one of the following courses, as basic technical background:

- 1. "Processo di certificazione nell'ambito della normativa aeronautica"
- 2. "Airworthiness of military aircrafts"
- 3. "Applied Safety Assessment Workshop"

# SPECIFIC COURSES (for each discipline, at least one of the proposed courses)<sup>10</sup>

Each SME, depending on the specific area of interest, shall attend at least one of the courses listed for each panel/discipline/section.

### Structures (EMACC - Section 5)

Aircraft structural loads: requirements, analysis, testing and certification

Aircraft structures design and analysis

Airframe system design

Composite materials

Rotorcraft vibration: analysis and practical reduction methods

Introduction to Fatigue and Fracture Analysis

Introduction to Aircraft Stress Analysis

Aircraft Fatigue and Damage Tolerance

Metal additive manufacturing: process, metallurgy, standards and applications

Materials failure and analysis

Airframe Systems design

Introduction to aircraft stress analysis

<sup>&</sup>lt;sup>8</sup> It is not required for each SME to take courses every year, as long as a continuous employment in certification activities is ensured.

<sup>&</sup>lt;sup>9</sup> The name of these courses is indicative of the topics to cover and can be replaced by equivalent titles upon the approval of the Head of the First Office.

 $<sup>^{10}</sup>$  The name of these courses is indicative of the topics to cover and can be replaced by equivalent titles upon the approval of the Head of the First Office

Failure of structural materials

Design durability and integrity of composite aircraft structures

Structural integrity

Principles of Aeroelasticity

### Flight Technologies (EMACC - Section 6)

Digital flight control systems: analysis and design

Flight control and hydraulic systems

Flight Data Monitoring (FDM) and Flight Operational Quality Assurance (FOQA) in Commercial Aviation

Flight Control - Auto flight

Fixed wings aeromechanics

Rotary wings aeromechanics

#### Propulsion and propulsion installation (EMACC - Section 7)

Mechanical Integrity of Gas Turbines

Gas Turbine Performance and Component Technologies

Hydrogen for civil aviation

Propulsion systems

Fundamental of aircraft engine control

Gas turbine appreciation

Gas turbine performance

Propulsion Systems performance and integration

Rotorcraft/UAM Aeromechanics and Propulsion Modelling

#### Aircraft Systems (EMACC - Section 8)

Airworthiness of military aircrafts

Military Aircraft Systems

General courses on any aircraft systems, such as:

Hydraulic and pneumatic systems

Environmental control system (ECS)

Fuel system

Fire and hazard protection systems

Any courses on "structure discipline" which could be useful to deal with Landing Gear systems, hook, hoist, winch, fast rope systems, etc.

Any courses which could be useful to deal with Air to Air Refuelling, such as:

- Flight test engineer
- Airworthiness of military aircrafts
- Introduction to Human Factors

- Flight Control Auto flight
- Human machine interface
- Handling qualities, performances, crew systems

### Crew Systems (EMACC - Section 9)

Flight test engineer

Airworthiness of military aircrafts

Introduction to Human Factors

Flight Control - Auto flight

Human machine interface

Handling qualities, performances, crew systems

### **Diagnostics Systems (EMACC - Section 10)**

System safety assessment of aircraft

Availability, Reliability, Maintenability and Supportability

Sustainment and continued airworthiness for aircraft structure

ARP4754A System Development, Validation & Verification

ARP4761 & Model-Based Safety Analysis

Applied aircraft accident investigation

Aviation safety investigation

Survivability

### Avionics (EMACC - Section 11)

Introduction to avionics

Electro-optic infrared systems

Communication systems

Systems architecture

Radar principles

Military laser safety

Sensor fusion architectures, algorithms and applications

Military avionics- STA, communications and Navigation

Avionics and related RMT, System safety & diagnostics

Aircraft avionics test and evaluation

### Electrical Systems (EMACC - Section 12)

Any course on electrical system architecture and aircraft system safety

### Electromagnetic Environmental Effects (EMACC - Section 13)

E3

Environmental tests and qualification (base MIL-STD-810) Aircraft lightning requirements HIRF

Introduction to Electromagnetic Effects and Aircraft Engineering Requirements Electromagnetic Effects

### Safety (EMACC - Section 14)

System safety assessment of aircraft Availability, Reliability, Maintenability and Supportability Sustainment and continued airworthiness for aircraft structure ARP4754A System Development, Validation & Verification ARP4761 & Model-Based Safety Analysis Applied aircraft accident investigation Aviation safety investigation Survivability

### Computer Systems and Software (EMACC - Section 15)

DO-178C e supplementi (DO-330, DO-331, DO-332, DO333)

DO-254

DO-297 Integrated Modular Avionics (IMA)

ARP4754A System Development, Validation & Verification

ARP4761 & Model-Based Safety Analysis

Introduction to RTCA 160

### Maintenance (EMACC - Section 16)

System safety assessment of aircraft

Availability, Reliability, Maintenability and Supportability

Sustainment and continued airworthiness for aircraft structure

### Armament/Store and Integration (EMACC - Section 17)

Electrical wiring interconnect system (EWIS) and FAA requirements KU University

Weapon Systems technology

Guide weapons propulsion

Fundamental of ballistics

Ordnance, munitions and explosives safety

Radar electronic warfare

Communications electronic warfare

Hypersonic guided weapons

### Passenger Safety (EMACC - Section 18)

Introduction to Human Factors

#### Materials (EMACC - Section 19)

Aircraft structural loads: requirements, analysis, testing and certification

Aircraft structures design and analysis

Airframe system design

Composite materials

Rotorcraft vibration: analysis and practical reduction methods

Introduction to Fatigue and Fracture Analysis

Introduction to Aircraft Stress Analysis

Aircraft Fatigue and Damage Tolerance

Metal additive manufacturing: process, metallurgy, standards and applications

Materials failure and analysis

Airframe Systems design

Introduction to aircraft stress analysis

Failure of structural materials

Design durability and integrity of composite aircraft structures

Structural integrity

Principles of Aeroelasticity

#### Other Criteria (EMACC - Section 20, AER(EP).P-516)

Any courses which could be useful to deal with any "pairing activity" (Parachute launching, loads drop, etc), mission test/equipment (roll on/roll off, etc) such as:

- Flight test engineer
- Airworthiness of military aircrafts
- Introduction to Human Factors
- Flight Control Auto flight
- Human machine interface
- Handling qualities, performances, crew systems
- Loitering ammunitions

### Data Links (AER(EP).P-2)

Introduction to avionics

Communication systems

Military avionics- STA, communications and Navigation

#### Modelling and simulation, digital twin and digital certification (AER(EP).P-3)

Introduzione al digital twin di prodotto/sistema (source CTE NEXT)

Discreet and continuous simulation

Modelling and simulation techniques and acquisition

Artificial intelligence for autonomia systems

Model and simulation of air vehicles

### Flight simulators (AER(EP).P-3)

Airworthiness of military aircrafts

Sensor fusion architectures, algorithms and applications

Model and simulation of air vehicles

### Cyber avionics (AER(EP).P-516)

Courses on the following regulations:

- DO-178C e supplementi (DO-330, DO-331, DO-332, DO333)
- DO-254
- DO-297 Integrated Modular Avionics (IMA)
- DO-326
- DO-356

Courses on the following subjects:

- Cyber attack threats and opportunities
- The human dimension
- Cyberwarfare in intelligence and military operations
- Critical networks and cyber physical systems
- Cyber deception

### Ground Control Station/Unmanned Air Systems (AER(EP).P-22)

Drone safety & airworthiness

Mechatronics for UAV

Unihabited Aircraft Systems

Uninhabited Military Vehicle Systems (UMVS)

Guidance and Navigation for autonomous systems

Dynamics and Control of Multirotors

Introduction to applied flight control

Payload & sensors for UAVs

Ground Control Station/Unmanned Air Systems

Flight testing of unmanned systems

### Payloads, pods, IR/EO/RF sensors (AER(EP).P-22)

HAD501 - Payload & sensors for UAVs

# ATTACHMENT B Certificate templates



Segretariato Generale della Difesa e Direzione Nazionale degli Armamenti Direzione degli Armamenti Aeronautici e per l'Aeronavigabilità

CERTIFICATE n° XX/YYYY

# IT IS HEREBY CERTIFIED THAT

born in\_\_\_\_\_ on dd/mm/yyyy

is in possession of the requirements defined in the norm AER(EP).P-1-1 and is qualified as

# TEAM LEADER

ROME, gg/mm/yyyy

The Deputy Director-Technical



Segretariato Generale della Difesa e Direzione Nazionale degli Armamenti Direzione degli Armamenti Aeronautici e per l'Aeronavigabilità

CERTIFICATE n° XX/YYYY

# IT IS HEREBY CERTIFIED THAT

born in\_\_\_\_\_ on dd/mm/yyyy

is in possession of the requirements defined in the norm AER(EP).P-1-1 and is qualified as

# **DEPUTY TEAM LEADER**

ROME, gg/mm/yyyy

The Deputy Director-Technical



Segretariato Generale della Difesa e Direzione Nazionale degli Armamenti Direzione degli Armamenti Aeronautici e per l'Aeronavigabilità

CERTIFICATE n° XX/YYYY

# IT IS HEREBY CERTIFIED THAT

born in\_\_\_\_\_ on dd/mm/yyyy

is in possession of the requirements defined in the norm AER(EP).P-1-1 and is qualified as

# SUBJECT MATTER EXPERT

for the following discipline(s):

- Aaaaaa
- Bbbbbbbb

ROME, gg/mm/yyyy

The Deputy Director-Technical