Subject Description Form

Subject Code	AAE5101
Subject Title	Next Generation Air Traffic Control and Air Traffic Flow Management
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This subject will provide students with 1. broad understanding of airport, air traffic control and air traffic flow management; 2. the latest development of the Next Generation Air Transportation System (NextGen) and Asia-pacific airport collaborative decision-making (A-CDM); and 3. the essential knowledge in managing air and surface traffic.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. apply techniques to optimise the airport and air traffic capacity; b. understand and establish a review on the effectiveness of an air traffic management system; c. streamline airport, ground and air traffic operations to gain overall turn-a-round efficiency; and d. identify the airline-airport conflict resolution approach and risk management.
Subject Synopsis/ Indicative Syllabus	**Air traffic control and managemen**t: Air traffic management, congestion control and capacity management, aviation system; Air traffic control and air traffic control aids; Seamless air traffic management and air navigation service; Extreme weather operations; airport emergencies. **Runway scheduling and capacity analysis:** Runway capacity analysis; Airport airside and landside structure and layout; First-come first-served heuristics; Runway design and configuration. **Advancement in airspace technology and performance indicators:** Measurement of system performance; Key issue in airport collaborative decision making in Asia pacific; Critical elements of the Next Generation Air Transportation System (NextGen); Performance and concerns of the NextGen; Airspace Technology Demonstration (ATD): ATD-2/ATD-3.

Teaching/Learning Methodology

Teaching is conducted through lectures and case study. Both the basic knowledge and theoretical models are going to be introduced. The understanding of how to address problems by using scientific tools is emphasised. Normally, examples of problem-solving techniques are taught in class and related scenarios are provided to students to enhance their application abilities.

Teaching/Learning Methodology	Outcomes			
	a	b	c	d
Lecture	√	√	√	√
Case Study	√	√	√	

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
		a	b	c	d
1. Assignment	30%	√	√		√
2. Case study	40%	√	√	√	√
3. Individual essay	30%		√	√	
Total	100%				

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

Overall Assessment:

1.0 × Continuous Assessment

The continuous assessment (100%) is aimed at enhancing the students' comprehension and assimilation of various topics of the syllabus via reading assignment and case study. Individual essay is used to assess the students' capacities of self-study and problem-solving and understanding on a specific topic to fulfil the requirements of working in the aviation industry.

Student Study Effort Expected

Class contact:	
▪ Lecture/Case Study	39 Hrs.
Other student study effort:	
▪ Literature review/case study/reading	36 Hrs.
▪ Self-learning/preparation	36 Hrs.
Total student study effort	111 Hrs.

Reading List and References	1. Ashford, N. J., Stanton, H. M., Moore, C. A., Pierre Coutu, A. A. E., & Beasley, J. R. (2013). Airport operations. McGraw-Hill Education. 2. Cusick, S. K., Cortes, A. I., & Rodrigues, C. C. (2017). Commercial aviation safety. McGraw-Hill Education. 3. De Neufville, R., Odoni, A. R., Belobaba, P. P., & Reynolds, T. G. (2013). Airport systems: Planning, design, and management. McGraw-Hill Education. 4. Horonjeff, R., McKelvey, F. X., Sproule, W. J., & Young, S. B. (2010). Planning and design of airports. McGraw-Hill Education. 5. Wells, A. T. (2007). Air transportation: A management perspective: Ashgate Publishing, Ltd. 6. Young, S. B., & Wells, A. T. (2011). Airport planning and management. McGraw-Hill Education.

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