



Federative Republic of Brazil  
 Defense Ministry  
 Aeronautics Command / Brazilian Air Force  
 Aeronautics Institute of Technology  
 Postgraduate Program in Aeronautics Infrastructure Engineering

## COURSE SYLLABUS – 2024

Updated: Mar 04, 2024.

<b>Course name:</b>	<b>Air Transport Innovation</b>
<b>Course code:</b>	IT-212
<b>Professor:</b>	Dr. Mauro Caetano
<b>Number of credits:</b>	3
<b>Day/hours schedule:</b>	Tuesday, from 8:48 a.m. to 11:53 a.m.
<b>Weekly workload*:</b>	3-0-2-4
<b>Prerequisite:</b>	None
<b>Type of course:</b>	Postgraduate (levels: Doctorate, Master, Special Student, Elective Discipline and Undergraduate Master Program – PMG/ITA)
<b>Area:</b>	Air Transport and Airports

\* X-Y-W-Z - The first one: number of hours per week, for the exposure of the Course; second: the number of operating hours for solving exercises in the classroom; third: number of hours estimated in the laboratory, design, project, technical visit or sports practice; and fourth: the number of hours estimated for home study, which is mandatory to follow the Course.

### 1. Course description

The Innovation concept; Taxonomies and types of innovation; Dimensions of the innovation process; Differences between technology and product / service / process; Open innovation; Planning and management of the innovation process; Innovations in Air Transport; Airport, Airline and Aeronautical Industry Innovations; Policies in Air Transport Innovation.

### 2. Course objectives

Discuss the dynamics of the innovation process. Identify the characteristics and specificities of the innovation processes, considering their determinants, dimensions, and activities. Identify and discuss innovative practices in air transport, as well as other aspects related to the state of the art on the subject and the management of innovation in the sector.

### 3. Course schedule

The schedule presented in Table 1 with the contents to be treated was developed in order to address the key elements related to Innovation in Air Transport, and its distribution throughout the semester may undergo small changes according to the development of the activities. Note that this is a preliminary schedule, and may change due to class needs, the number of students, complementary programs, etc.

Class	Date	Main Topics
1	March 5 <sup>th</sup>	Course introduction, Syllabus and main procedures.
2	March 12 <sup>nd</sup>	Innovation Concept applied to Air Transport; Techniques and Tools for the Innovation Process Management - Technology Roadmapping.
-	March 19 <sup>th</sup>	Holiday - São José's Day
3	March 26 <sup>th</sup>	Innovation Measurement and Innovation Metrics.
4	April 2 <sup>nd</sup>	Airport Innovation Measuring.
5	April 9 <sup>th</sup>	Airport Infrastructure Innovation.
6	April 16 <sup>th</sup>	Indicators and Metrics applied to General Aviation.
7	April 23 <sup>th</sup>	Airlines Innovation.
-	April 30 <sup>th</sup>	Institutional Technical Halt.
8	May 7 <sup>th</sup>	Aeronautics Industry Innovation.
9	May 14 <sup>th</sup>	Airport and Airline Business Model and Open Innovation.
10	May 21 <sup>st</sup>	Rupture Innovation – eVTOL - electric vertical take-off and landing.
11	May 28 <sup>th</sup>	Technical mission to Sweden - carrying out a directed study (AS)*.
12	June 4 <sup>th</sup>	Technical mission to Sweden - carrying out a directed study (AS)*.
13	June 11 <sup>st</sup>	Technical Visit – EMBRAER / KC-390 and SAAB Gripen P&D Center*, or Individual Air Transport Study Outline.
14	June 18 <sup>th</sup>	Air Transport Innovation Policies.
15	June 25 <sup>th</sup>	<b>Final Exam Schedule.</b>
-	July 2 <sup>nd</sup>	ATRS Lisbon.
-	August 8 <sup>th</sup> (Wednesday)	LABACE**. (Annual Latin American Business Aviation Conference & Exhibition)

\* Under planning; \*\* Frequency not mandatory.

Table 1: class schedule and content, subject to change according to the class calendar.

#### 4. Instructional methods and assignments

- **Theoretical classes:** classes with slide presentations, texts discussions, and reflections on the overview of subjects related to the Course, as well as debates based on the analysis of literature and practical cases, with possible applications of exercises with additional scores (**AS**);
- **Deliveries (D):** specifics deliveries related to the structuring of studies that guide the final paper of the Course. These deliveries will be made gradually with the study's progress, as the initial research theme, initial theoretical basis, research method procedures, results analysis, and final text. Consider that, every day of delay will reduce by 2 points to the respective delivery evaluation;
- **Scientific study presentations of the Basic (BT) and Additional Text (AT):** in previously defined classes, the students will be drawn to present the BT and the AT of the class, and both will have up to 20 minutes for the text presentation, which should include the following items: 1) The context of the study; 2) Theoretical gap to be filled; 3) Research method used and its authors on methods; 4) Main results of the study; 5) Final considerations with the implications for air transport innovation. The AT must be sent to the class 48 hours before the corresponding class;
- **Final Exam (FE):** a written test containing questions that address the topics studied during the semester will be applied at the end of the course.
- **Individual Study in a Final Paper (FP – D5):** for the composition of the final grade, each student will individually produce a paper related to any topic discussed at the Course. This paper should have a digital version, in Word, sent to the Professor's email ([mauro.caetano@gp.ita.br](mailto:mauro.caetano@gp.ita.br) and [caetano@ita.br](mailto:caetano@ita.br)) at the end of the Course (until July 8<sup>th</sup>, 2024). For this paper production, guidance will be given throughout the classes and directly in the Deliveries documents (D1 to D4). This paper should have between 3 and 12 pages in total, in Arial 12 font and 1.5 spacing between lines, as well as the following structure with their respective weights in the composition of the score: Title, Abstract (1), Introduction (1), Theoretical basis (2,5), Methods (2,5), Results analysis (2), Conclusions (1), References.
  - ❖ **Crucial and far-reaching consequences:** if any part of the paper submitted has been extracted from a publication and that characterizes it as plagiarism, even if it is only one or two sentences, or then produced by an artificial intelligence tool, a zero score (0) will be assigned to the entire paper and all other Deliveries. In addition, institutional disciplinary procedures will be applied.

## 5. Assessment weighting procedures

For each of the course activities (D, BT, AT, FE, FP and AS), a score from 0 to 10 will be assigned in their respective analyzes, as described in the previous item, and the composition of the final grade (FG) for the student will be carried out from Equation 1.

$$FG = \left( \frac{\sum_{i=1}^4 D_i}{4} \right) + 2 \left( \frac{\sum_{j=1}^n (BT_j) - IBT_j}{(n-1)} + \frac{\sum_{k=1}^m (AT_k) - IAT_k}{(m-1)} + FE \right) + 3FP + AS \quad (1)$$

Since  $n$  and  $m$  are the total number of scientific studies presented by the student as the base and the additional texts,  $IBT$  and  $IAT$  are the lowest scores obtained between the presentation of the base and the additional texts, respectively, the maximum FG can be one hundred (100). The student' classification in each of the concepts adopted by the PG EIA will be carried out based on the following distribution:

- ❖  $100 \geq \mathbf{L}$  ("louvor": praise)  $\geq 95$ ;
- ❖  $94 \geq \mathbf{MB}$  ("muito bom": very good)  $\geq 85$ ;
- ❖  $84 \geq \mathbf{B}$  ("bom": good)  $\geq 75$ ;
- ❖  $74 \geq \mathbf{R}$  ("regular": regular)  $\geq 65$ ;
- ❖  $64 \geq \mathbf{I}$  ("insuficiente": insufficient)  $\geq 50$ ;
- ❖  $49 \geq \mathbf{D}$  ("deficiente": disabled)  $\geq 0$ .

Additionally, the student who fails to reach 85% (eighty-five percent) of frequency in the discipline will be disapproved.

### Basic references

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***Good studies to all!***

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