Réf.	Intitulé de l'item Sous-item (FR)	Niveau B3	Contenu détaillé (EN — texte EASA original)
MODULE 1 — MATHÉMATIQUES			
1.1	Arithmétique	**2**	Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.
1.2(a)	Algèbre — Expressions algébriques simples	**2**	Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions.
1.2(b)	Algèbre — Équations	**1**	Linear equations and their solutions; indices and powers, negative and fractional indices; binary and other applicable numbering systems; simultaneous equations and second-degree equations with one unknown; logarithms.
1.3(a)	Géométrie — Constructions géométriques simples	**1**	Simple geometrical constructions.
1.3(b)	Géométrie — Représentation graphique	**2**	Graphical representation: nature and uses of graphs, graphs of equations/functions.
1.3(c)	Géométrie — Trigonométrie	**2**	Simple trigonometry: trigonometrical relationships, use of tables and rectangular and polar coordinates.

MODULE 2 — PHYSIQUE			
2.1	Matière	**2**	Nature of matter: the chemical elements, structure of atoms, molecules; chemical compounds; states: solid, liquid, and gaseous; changes between states.
2.2.1	Mécanique — Statique	**1**	Forces, moments and couples, representation as vectors; centre of gravity; elements of theory of stress, strain, and elasticity: tension, compression, shear, and torsion; nature and properties of solid, fluid, and gas matter; pressure and buoyancy in liquids (barometers).
2.2.2	Mécanique — Cinématique	**1**	Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); rotational movement: uniform circular motion (centrifugal/centripetal forces); periodic motion: pendular movement; simple theory of vibration, harmonics, and resonance; velocity ratio, mechanical advantage, and efficiency.
2.2.3(a)	Dynamique — Masse, force et énergie	**1**	Mass; force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency.
2.2.3(b)	Dynamique — Quantité de mouvement et conservation	**1**	Momentum, conservation of momentum; impulse; gyroscopic principles; friction: nature and effects, coefficient of friction (rolling resistance).
2.2.4(a)	Dynamique des fluides — Pesanteur et masse volumique	**2**	Specific gravity and density.
2.2.4(b)	Dynamique des fluides — Viscosité, compressibilité, pressions	**1**	Viscosity, fluid resistance, effects of streamlining; effects of compressibility on fluids; static, dynamic, and total pressure: Bernoulli's Theorem, venturi.
2.3(a)	Thermodynamique — Température	**2**	Temperature: thermometers and temperature scales (Celsius, Fahrenheit and Kelvin); definition of heat.
2.3(b)	Thermodynamique — Chaleur	**1**	Heat capacity, specific heat; heat transfer: convection, radiation and conduction; volumetric expansion; first and second law of thermodynamics; gases: ideal gases laws, specific heat at constant volume and constant pressure, work done by expanding gas; isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; latent heats of fusion and evaporation, thermal energy, heat of combustion.

MODULE 3 — FONDAMENTAUX DE L'ÉLECTRICITÉ			
3.1	Théorie de l'électron	1	Structure and distribution of electrical charges within atoms, molecules, ions, and compounds; molecular structure of conductors, semiconductors, and insulators.
3.2	Électricité statique et conduction	1	Static electricity and distribution of electrostatic charges; electrostatic laws of attraction and repulsion; units of charge, Coulomb's law; conduction of electricity in solids, liquids, gases and in vacuum.
3.3	Terminologie électrique	1	The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.
3.4	Production d'électricité	1	Production of electricity by the following methods: light, heat, friction, pressure, chemical reaction, magnetism, and motion.
3.5	Sources d'électricité en courant continu	2	Construction and basic chemical reaction of primary cells, secondary cells, lead acid cells, nickel cadmium cells, lithium cells, nickel cells and other alkaline cells; cells connected in series and in parallel; internal resistance and its effect on a battery; construction, materials, and operation of thermocouples; operation of photocells.
3.6	Circuits en courant continu	1	Ohm's law, Kirchhoff's voltage, and current laws; calculations using the above laws to find resistance, voltage, and current; significance of the internal resistance of a supply.
3.7(a)	Résistance électrique	1	Specific resistance; calculation of total resistance using series, parallel and series-parallel combinations; operation and use of potentiometers and rheostats; operation of Wheatstone Bridge.
3.8	Puissance électrique	1	Power, work, and energy (kinetic and potential); dissipation of power by a resistor; power formula; calculations involving power, work, and energy.

3.9	Capacité / condensateur	**1**	Operation and function of a capacitor; factors that affect the capacitance: area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; capacitor types, construction, and function; capacitor colour-coding; calculations of capacitance and voltage in series and in parallel circuits; exponential charge and discharge of a capacitor, time constants; testing of capacitors.
3.10(a)	Magnétisme — Théorie du magnétisme	**1**	Properties of a magnet; action of a magnet suspended in the Earth's magnetic field; magnetisation and demagnetisation; magnetic shielding; various types of magnetic material; electromagnet construction and principles of operation; handclasp rules to determine magnetic field around current-carrying conductor.
3.10(b)	Magnétisme — Force magnétomotrice	**1**	Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; precautions for care and storage of magnets.
3.11	Inductance / inducteur	**1**	Faraday's law; action of inducing a voltage in a conductor that moves in a magnetic field; induction principles; effects on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns; mutual induction; the effect of rates of change of primary current and mutual inductance on induced voltage; factors that affect mutual inductance: number of turns in the coil, physical size of the coil, permeability of the coil, position of coils with respect to each other; Lenz's law and polarity determining rules; back EMF, self-induction; saturation point; principal uses of inductors.
3.12	Théorie des moteurs et générateurs à courant continu	**1**	Basic motor and generator theory; construction and purpose of components in a DC generator; operation of and factors that affect the output and direction of the current in DC generators; operation of and factors that affect the output power, torque, speed, and direction of rotation of DC motors; series-wound, shunt-wound and compound motors; starter generator construction.

3.13	Théorie du courant alternatif	**1**	Sinusoidal waveform: phase, period, frequency, cycle; instantaneous, average, root mean square, peak, peak-to-peak current values and calculations of these values in relation to voltage, current and power; triangular/square waves; single-phase/three-phase principles.
3.14	Circuits résistifs (R), capacitifs (C) et inductifs (L)	**1**	Phase relationship of voltage and current in L, C and R circuits, parallel, series and series-parallel; power dissipation in L, C and R circuits; impedance, phase angle, power factor and current calculations; true power, apparent power, and reactive power calculations.
3.15	Transformateurs	**1**	Transformer construction principles and operation; transformer losses and methods for overcoming them; transformer action under load and no-load conditions; power transfer, efficiency, polarity markings; line and phase voltages and currents; power in a three-phase system; primary and secondary current, voltage, turn ratio, power, efficiency; auto-transformers.
3.17	Alternateurs (générateurs CA)	**1**	Rotation of loop in a magnetic field and waveform produced; operation and construction of revolving armature and revolving field type AC generators; single-phase, two-phase, and three-phase alternators; three-phase star and delta connection advantages, and uses; permanent magnet generators.
3.18	Moteurs à courant alternatif	**1**	Construction, principles of operation and characteristics of: AC synchronous and induction motors both single-phase and polyphase; methods of speed control and direction of rotation; methods of producing a rotating field: capacitor, shaded or split pole.

MODULE 4 — FONDAMENTAUX DE L'ÉLECTRONIQUE			
4.1.1(a)	Semi-conducteurs — Diodes : description et caractéristiques	**2**	Diode symbols; diode characteristics and properties; diodes in series and in parallel; materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters; P-N junction in a semiconductor, development of a potential across a P-N junction in unbiased, forward-biased and reverse-biased conditions; diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation; main characteristics and use of silicon-controlled rectifiers (thyristors), light-emitting diodes (LEDs), photo-conductive diodes, rectifier diodes.
4.1.2(a)	Transistors	**1**	Description and characteristics Transistor symbols; Component description and orientation; Transistor characteristics and properties.
4.1.3(a)	Integrated circuits	**1**	Description and operation of logic circuits and linear circuits/operational amplifiers;
4.2	Printed circuit boards	**1**	Description and use of printed circuit boards
4.3(a)	Servomechanisms Principles	**1**	Understanding of the following principles: open- and closed-loop systems, servomechanism, feedback, follow-up, null, overshoot, damping, deadband, hunting, proximity switches, analogue transducers, synchro systems and components, digital tachometers and encoders, inductance, and capacitance Transmitters;

MODULE 5 — TECHNIQUES NUMÉRIQUES / SYSTÈMES D'INSTRUMENTS ÉLECTRONIQUES			
5.1	Systèmes d'instruments électroniques	1	Typical arrangements of systems and cockpit layout of electronic instrument systems.
5.6(a)	Architecture informatique — Terminologie et technologie	1	Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); computer technology (as applied in aircraft systems).
5.11	Afficheurs électroniques	1	Principles of operation of common types of displays used in modern aircraft, including cathode-ray tubes (CRTs), light-emitting diodes (LEDs) and liquid crystal displays (LCDs).
5.12	Dispositifs sensibles aux décharges électrostatiques	1	Special handling of components sensitive to electrostatic discharges; awareness of risks and possible damage, component, and personnel antistatic protection devices.
5.13	Gestion et contrôle des logiciels	1	Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programs.
5.14	Environnement électromagnétique	1	Influence of the following phenomena on maintenance practices for electronic systems: EMC — Electromagnetic Compatibility; EMI — Electromagnetic Interference; HIRF — High-Intensity Radiated Field; lightning / lightning protection.
5.15	Systèmes aéronefs électroniques/numériques typiques	1	General arrangement of typical electronic/digital aircraft systems and associated BITE (Built-In Test Equipment), such as: ACARS, FBW — Fly-by-Wire, FMS — flight management system, IRS — inertial reference system; ECAM, EICAS, EFIS, GNSS, TCAS, Integrated Modular Avionics, Cabin Systems, Information Systems.

MODULE 6 — MATÉRIAUX ET QUINCAILLERIE			
6.1(a)	Matériaux ferreux — Aciers alliés utilisés en aéronautique	**2**	Characteristics, properties and identification of common alloy steels used in aircraft; heat treatment and application of alloy steels.
6.1(b)	Matériaux ferreux — Essais mécaniques	**1**	Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.
6.1(c)	Matériaux ferreux — Procédures de réparation et d'inspection	**2**	Repair and inspection procedures for ferrous materials, structures, and airframes.
6.2(a)	Matériaux non ferreux — Caractéristiques	**2**	Characteristics, properties and identification of common non-ferrous materials used in aircraft; heat treatment and application of non-ferrous materials.
6.2(b)	Matériaux non ferreux — Essais mécaniques	**1**	Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.
6.2(c)	Matériaux non ferreux — Procédures de réparation et d'inspection	**2**	Repair and inspection procedures for non-ferrous materials, structures, and airframes.
6.3.1(a)	Matériaux composites et non métalliques — Caractéristiques	**2**	Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; sealant and bonding agents.
6.3.1(b)	Matériaux composites et non métalliques	**2**	Detection of defects/deterioration in composite and non-metallic materials.
6.3.1(c)	Matériaux composites et non métalliques — Réparation et inspection	**2**	Repair of and inspection procedures for composite and non-metallic materials, structures, and airframes.
6.3.2	Wooden structures	**1**	Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structures; Types of defects in wood material and wooden structures; Detection of defects in wooden structures; Repair of wooden structures.
6.3.3	Fabric covering	**1**	Characteristics, properties and types of fabrics used in aeroplanes; Inspection methods for fabrics; Types of defects in fabrics; Repair of fabric covering.

6.4(a)	Corrosion — Fondamentaux chimiques	1	Chemical fundamentals; formation by galvanic action process, microbiological contamination, mechanical stress.
6.4(b)	Corrosion — Types de corrosion	3	Types of corrosion and their identification; causes of corrosion; material types, and their susceptibility to corrosion.
6.5.1	Fixations — Filetages	2	Screw nomenclature; thread forms, dimensions and tolerances for standard threads used in aircraft; measuring screw threads.
6.5.2	Fixations — Boulons, goujons et vis	2	Bolt types: specification, identification and marking of aircraft bolts, international standards; nuts: self-locking, anchor, standard types; machine screws: aircraft specifications; studs: types and uses, insertion, and removal; self-tapping screws, dowels.
6.5.3	Fixations — Dispositifs de freinage	2	Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick-release fasteners, keys, circlips, cotter pins.
6.5.4	Fixations — Rivets aéronautiques	2	Types of solid and blind rivets: specifications and identification, heat treatment.
6.6(a)	Tuyauteries et raccords — Identification	2	Identification and types of rigid and flexible pipes and their connectors used in aircraft.
6.6(b)	Tuyauteries et raccords — Raccords normalisés	2	Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.
6.7	Ressorts	2	Types of springs, materials, characteristics, and applications.
6.8	Roulements	2	Purpose of bearings, loads, material, construction; types of bearings and their application.
6.9	Transmissions mécaniques	2	Gear types and their application; gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; belts and pulleys, chains and sprockets.
6.10	Câbles de commande	2	Types of cables; end fittings, turnbuckles and compensation devices; pulleys and cable system components; Bowden cables; aircraft flexible control systems.
6.11	Câbles électriques et connecteurs	2	Cable types, construction and characteristics; high-tension and coaxial cables; crimping; connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.

MODULE 7 — PRATIQUES DE MAINTENANCE			
7.1	Précautions de sécurité — Aéronef et atelier	**3**	Aspects of safe working practices including precautions to be taken when working with electricity, gases (especially oxygen), oils, and chemicals. Fuel tank safety and fuel tank entry procedures and precautions. Awareness and precautions regarding aircraft equipped with ballistic recovery systems.
7.2	Pratiques d'atelier	**3**	Care of tools, control of tools, use of workshop materials; dimensions, allowances and tolerances, workmanship standards; calibration of tools and equipment, calibration standards.
7.3	Outillage	**3**	Common hand-tool types; common power-tool types; operation and use of precision-measuring tools; lubrication equipment and methods; operation, function, and use of electrical general test equipment.
7.4	Potential safety hazards when working with electrical systems and protective equipment	**3**	Electric shock hazards and effects of current on the human body Arc flash, arc blast, and stored energy hazards (capacitors, batteries, power electronics) Battery-related hazards: chemical, thermal runaway, fire and explosion risks Electrostatic discharge (ESD) and electromagnetic hazards
7.5	Dessins techniques, schémas et normes	**2**	Drawing types and diagrams, their symbols, dimensions, tolerances and projections; identification of title block information; microfilm, microfiche, and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; wiring diagrams and schematic diagrams.
7.6	Ajustements et jeux fonctionnels	**2**	Drill sizes for bolt holes, classes of fits; common system for fits and clearances; schedule of fits and clearances for aircraft and engines; limits for bow, twist and wear; standard methods for checking shafts, bearings, and other parts.
7.7	Système d'interconnexion du câblage électrique (EWIS)	**3**	Continuity, insulation and bonding techniques and testing; use of crimp tools: hand and hydraulic operated; testing of crimp joints; connector pin removal and insertion; coaxial cables: testing and installation precautions; identification of wire types, their inspection criteria and damage tolerance; wiring protection techniques: cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding; High-Intensity Radiated Fields (HIRF) and protection principles; soldering of electrical wires, EWIS installations, inspection, repair, maintenance, and cleanliness standards.
7.8	riveting	**2**	Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints
7.9	Pipes and Hoses	**2**	Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.

7.10	springs	**2**	Inspection and testing of springs.
7.11	Bearings	**2**	Testing, cleaning and inspection of bearings; Lubrication requirements for bearings; Defects in bearings and their causes.
7.12	Transmissions	**2**	Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push–pull rod systems.
7.13	Controls cables	**2**	Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.
7.14.1	Material handling Sheet metal	**2**	Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.
7.14.2	Composite and non-metallic	**2**	Bonding practices; Environmental conditions; Inspection methods.
7.14.3	Fabrication additive	**1**	Common additive manufacturing techniques and their influence on the mechanical properties of the finished part; inspection of additive manufactured parts and common production failures.
7.16(a)	Masse et centrage — Calcul du centre de gravité	**2**	Calculation of centre-of-gravity / balance limits: use of relevant documents.
7.16(b)	Preparation of aircraft for weighing;	**2**	Aircraft weighing.
7.17	Manutention et stockage des aéronefs	**2**	Aircraft taxiing/towing and associated safety precautions; aircraft jacking, chocking, securing and associated safety precautions; aircraft storage methods; refuelling/defuelling procedures; de-icing/anti-icing procedures; electrical, hydraulic, and pneumatic ground supplies; effects of environmental conditions on aircraft handling and operation.
7.18(a)	Inspection — Types de défauts et inspection visuelle	**3**	Types of defects and visual inspection techniques; corrosion removal, assessment and reprotection.
7.18(b)	General repair methods, structural repair manual;	**2**	Ageing, fatigue, and corrosion control programmes;

7.18(c)	Contrôles non destructifs (CND)	**2**	Non-destructive inspection techniques including penetrant, radiographic, eddy current, magnetic particle, ultrasonic and borescope inspections; including practical training in colour contrast penetrant inspection.
7.18(d)	Techniques de démontage et de remontage	**2**	Disassembly and reassembly techniques.
7.18(e)	Techniques de dépannage (troubleshooting)	**2**	Troubleshooting techniques.
7.19(a)	Événements anormaux — Impact foudre et pénétration HIRF	**2**	Inspections following lightning strikes and HIRF penetration.
7.19(b)	Événements anormaux	**2**	Inspections following abnormal events such as heavy landings and flight through turbulence.
7.20	Procédures de maintenance	**2**	Maintenance planning; modification procedures; stores procedures; certification/release procedures; interface with aircraft operation; maintenance inspection / quality control / quality assurance; additional maintenance procedures; control of life-limited components.
7.21	Documentation et communication	**2**	Documentation: elements and criteria for writing work reports, troubleshooting reports, and shift handover instructions. Communication: clear, comprehensive, and concise.

MODULE 8 — AÉRODYNAMIQUE DE BASE			
8.1	Physique de l'atmosphère — Atmosphère standard (ISA)	**1**	International Standard Atmosphere (ISA), and its application to aerodynamics.
8.2	Aérodynamique	**1**	Airflow around a body; boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; the terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash-in and wash-out, fineness
8.3	Théorie du vol	**1**	Relationship between lift, weight, thrust and drag; glide ratio; steady-state flights, performance; theory of the turn; influence of load factor: stall, flight envelope, and structural limitations; lift augmentation.
8.4	Écoulement à grande vitesse	**1**	Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; factors that affect airflow in engine intakes of high-speed aircraft; effects of sweepback on critical Mach number.
8.5	Stabilité et dynamique du vol	**1**	Longitudinal, lateral, and directional stability (active and passive).

MODULE 9 — FACTEURS HUMAINS			
9.1	Généralités	**2**	The need to take human factors into account when performing maintenance; incidents attributable to human factors/human error; Murphy's law.
9.2	Performances et limitations humaines	**2**	Vision; hearing; information processing; attention and perception; memory; claustrophobia and physical access.
9.3	Psychologie sociale	**1**	Accountability and responsibility: individual and group; motivation and demotivation; peer pressure; cultural issues; teamwork; management, supervision, and leadership.
9.4	Facteurs influençant les performances	**2**	Fitness/health; stress: domestic and work related; time pressure and deadlines; workload: overload, underload, and workload management; sleep and fatigue, shift work; alcohol, medication, drug abuse; lack of manpower.
9.5	Environnement physique	**1**	Noise and fumes; illumination; climate and temperature; motion and vibration; working environment; situational awareness.
9.6	Tâches	**1**	Physical work; repetitive tasks, complacency; visual inspection; complex systems; critical maintenance tasks and error-capturing methods; technical documentation: access, use, and quality.
9.7	Communication	**2**	Within and between teams; work logging and recording; shift handover; keeping up to date, currency; dissemination of information.
9.8	Erreur humaine	**2**	Error models and theories; types of error in maintenance tasks; implications of errors (e.g. accidents); organisational errors; avoiding and managing errors.
9.9	Gestion de la sécurité	**2**	Risk management; occurrence reporting; safety culture; just culture; identifying, avoiding, and reporting hazards; organisational human-factors programme: professionalism and integrity, error-provoking behaviour, reporting errors, disciplinary policy, error investigation, action to address problems, feedback, assertiveness; dealing with emergencies.
9.10	La 'Sale Douzaine' (Dirty Dozen) et atténuation des risques	**2**	The 'Dirty Dozen': the twelve most common human-factors errors in maintenance: lack of communication, lack of teamwork, lack of assertiveness, complacency, fatigue, stress, lack of knowledge, lack of resources, lack of awareness, distraction, pressure, norms. Risk-mitigation methods.

MODULE 10 — LÉGISLATION AÉRONAUTIQUE			
10.1	Cadre réglementaire	1	Role of: ICAO; the European Commission (EC); EASA; the European Union Member States and national aviation authorities; the bilateral agreements concluded by the European Commission; Regulation (EU) 2018/1139 (the Basic Regulation) and its implementing acts: Regulations (EU) No 748/2012 (Initial
10.2	Personnel de certification — Maintenance	2	Deep understanding of Part-66 maintenance licences with the associated privileges and authorisations, and how to exercise them properly for the different aircraft categories.
10.3	Organismes d'entretien agréés (OEA / Part-145, Part-CAO)	2	General understanding of Part-145 and Part-CAO.
10.4	Personnel de certification indépendant	3	Privileges, responsibilities, record-keeping, limitations, and oversight according to Part-M, Part-66 and Part-ML.
10.5	Opérations aériennes	1	General understanding of Regulation (EU) No 965/2012 (the Air Operations Regulation); differences between commercial and non-commercial air operations, and their influence on aircraft maintenance; Air Operator Certificates (AOCs) and self-declaration authorisations; air operator responsibilities regarding
10.6	Certification des aéronefs, pièces et équipements	2	Basic understanding of Part 21 and of the following EASA certification specifications: CS-22, CS-23, CS-25, CS-27, CS-29, and CS-STAN.
10.7	Maintien de la navigabilité	2	General understanding of the Part 21 requirements on continuing airworthiness; general understanding of Part-M, Part-ML and Part-CAMO; Aircraft Maintenance Programme.
10.8	Principes de surveillance du maintien de la navigabilité	1	Oversight principles in continuing airworthiness.
10.9	Maintenance et certification hors réglementation EU	1	Maintenance of European Union aircraft that are not within the scope of Regulation (EU) 2018/1139 (Annex I aircraft); European military airworthiness requirement (EMAR) 66 licence; applicable national and international requirements for component maintenance, welding, painting, NDT, etc. (if not superseded by
10.10	Cybersécurité en maintenance aéronautique	1	Regulation on the introduction of organisation requirements for the management of information security risks related to aeronautical information systems used in civil aviation.

MODULE 11 — AÉRODYNAMIQUE, STRUCTURES ET SYSTÈMES AVIONS			
11.1(a)	Théorie du vol — Aérodynamique de l'avion et commandes de vol	1	Operation and effect of: roll control: ailerons and spoilers; pitch control: elevators, stabilators, variable incidence stabilisers and canards; yaw control, rudder limiters; elevons, ruddervators; high-lift devices: slots, slats, flaps, flaperons; drag-inducing devices: spoilers, lift dumpers, speed brakes; trim tabs, servo tabs, control surface bias.
11.1(b)	Théorie du vol — Autres dispositifs aérodynamiques de l'avion	1	Operation and effect of: balance and antibalance (leading) tabs; spring tabs, mass balance, aerodynamic balance panels; effects of wing fences, saw tooth leading edges; boundary layer control using vortex generators, stall wedges or leading-edge devices.
11.2(a)	Structures de cellule (ATA 51) — Concepts généraux	2	Zonal and station identification systems; electrical bonding; lightning strike protection provisions.
11.2(b)	Structures de cellule (ATA 51) — Exigences de résistance structurale	2	Structural classification: primary, secondary, and tertiary; fail-safe, safe-life, damage-tolerance concepts; stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; drains and ventilation provisions; system installation provisions.
11.2(c)	Structures de cellule (ATA 51) — Méthodes de construction	2	Stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, skinning, anticorrosive protection, wing, empennage and engine attachments; structure assembly techniques: riveting, bolting, bonding; methods of surface protection: chromating, anodising, painting; surface cleaning; airframe symmetry: methods of alignment and symmetry checks.
11.3.1(a)	Fuselage, portes, hublots (ATA 52/53/56) — Principes de construction	1	Construction and pressurisation sealing; wing, stabiliser, pylon, and undercarriage attachments; seat installation and cargo loading system; doors and emergency exits: construction, mechanisms, operation and safety devices; windows and windscreen construction and mechanisms.
11.3.1(b)	Fuselage — Dispositifs de remorquage aérien	1	Airborne towing devices (glider, banner, target).
11.3.2	Voilure (ATA 57)	1	Construction; fuel storage; landing gear, pylon, control surface and high lift/drag attachments.
11.3.3	Empennages (ATA 55)	1	Construction; control surface attachment.

11.3.4	Surfaces de commande de vol (ATA 55/57)	1	Construction and attachments; balancing — mass and aerodynamics.
11.3.5	Nacelles et pylônes (ATA 54)	1	Nacelles/pylons: construction, firewalls, engine mounts.
11.4(e)	Conditionnement d'air et pressurisation (ATA 21) — Chauffage et ventilation	1	Heating and ventilation systems.
11.5.1	Instruments (ATA 31)	2	Pitot-static: airspeed indicators, vertical speed indicators, altimeters; gyroscopic: gyroscopic principles, artificial horizons, attitude directors, direction indicators, horizontal situation indicators (HSI), slip indicators, turn indicators, turn coordinators; compass systems: direct reading, remote reading; stall-warning systems and angle-of-attack indicating systems; glass cockpit; indications of other aircraft systems.
11.5.2	Systèmes avioniques	1	Fundamentals of system layouts and operation of: autoflight (ATA 22); communication systems (ATA 23): VHF, HF, SATCOM, CPDLC, audio systems, ELTs, CVR; navigation systems (ATA 34): VOR, ADF, ILS, MLS, FDS/DME, RNAV, FMS, satellite navigation, ATC transponder/SSR, TCAS, weather avoidance radar, radio altimeter, INS, ARINC. Types and uses of avionics general test equipment.
11.6	Alimentation électrique (ATA 24)	3	Installation and operation of batteries; DC power generation; AC power generation; emergency power generation; voltage regulation; power distribution; inverters, transformers, rectifiers; circuit protection; external/ground power.
11.7(a)	Équipements et aménagements (ATA 25) — Équipements de secours	2	Emergency equipment requirements.
11.8(b)	Protection incendie (ATA 26) — Extincteurs portatifs	1	Portable fire extinguisher.
11.9(a)	Commandes de vol (ATA 27) — Commandes primaires et secondaires	2	Primary controls: aileron, elevator, rudder, spoiler; trim control, trim tabs; high-lift devices; system operation: manual; gust locks and gust lock systems; artificial feel, yaw damper, Mach trim, rudder limiter; stall-warning systems.
11.9(d)	Commandes de vol (ATA 27) — Équilibrage et réglage	2	Balancing and rigging.
11.10(a)	Systèmes carburant (ATA 28/47) — Architecture du système	1	Systems: — System layout; — Fuel tanks; — Supply systems.

11.10(b)	Systèmes carburant (ATA 28/47) — Gestion du carburant	1	Cross-feed and transfer; refuelling and defuelling.
11.10(c)	Systèmes carburant (ATA 28/47) — Indications et alarmes	1	Indication and warnings.
11.11(a)	Système hydraulique (ATA 29) — Description du système	2	System layout; hydraulic fluids; hydraulic reservoirs and accumulators; filters; power distribution.
11.11(b)	Système hydraulique (ATA 29) — Fonctionnement (1)	2	Pressure generation: electric and mechanical; pressure control; indication and warning systems; servicing.
11.12(a)	Protection givrage et pluie (ATA 30) — Principes	1	Ice formation, classification, and detection.
11.12(b)	Protection givrage et pluie (ATA 30) — Dégivrage	1	De-icing systems: electrical, hot-air, pneumatic, chemical; probe and drain heating.
11.12(d)	Protection givrage et pluie (ATA 30) — Essuie-glaces	1	Wiper systems.
11.13(a)	Train d'atterrissage (ATA 32) — Description	2	Construction, shock absorbing; tyres.
11.13(b)	Train d'atterrissage (ATA 32) — Fonctionnement du système	2	Extension and retraction systems: normal and emergency; indications and warnings; wheels, brakes, antiskid, and autobraking; steering.
11.13(d)	Train d'atterrissage (ATA 32) — Protection de l'empennage arrière	2	Tail protection: skids.
11.14	Éclairage (ATA 33)	2	External: navigation, anticollision, landing, taxiing, ice; internal: cabin, cockpit, cargo; emergency.
11.15	Oxygène (ATA 35)	2	System layout: cockpit, cabin; sources, storage, charging and distribution; supply regulation; indications and warnings.

11.16(a)	Pneumatique / dépression (ATA 36) — Systèmes	**2**	System layout; sources: engine/APU, compressors, reservoirs, ground supply; pressure control; distribution; indications and warnings; interface with other systems.
11.16(b)	Pneumatique / dépression (ATA 36) — Pompes	**2**	Pressure and vacuum pumps.
11.17(a)	Eau et déchets (ATA 38) — Systèmes	**2**	Water system layout, supply, distribution, servicing and draining; toilet system layout, flushing and servicing.
11.17(b)	Eau et déchets (ATA 38) — Corrosion	**2**	Corrosion aspects.

MODULE 16 — MOTEUR À PISTONS			
16.1	Principes fondamentaux	**2**	Mechanical, thermal, and volumetric efficiencies; operating principles: 2-stroke, 4-stroke, Otto, diesel, and rotary (Wankel); piston displacement and compression ratio; engine configuration and firing order.
16.2	Performances moteur	**2**	Power calculation and measurement; factors that affect engine power; mixtures/leaning, pre-ignition.
16.3	Construction du moteur	**2**	Crank case, crank shaft, cam shafts, sumps; accessory gearbox; cylinder and piston assemblies; connecting rods, inlet and exhaust manifolds; valve mechanisms; propeller reduction gearboxes.
16.4.1	Systèmes carburant — Carburateurs	**2**	Types, construction, and principles of operation; icing and heating.
16.4.2	Systèmes carburant — Systèmes d'injection carburant	**2**	Types, construction, and principles of operation.
16.4.3	Systèmes carburant — Régulation électronique moteur (FADEC)	**2**	Operation of engine control and fuel-metering systems including electronic engine control (FADEC); system layout and components.
16.5	Systèmes de démarrage et d'allumage	**2**	Starting systems, preheat systems; magneto types, construction, and principles of operation; ignition harnesses, spark plugs; low- and high-tension systems.
16.6	Systèmes d'admission, d'échappement et de refroidissement	**2**	Construction and operation of induction systems, including alternate air systems; exhaust systems, engine cooling systems — air and liquid.
16.7	Suralimentation / turbocompression	**2**	Principles and purpose of supercharging and its effects on engine parameters; construction and operation of supercharging/turbocharging systems; system terminology; control systems; system protection.
16.8	Lubrifiants et carburants	**2**	Properties and specifications of standard, alternate, and drop-in fuel; properties and specifications of lubricants; fuel additives; safety precautions.
16.9	Système de lubrification	**2**	System operation/layout and components.
16.10	Systèmes d'indication moteur	**2**	Engine speed; cylinder head temperature; coolant temperature; oil pressure and temperature; exhaust gas temperature; fuel pressure and flow; manifold pressure.

16.11	Installation de la tranche moteur (powerplant)	**2**	Configuration of firewalls, cowlings, acoustic panels, engine mounts, antivibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.
16.12	Surveillance moteur et opérations au sol	**3**	Procedures for starting and ground run-up; interpretation of engine power output and parameters; inspection of engine and components: criteria, tolerances, and data specified by the engine manufacturer.
16.13	Stockage et conservation moteur	**2**	Preservation and depreservation for the engine and its accessories/systems.
16.14	Constructions alternatives — Motorisation hybride piston-électrique	**1**	Hybrid piston-electric concepts and electric power augmentation.

MODULE 17 — HÉLICE			
17.1	Principes fondamentaux	**2**	Blade element theory; high/low blade angle, reverse angle, angle of attack, rotational speed; propeller slip; aerodynamic, centrifugal, and thrust forces; torque; relative airflow on blade angle of attack; vibration and resonance.
17.2	Construction de l'hélice	**2**	Construction methods and materials used in wooden, composite and metal propellers; blade station, blade face, blade shank, blade back / thrust face and hub assembly; fixed pitch, controllable pitch, constant speeding propeller; propeller/spinner installation.
17.3	Contrôle du pas d'hélice	**2**	Speed control and pitch change methods — mechanical and electrical/electronic; feathering and reverse pitch; overspeed protection.
17.4	Synchronisation des hélices	**2**	Synchronising and synchrophasing equipment.
17.5	Protection contre le givrage	**2**	Fluid and electrical de-icing equipment.
17.6	Entretien de l'hélice	**3**	Static and dynamic balancing; blade tracking; assessment of blade damage, erosion, corrosion, impact damage, delamination; propeller treatment/repair schemes; propeller engine running.
17.7	Stockage et conservation	**2**	Propeller preservation and depreservation.