Maintenance, Maintainability and Reliability

Code: 108238
Credits: 6

2026/2027

Degree programme	Type	Course
Aeronautical Management	OP	4

Contact lecturer

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Teaching staff (external to UAB)

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Group languages

You can consult this information at the end of the document.

Prerequisites

Basic statistical knowledge is recommended as well as the ability to read (and understand) technical texts in English.

Objectives

It is widely known by professionals in the industrial sector that the incorporation of Reliability, Availability and Maintainability characteristics in the design stage of a system and its components is the best way to ensure that this system has an adequate long-term cost-effectiveness ratio. Under this motivation, this subject aims to study the main theoretical foundations associated with the concepts of reliability, availability and maintainability, and their relationship with the effectiveness of the systems.Likewise, the concept of airworthiness and the European EASA regulations will be studied in what refers to Maintenance Centers Part 145 and Airworthiness Organizations (CAMO). Additionally, its application will be applied to practical cases.

Learning outcomes

- KM27 (Explore the relations between the main concepts of reliability, availability and maintainability of the aircraft's operating systems and auxiliary equipment (such as cabin systems or ground handling equipment) and their effectiveness.) Explore the relations between the main concepts of reliability, availability and maintainability of the aircraft's operating systems and auxiliary equipment (such as cabin systems or ground handling equipment) and their effectiveness.

Contents

PART III: AIRCRAFT MAINTENANCE UNDER EASA REGULATIONS

6. AIRCRAFT MAINTENANCE PROGRAMS

6.1. Basic definitions

6.2. Maintenance intervals

6.3. Analysis of pre-flight, post-flight, and line maintenance

6.4. Analysis of hourly maintenance

6.5. Analysis of cycle-based maintenance

6.6. Preventive maintenance

6.7. Scheduled maintenance

6.8. Corrective maintenance

6.9. Aircraft maintenance manuals. Practical examples of different aircraft maintenance programs

7. EUROPEAN AIRCRAFT MAINTENANCE REGULATIONS (I)

7.1. Introduction to Regulation 2042/2003

7.2. Regulations applicable to EASA Part-145 organizations

7.3. Organization Part 145 Centers and Postholders

7.4. EOM preparation

7.5. Scope and Qualifications of Part-145 organizations

8. EUROPEAN AIRCRAFT MAINTENANCE REGULATIONS (II)

8.1. Regulations for Continuing Airworthiness Maintenance Organizations (CAMO)

8.2. CAMO organization

8.3. Organizational management and postholders

8.4. Preparation of the CAME

8.5. New applicable regulations

8.6. CAO Party

9. EUROPEAN AIRCRAFT MAINTENANCE REGULATIONS (III)

9.1. Definition Qualification and Qualification

9.2. Analysis of Part-66 Aircraft Maintenance Technician licenses

PART IV: ANALYSIS OF PART-145 AND CAMO MANUALS

10. MANUAL PRODUCTION PROCEDURE

10.1. MOE for Part-145 organizations

10.2. CAME for CAMO/CAO organizations

10.3. Real-world application examples

11. REVIEW OF SCIENTIFIC ARTICLES ON AIRWORTHINESS AND MAINTENANCE

11.1. Articles on maintenance management in the aviation industry

11.2. Articles on continuing airworthiness management in the aviation industry

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Tutorship	18	0.72	KM27
Study	80	3.2	KM27
Theoretical sessions	26	1.04	KM27
Practical sessions	24	0.96	KM27

The methodology of the subject is based on a combination of theoretical and practical classes. During the theoretical classes, the professor will present the fundamental concepts of the assignment, whereas, in the practical courses, students will be those who, working individually or in small groups, will carry out the activities and exercises proposed during the course.

Will be encouraged to work in collaborative groups, the use of ICTs, and also the use of specialized software (eg: R, MINITAB, Excel, SREMS, SAEDES, etc.).

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Theoretical exams (T)	40%	2	0.08	KM27
Problem-solving (P)	20%	0	0	KM27

Lab practices (L)	40%	0	0	KM27

The evaluation of the subject is based on the completion of several tests: two theoretical exams to evaluate the theory part (T), two problem-solving tests to evaluate the problems part (P), and a practical laboratory test (L), which will consist of the resolution of a practice and delivery of a report. The base grade for the subject will be the weighted average of grades (T = 0.3, P = 0.3, L = 0.4), being necessary to obtain more than 3.5 points out of 10 in each part to be able to make this average.

The final grade for the subject will be the previous base grade plus possible additional points that can be obtained by carrying out voluntary work and activities that the teacher proposes during the course.

Transversal skills are worked on and evaluated through mandatory laboratory activities (which can be done in small groups of 2 or 3 members with prior authorization from the teaching staff) and the optional preparation of topics that students work on in small teams and that must be presented orally. in class for a few minutes. These voluntary activities can lead to up to 1 or 2 extra points in the evaluation (depending on the quality of the work and public presentation).

To qualify for an MH you must obtain the highest possible grade for each of the controls carried out, have given a brilliant presentation, have actively participated in classes, and have always shown an attitude of maximum interest towards the subject.

Anyone who has taken the evaluation tests and has not passed but has obtained a grade of 3.5 or higher will be able to make a retake on the established date and time.

The virtual platform that will be used for communication with professors will be the UAB email and the UAB Virtual Campus.

There is no differentiated treatment in the case of repeaters.

A student is considered Non-Evaluable (Not Presented) if they have not participated in any of the course assessment activities.

Without prejudice to other disciplinary measures that are deemedappropriate, and in accordance with current academic regulations, irregularities committed by the student that may lead to a Variation in the Grade of an evaluation act will be graded with a zero. Therefore, copying or allowing a practice to be copied ANY other Evaluation activity will imply failing with a zero.

Use of Natural Language Models

For this subject, the use of Artificial Intelligence (AI) technologies such as ChatGPT is allowed exclusively in support tasks, such as bibliographic or information search, generate or modify content, text correction or translations. The student must clearly identify which parts have been generated with this technology, specify the tools used and include a critical reflection on how these have influenced the process and the final result of

the activity. If model-generated snippets are used, it is essential to properly cite the sources. It is the responsibility of the student to critically evaluate the text generated. The lack of transparency of the use of AI in this assessable activity will be considered a lack of academic honesty and may lead to a partial or total penalty in the grade of the activity, or greater sanctions in serious cases.

Bibliography

- González Fernández, Francisco Javier. Teoría y Práctica del Mantenimiento Industrial Avanzado. FC (Fundación Confemetal) Editorial, Madrid, 2003.
- Kister, Timothy C. & Hawkins, Bruce. Maintenance Planning and SchedulingHandbook. Elsevier, Oxford, 2006.
- Sols, Alberto. Fiabilidad, Mantenibilidad, Efectividad. Un Enfoque Sistémico. Publicaciones de la Universidad Pontificia Comillas, Madrid, 2000.
- Wolstenholme, Linda C. Reliability Modelling. A Statistical Approach. Chapman & Hall/CRC, 1999.
- Kinnison, Harry A. Aviation Maintenance Management, McGraw-Hill,2004.

Software

Ms Office

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this link. To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	11	Catalan/Spanish	first semester	afternoon
(PAUL) Classroom practices	11	Catalan/Spanish	first semester	afternoon
(PLAB) Practical laboratories	11	Catalan/Spanish	first semester	afternoon
(PLAB) Practical laboratories	12	Catalan/Spanish	first semester	afternoon