City College Norwich

SUMMARY PROGRAMME SPECIFICATION

Course Title	BSc (Hons) Professional Aviation Engineering Practice
Awarding Body	University of East Anglia (UEA)
Level of Award	Undergraduate
Professional, Statutory and Regulatory Bodies Recognition	
Credit Structure	360 Credits Level 4: 120 Credits Level 5: 120 Credits Level 6: 120 Credits
Mode of Attendance	FT
Standard Length of Course	3 years
Intended Award	BSc (Hons)
Fall-back Awards	Unclassified Degree (BA) – 300 credits Diploma of Higher Education (Dip HE) – 240 credits Certificate of Higher Education (Cert HE) – 120 credits
Entry Requirements	96 UCAS points, GCSE Maths and English at grade C (grade 4) or equivalent. Mature students with a relevant industrial background may also be considered subject to interview
Delivering Institution(s)	City College Norwich (CCN) is the programme provider with KLM UK Engineering Limited providing the technical work based delivery expertise
UCAS Code	H140

This Summary Programme Specification sets out the essential features and characteristics of the BSc (Hons) Professional Aviation Engineering Practice course.

Course Summary

The purpose of the course is to provide a joint collaborative work-based programme which targets engineers training to maintain fixed wing aircraft for commercial airlines.

Course Aims

- To develop academic and practical aviation engineering skills to meet identified and primarily national and local employment needs by integrating engineering training fully with a degree.
- To maximise the use of reflective learning as a tool to measure academic and practical achievement
- To fully integrate regulatory exams with those required to achieve module completion
- To provide an intellectually stimulating programme of work that will develop the student as reflective, independent and flexible learner.
- To provide a programme of learning that will develop transferable employability skills.
- To develop the generic and problem-solving skills that will enable students to perform effectively within the workplace.

SUMMARY PROGRAMME SPECIFICATION

- To inculcate in students a philosophy of continual learning.
- To enhance students' employment and career development opportunities.
- To widen participation in, and progression through, higher education.
- To prepare students for further academic or professional studies.
- To promote key components of a contemporary aviation engineering education

Course Learning Outcomes

To meet the objectives of the BSc (Honours) Professional Aviation Engineering Practice the following outcomes have been identified:

i. Students will be able to develop understanding and application of professional aviation engineering practice
ii. Students will be able to develop transferable, problem solving, and creative skills that are relevant both to work roles, and to their personal development
iii. Students will be able to reflect, evaluate, and reinforce their behavioural skills and knowledge through practical application and maintenance in work-related assignments and projects
iv. Students will have completed an academically rigorous study of the disciplines that form the basis of an understanding of aviation engineering
v. Students will be able to pursue specialist interests and to relate these specialisations to professional body requirements
vi. Students will appreciate the importance of scientific principles, mathematics, and realisation in external contexts

Learning outcomes will be communicated during induction, the programme, and via the course handbook. These documents will be made available on Blackboard and accessible to HE students, staff and External Examiners.

Course Design

The design of this course has been guided by the following QAA Benchmark and Professional Standards:

QAA Benchmark

- Engineering drives technological, economic and social progress. It deals with the delivery of practical solutions to problems, which includes addressing some of the greatest challenges and opportunities of our rapidly evolving world. Engineers apply their understanding, knowledge, experience, skills and know-how to create social and economic value.
- Engineering is concerned with developing, providing and maintaining infrastructure, products, processes and services for society. Engineering addresses the complete life-cycle of a product, process or service, from conception, through design and manufacture, to decommissioning, recycling, and disposal, within the constraints imposed by economic, legal, social, cultural and environmental considerations
- Engineering relies on three core elements, namely scientific principles, mathematics, and realisation. Scientific principles underpin all engineering, while mathematics is the language used to communicate parameters, model and optimise solutions. Realisation encapsulates the whole range of creative abilities which distinguish the engineer from the scientist; to conceive, make and actually bring to fruition something which has never existed before - and to create Intellectual Property, associating invention with commercial or social value. This creativity and innovation to develop economically

viable and ethically sound sustainable solutions is an essential and distinguishing characteristic of engineering, shared across the many diverse, established and emerging subjects within the discipline.

Course Structure
This course comprises modules at levels 4, 5 and 6.

Module Specifications for each of these modules will be made available to students on-line at the beginning of each academic year.

	Module	Credits	Module Type/Description
Level 4			
	Materials, Hardware	20	The materials element of this module investigates the characteristics, properties, applications and common heat treatments utilised in ferrous and non-ferrous metals and the properties, characteristics, and repair techniques associated with composite and non-metallic materials. The hardware element of the module involves a comprehensive study of typical hardware as used on and in engineering operations and maintenance processes. This module provides the content required for EASA Module 6 Compulsory for all pathways
	Maintenance Practices	20	This Module provides students with the knowledge required to select and use the appropriate tools, materials, drawings and equipment necessary to perform aircraft maintenance tasks. It also provides them with knowledge necessary to work effectively and safely in an aircraft maintenance environment. The module also introduces the student to inspection, testing, repair, assembly and disassembly methodologies as well as the various philosophies that shape or determine the planning and application of aircraft maintenance activities. This module provides the content required for EASA Module 7 Compulsory for all pathways
	Workshop & Aircraft Principles	30	This module introduces and provides an opportunity for students to develop the hand skills and basic maintenance skills needed by an aircraft maintenance engineer. The module is not intended to turn the

			student into skilled experts; rather it is designed to provide a thorough introduction and solid grounding for further training, practice and development. This module provides the practical content required for EASA Module 7 Compulsory for all pathways
	Human Factors & Legislation	20	This module comprises two parts. The first will look at the way human factors affect aircraft maintenance and flight safety and the second will focus on the legal framework in which EASA Part-66 Licensed Engineers work. This module provides the content required for EASA Modules 9 &10 Compulsory for all pathways
	Mathematics & Physics for Practitioner Engineers	30	This module covers all of the topics in the EASA part-66 Mathematics and Physics syllabuses and provides a knowledge and understanding sufficient for the students to take the associated EASA category B licence. It also extends the mathematics knowledge to a level sufficient to underpin key engineering principles and prepare students for the mathematics in the level 5 & 6 modules of the programme and further study. This module provides the content required for EASA Modules 1 & 2 Compulsory for all pathways
Level 5			
	Electrical Fundamentals	30	This module comprises both theory and practical exercises. The theory is delivered in a series of lectures and the practical involves the student completing a series of laboratory sessions designed to reinforce the knowledge gained in the lectures. This module starts by looking at electrical charge and how electricity is created, before moving on to look at resistors, capacitors and inductors. This module provides the content required for EASA Module 3 Compulsory for all pathways

SUMMARY PROGRAMME SPECIFICATION

	Electronic Fundamentals, Digital Techniques & Aerodynamics	30/40	This module is a combination of electronic fundamentals, digital techniques, aircraft digital systems and aerodynamics. This module provides the content required for EASA Modules 4, 5 & 8 B1.1 pathway – 30 credits B2 pathway – 40 credits
	Aeroplanes Aerodynamics, Structures & Systems	30	This module is split into two parts; mechanical and electrical/avionic. The mechanical section provides opportunities to understand and assess elements of aerodynamics, the structure, construction and mechanics of those systems. It also examines the Theory of Flight and how airflow and flight affects the design and operation of aircraft. This module provides the content required for EASA Module 11 B1.1 pathway
	Engines & Propellers	30	The principles of operation of gas turbine engines are examined using fundamental laws of physics and the performance of a range of aircraft propulsion systems are assessed. The module also looks at the construction of typical engines by examining the various component parts (stages) of engines in detail. The module follows with a look at the aerodynamics principles of propellers, their construction and performance, before looking at propeller assemblies and associated control and monitoring systems. This module provides the content required for EASA Module 15 & 17 B1.1 pathway
	Aircraft Aerodynamics, Structures & Systems (Avionics)	30	This module is split into two parts; electrical/avionic and mechanical. The electrical/avionic section includes an in-depth look at Electrical Power Generation and Distribution along with Internal and External lighting systems. The module also gives an introduction to air data, gyroscopic and compass flight instrument systems and an overview of a number of avionic systems including on-board maintenance systems, integrated modular avionics and Information systems.

SUMMARY PROGRAMME SPECIFICATION

			This module provides the content required for EASA Module 13 B2 Pathway
	Propulsion	20	The principles of operation of jet engines are examined using fundamental laws of physics of aircraft propulsion systems are discussed. The module looks at the structure and operation of turbojet, turbofan, turboshaft and turbo-propeller engine types. The module then looks at how the engine is controlled through use of Full Authority Digital Engine Control (FADEC) and fuel metering along with flight deck engine indications systems. The module rounds off with how propulsion units are started and how ignition is provided during this cycle This module provides the content required for EASA Module 14 B2 Pathway .
Level 6			
	Aircraft Maintenance Orientation	30	The aim of this module is to broaden and further develop the engineering understanding of the constraints and requirements of aircraft and maintenance in a specific commercial environment. This module will build knowledge and experience around specific engineering tasks. Specific work practices and systems will implant real working practices on top of EASA regulated training and to allow on-aircraft time to gain familiarity and competence including use of tech log, company systems and practices.
	Aircraft Engineering Specifics	30	The aim of this module is to guide and support you in the application of your general knowledge and understanding of the aircraft maintenance quality, task and safety practices, to enable you to formally certify a specific aircraft type as fit to fly (Type Rating). This module allows the engineer to be knowledgeable on the aircraft type – in this case the B737-300 Classic replicated through the aircraft within the Aviation Emulation Zone. This module provides the requirements for EASA Type Regulation.

	Threat and Error Management	20	The aim of this module is to provide the opportunity to demonstrate explicit evidence of the integration of technical knowledge, understanding, skills and professional competencies drawn from professional engineer training, maintenance practice and airline/operator specific requirements. Further this module has been designed to further develop students understanding of company standard Safety Management and Human Factors that impact on the effective delivery of aircraft maintenance practices
	Extended Project – Evaluating and Managing Aviation Engineering Risk	40	This module is an Extended Project designed specifically to encapsulate final stages of engineer problem solving authorisation. Further it is a development of professional skills, bringing together an established body of knowledge and theory and relating these to issues of aviation risk. This negotiated Extended Project will take into account human and environmental factors affecting task, maintenance activity and flight. Undergraduates will provide critical evaluation and select responses to a wide variety of factors.

Awards
On successful completion of the course, students will be awarded a BSc (Hons) Professional Aviation Engineering Practice.

Course Delivery
The course is mainly delivered at the International Aviation Academy Norwich (IAAN) at Norwich Airport. Course delivery will be Monday – Friday and due to the intensive nature of the programme contact hours will be 25-30 hours per week. There is a 90% attendance requirement for this programme. The contact hours will be a mix of lectures, seminars, simulated skills and workshops. Students will normally be expected to undertake 16 hours of independent study in an average week, but should be prepared for this to vary based on assignment deadlines and class exercises.

Course Assessment
Assessment methods will include exams, assignments. portfolios and project reports.

Course Team
The academic staff delivering this course are drawn from a team that includes teaching specialists and current practitioners. All staff are qualified in their subjects with their own specialist knowledge to contribute.

Course Costs

The tuition fees that new students pay will be fixed for the duration of the course and will not be subject to any further increases.

SUMMARY PROGRAMME SPECIFICATION

Payment of tuition fees is due at the time of enrolment and is managed in accordance with the Course Fees & Eligibility Statement and Rules and Regulations 2018/19.

Students will be required to purchase Personal Protective Equipment (PPE) for example overalls and safety boots. Approximate cost for the 2018 academic year was £40-£45. Students may choose to buy some books to support their studies, although the library has access to a full range of core texts, including e-books. Students will also be expected to print and bind two copies of their final year dissertation, although there are low cost options within the college for this.

Academic Framework and Regulations
This course is delivered according to the Norfolk Regulatory Framework and other academic policies and procedures of the College as published on Blackboard. Some elements of assessment will be subject to European Aviation Safety Agency (EASA) regulations.