Subject Description Form

Subject Code	AAE1BN01
Subject Title	Introduction to Aviation Industry
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This subject aims to provide: • a basic understanding of the impact of air transport to global economy and the environment; • a basic understanding of international air laws: • a fundamental concept of airline economics as well as fleet selection criteria; • an opportunity to learn the basic principles of flight, basic fluid statics and dynamics, and their application in actual flying; and • an opportunity to fulfil English Reading and English Writing requirements.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. identify and explain the structure and functions of ICAO, airline, airport and other aviation organizations; b. describe the advantage and disadvantages of different airline business models; c. understand the implications to the society when the airlines have become economically non-viable due to reasons beyond their control, e.g. Covid-19; d. understand the major criteria for fleet selection to meet the airlines' business needs and how these are related to the wider public expectations, i.e. less adverse environmental impact etc.; e. describe the key performance indicators to measure an airline's cost efficiency or productivity; f. understand the basic principles of flight, fluid statics and dynamics; and g. enhance reading and writing skills in English language.
Subject Synopsis/ Indicative Syllabus	**1. The airline industry today** - Social and economic impact of air transport - The role of Air Traffic Control System (ATCS) and, from the practical perspective, the selection and implementation of the ATCS to cope with air traffic expansion as well as all challenges encountered - Hub and spoke concept - Aviation business models: premium/legacy carriers and low-cost carriers (LCC) and the pros and cons of each model - Benefits provided to the consumers by each of the models

	- Crisis management **2. Airline Fleet Selection/Fleet Planning** - Short range - Medium range - Long range - New aircraft vs Used aircraft - Acquisition vs Leasing - Impact to environment **3. Airline economics** - Airline costs: directing operating cost (DOC) and indirect operating cost (IOC) - Productivity measurements: ▪ Load Factor/Breakeven load factor ▪ Available Seat Kilometres (ASK) ▪ Yield ▪ Revenue Passenger Kilometres (RPK) ▪ Cost per Available Seat Kilometres (CASK) ▪ Revenue per Available Seat Kilometres (RASK) - Fuel and currency hedging **4. Major stakeholders responsible for air safety** - International Civil Aviation Organisation (ICAO) - Authority (including FAA, EASA, Hong Kong Airport Authority, Civil Aviation Department, Hong Kong Flight Information Region (HKFIR) and its relationship with other neighouring FIRs etc.) - International Air Transport Association (IATA) - Airlines - Suppliers/ Maintenance Repair Organisations - Other peripheral aviation organizations: ramp services, etc **5. Basic aerodynamics/fluid mechanics** - Fluid statics/dynamics: fluid pressure, pressure-height relation, buoyancy, properties of fluids, streamlines, viscosity, effects of compressibility on fluids, specific gravity and density - Heat transfer: convection, radiation and conduction - Relationship between lift, weight, thrust and drag; - Generation of lift; Bernoulli's Theorem and venturi effect - Operation and effect of: ▪ roll control: ailerons and spoilers; ▪ pitch control: elevators, stabilators and variable incidence stabilisers; ▪ yaw control, rudder limiters; - High lift devices, slots, slats, flaps, flaperons; - Drag inducing devices, spoilers, lift dumpers, speed brakes; **6. Flying experience**

Teaching/Learning Methodology

This is an introductory course aiming at arousing students' interest in and awareness of the complex yet challenging aviation industry and the impact the latter may bring to the society at large. Counter-measures adopted by the airlines to minimize the impact will also be discussed.

Due to the fact that this is an introductory course, it is therefore not the intention of the subject to set any pre-requisite for this course. In addition to the traditional classroom lectures, mini project and small-group discussions will be used whenever applicable. In order to enable the students to appreciate some of the theories learned in class, the students, who will be formed in small groups, will be provided an opportunity to experience flying in an A320 simulator.

Guest lecturers who are current practitioners in the aviation industry, e.g. flight dispatchers, engineers, pilots etc., may be invited to give joint lectures/seminars, with the subject teachers.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						
		a	b	c	d	e	f	g
1. Written examination	50%	√	√	√	√	√	√	√
2. Mini project report [EW assessment: 30% to be assessed by Subject Teachers & 10% to be assessed by ELC]	40%	√	√	√	√	√	√	√
3. Quiz [ER assessment]	10%	√	√		√	√	√	√
Total	100%							

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Overall Assessment:

0.5 x Written Examination + 0.5 x Continuous Assessment

Although a written examination (50%) can be an important assessment to achieve all the intended learning outcomes for this course, because of the complexity of the aviation industry, it will be beneficial to the students' learning experience should the written examination be supplemented with additional works.

There is a major writing task required: a written report (40%) of a mini project performed by every student on a given topic. To meet the requirement of the "EW" (English Writing) requirement, students are required to submit a written report with 1,500 – 2,500 words in English. Before submission, a writing plan and a minimum word length for a draft of 1500 to be submitted to English Learning Centre (ELC). The final report contributes to 40% of the subject grade. This includes the 10% from ELC and 30% from the subject teachers.

	In order to fulfill the writing component assessment, student should attain a minimum grade D in task 2. Students will be given a 'quiz' which will take up 10% of the subject grade. In order to complete the quiz successfully, knowledge obtained from an intensive reading task (approximately 100,000 words or 200 pages) will be required. References should be provided to students by the subject teachers. ***In order to fulfill the reading component assessment, student should attain a minimum grade D in task 3.***		
Student Study Effort Expected	Class contact:		
	▪ Lectures	27	Hrs.
	▪ Seminars/Forum	3	Hrs.
	▪ Discussions on Mini Project or Case Study	9	Hrs.
	Other student study effort:		
	▪ Literature Survey and Extensive Reading	35	Hrs.
	▪ Conducting Mini Project and Producing Report	30	Hrs.
	▪ Preparation for the Quiz	16	Hrs.
	Total student study effort	120	Hrs.
Reading List and References	**Required Readings (About 100,000 words):** 1. Belobaba, Peter, Odoni, Amedeo, and Barnhart, Cynthia. The Global Airline Industry. 2009. Web.(Chapters 1, 2 (2.1,2.2 (2.6), 3,5,6 (6.1 & 6.2), and 14 (134 pages with approx.. 75,000 words) 2. Organisation for Economic Co-operation Development Staff Corporate Author. *Globalisation, Transport and the Environment*. Paris: OECD, 2010. Web. (Chapters ,1, 2, 4 (4.1,4.2,4.3 and 4.4) and7) (56 pages with approx. 27,000 words) 3. Principles of Flight, ATPL Ground Training Series CAE Oxford Aviation Academy (UK)Ltd 2009, KHL Printing Co. Pte Ltd. (Chapter 1, 14 pages with 300 words only-mostly pictures) **Supplementary Readings:** 4. Cengel Y. A., Cimbala J. M., and Turner R. H., Fundamentals of Thermal-Fluid Sciences. McGraw-Hill, 5th edition. 5. The economic & social benefits of air transport, Air Transport Action Group (ATAG), 2004 https://www.icao.int/meetings/wrdss2011/documents/jointworkshop2005/atag_socialbenefitsairtransport.pdf		

	6. Effects of Novel Coronavirus (Covid-19) on Civil Aviation: Economic Impact Analysis, 12 August 2020 Air Transport Bureau, ICAO (general appreciation only) https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx 7. International Aviation Law: A Practical Guide, Bartsch, Ronald I. C. United Kingdom: Ashgate Publishing Ltd 2012 New edition https://julac.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=TN_dawson9781409432883&context=PC&vid=HKPU&lang=en_US&search_scope=All&adaptor=primo_central_multiple_fe&tab=default_tab&query=any,contains,Practical%20Aviation%20&%20Aerospace%20Law&offset=0 8. Analysts Briefing 2020 Interim Results, Cathay Pacific 12 August 2020 https://www.cathaypacific.com/content/dam/cx/about-us/investor-relations/financial-briefings/en/202008-interim-results-final.pdf

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