

## **Master of Science (MSc) Program in International Air Transport Operations Management**

### **Program Director:**

Xun HUANG, Associate Professor of Mechanical and Aerospace Engineering

The Master of Science (MSc) program in International Air Transport Operations Management is jointly offered by the School of Engineering of HKUST and Ecole Nationale de l'Aviation Civile (ENAC) in Toulouse, France. The program aims to equip those who want to enter the positions for versatile managers, air transport professional or to enhance the knowledge of those who have already been working in the sector.

The program combines the technical, economic and managerial skills that are specific to air transport which will improve and enhance the capabilities of students supporting engineering work for the aeronautics and air transport. It will allow students to get exposure to the various core aspects of air transport and how they are integrated with the technology development in the real world. Upon graduation, students shall be awarded a joint Master of Science degree in International Air Transport Operations Management by HKUST and ENAC. A separate certificate recognized by the French Ministry of Higher Education will also be issued by ENAC.

### ***Program Learning Outcomes***

On successful completion of the program, graduates will be able to:

- Apply mathematics, mechanics, and/or control principles, and a knowledge of materials and structures, to ensure safe and efficient flight operations;
- Analyze existing aeronautical engineering problems in depth;
- Design and operate complex systems from a conceptual design perspective;
- Identify and explain the aircraft safety system through the design principles;
- Identify and explain the main aspects of the aircraft maintenance management and explain how the maintenance is certified;
- Explain the operational and economic constraints associated to aircraft operations;
- Describe and explain the major issues and challenges facing international air transport operations management;
- Distinguish between the elements and processes of certification, airworthiness and operational control;
- Explain the basic fundamentals of human resources management, taking into account the peculiarities of air transport;
- Analyze and provide possible solutions to problems related to the flight planning and crew management in all their aspects (technical, regulatory, human); and
- Explain technical, regulatory and legal concepts and practices to members of the air transport industry through individual written communications.

### ***Admission Requirements***

Applicants must have a bachelor's degree in Aeronautical Engineering / Aerospace Engineering / Mechanical Engineering / Manufacturing Engineering / Engineering Management / Materials Science and Engineering / Electrical and Electronic Engineering / Civil Engineering / Environmental Engineering / Industrial Engineering, or a related field from a recognized university or tertiary institution. Applicants with a bachelor's degree in other non-engineering disciplines must have relevant working experience in the air transport industry or aviation related fields.

### ***Program Duration***

The normal duration for program completion is two years in full-time mode.

### ***Program Fee***

The program fee is HK\$215,000. New students admitted with credit transfer are also required to pay the full program fee. Students who take additional courses or need to retake any courses are required to pay additional fee.

### ***Curriculum***

Students are required to complete a total of 60 credits (120 ECTs), including 1<sup>st</sup> term of 18 credits (36 ECTs) of courses at HKUST, 2<sup>nd</sup> & 3<sup>rd</sup> terms of a total of 27 credits (54 ECTs) of courses at ENAC, and a 6-month internship of 15 credits (30 ECTs) in the air transport industry. All courses will be taught in English.

a) 1st Term at HKUST (18 credits / 36 ECTs)

Students are required to take at least 9 credits of foundation courses. The remaining credits can be taken from the foundation or elective courses. Subject to the approval of the Program Director, students may take a maximum of 9 credits of courses from outside the following course lists:

#### Foundation Courses

AESF	5210	Fluid Dynamics
AESF	5310	Advanced Aerodynamics
AESF	5320	Advanced Aircraft Structures
AESF	5330	Advanced Aircraft Design
AESF	5340	Aircraft Flight Dynamics
AESF	5350	Aircraft Propulsion
AESF	6950	Aeronautical Independent Project
EEMT	5220	Six Sigma Quality Management

#### Elective courses

AESF	5050	Fracture Behavior of Polymers
AESF	5311	Robotics: Mechanics and Control
AESF	5360	Advanced Flow Instability

AESF 5370	Composites and Nanocomposites
AESF 5380	Computational Fluid Dynamics
AESF 5390	Computational Aeroacoustics
AESF 5410	Advanced Mechanical Behavior of Materials
AESF 5930	Finite Element Methods
AESF 6910	Special Topics
EEMT 5120	Operation/Production Management

b) 2nd Term at ENAC (12 credits / 24 ECTs)

Design Principles  
Production Process  
Operator's Responsibilities  
MRO Constraints  
Manufacturer's Role  
Safety Management System

In order to start the 3<sup>rd</sup> term, a student has to complete 30 credits / 60 ECTs.

c) 3rd Term at ENAC (15 credits / 30 ECTs)

Aircraft Performances Optimization – Specialization  
Flight Control System  
Maintenance Management and Engineering  
Airspace Organization and ATM  
Airline Strategy  
Marketing, Customer Support and Fleet Management  
Human Resources Management  
Fleet Planning and Crew Management  
Social Sciences

d) 4th Term (15 credits / 30 ECTs)

Internship

***Credit Transfer***

Credit transfer may be granted to students in recognition of studies completed successfully elsewhere. Application must be made to the program office within the first term after admission. All credit transfer must be approved by the Program Director and are subject to the normal university, school, and program requirement on credit transfer.

***Graduation Requirements***

Students must complete all prescribed courses to graduate. Students must complete the program with a cumulative grade average (CGA) of 2.85 for courses taken at HKUST and a graduation grade average (GGA) of 12 (of a 20-point scale) or above

## CURRICULA FOR TAUGHT POSTGRADUATE PROGRAMS

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for courses taken at ENAC. Students failing to meet the CGA requirement of HKUST are required to repeat or substitute the course(s) at HKUST at a per-credit fee. Students failing to meet the GGA requirement of ENAC are required to repeat or substitute the course(s) at ENAC at a per-credit fee.