City College Norwich Higher Education: Programme Summary Specification	
This Summary Programme Specification sets out the essential features and characteristics of the BSc (Hons) Professional Aviation Engineering Practice course.	
Course Title	BSc (Hons) Professional Aviation Engineering Practice
Awarding Body	University of East Anglia
Level of Award	Level 6, Undergraduate
Professional, Statutory and Regulatory Bodies Recognition	
Credit Structure	120 credits at Level 4, Level 5, and Level 6: 360 credits in total
Mode of Attendance	Full-Time
Standard Length of Course	3 Years
Intended Award	BSc (Hons): Bachelor of Science
Fall-back Awards	Certificate of Higher Education: 120 Credits Diploma of Higher Education: 240 Credits
Entry Requirements	Applicants are expected to achieve 96 UCAS points. Mathematics and English Grade 4/5 (grade C or above)
Delivering Institution(s)	City College Norwich
UCAS Code	H410

Course Summary

This specialist aviation engineering degree course will allow you to gain practical experience alongside advanced academic study. Delivered in partnership with KLM UK Engineering and awarded by University of East Anglia, this course has been designed to ensure you develop the knowledge, technical skills, understanding and awareness necessary to work in technical, supervisory or management roles in the industry and will help kick start your journey to a highflying career.

The programme provides applicants with the opportunity to pass European Aviation Safety Agency (EASA) B1.1 examinations, alongside academic study for an aviation degree.

This course allows you to work on a fully functional Boeing 737 aircraft in the International Aviation Academy Norwich's (IAAN) world class Aviation Emulation Zone® whilst studying in our first-class learning environment at IAAN.

Course Aims

Aims of the BSc (Hons) Professional Aviation Engineering Practice Programme
The Course aims to deliver an academic work-related experience which provides theoretical and practical study in an integrated approach.

Programme Objectives
The objectives of the programme are:

- To develop academic and practical aviation engineering skills to meet identified and primarily national, regional, and local employment needs.
- To maximise the use of reflective learning as a tool to measure academic and practical achievement
- To provide the opportunity for successful achievement of industry regulatory exams
- To provide an intellectually stimulating programme of work that will develop the student as a 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.
- 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

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

- Students will be able to develop understanding and application of professional aviation engineering practice
- Students will be able to develop transferable, problem solving, and creative skills that are relevant both to work roles, and to their personal development.

- Students will be able to reflect, evaluate, and reinforce their behavioural skills and knowledge through practically based assignments and projects.
- Students will have achieved an academically rigorous study of the disciplines that forms the basis of an understanding of aviation engineering.
- Students will be able to pursue pathways in line with industry specific requirements
- Students will gain an appreciation of the importance of scientific and mathematical principles in the context of aviation engineering

Learning outcomes will be communicated during induction, within the programme and through the course handbook. These documents will be made available on Blackboard and will be 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 Framework for HE Qualifications of UK Degree-Awarding Bodies (publication date 3 November 20124).

UK Quality Code for Higher Education: https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmarkstatement-engineering.pdf?sfvrsn=1f2c881_16

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.

The BSc (Honours) Professional Aviation Engineering Practice programme is a 360-credit programme.

Students will have the opportunity to achieve a Bachelors Degree (BSc (Hons) Professional Aviation Engineering Practice) through completion of academic modules. Students will also have the opportunity to complete the European Aviation Safety Agency (EASA) Part 66 Aircraft Engineer Licence examinations (and modules); the successful achievement of which will provide students with the opportunity to apply for Category B licence certification, subject to completion of a minimum of two years' maintenance experience, after graduation.

To satisfy the requirements of EASA, students will be required to pass all relevant examinations, satisfy 90% attendance of course delivery and complete required hours (2400) in a Part 147 (EASA regulated training) environment. This will allow a reduction in the minimum number of years' experience required before application for a full B Category licence, from five years to two years.

It should be noted achievement of the EASA requirements is independent of the academic assessment of the BSc Degree, and Degree classification is similarly unrelated to achievement (or not) of any EASA requirements.

Modules

Year 1 – Level 4 Modules		
Module Title	**Credit Value**	**Module Summary (including associated assessments)**
Higher Learning Skills	20	This module is designed to enable participants to identify and develop skills for successful higher education study and transferable employability skills. Delivery and assessment is designed to develop study skills through personal reflection and the identification of personal goals and communication skills. The skills are core to any undergraduate programmes. Assessment: • Group Presentation • Journal - The written Journal will consist of generic and subject specific tasks
Human Factors and 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. Assessment: • Case study - Students will be required to demonstrate and discuss the impact of Human Factors in an aviation environment through investigation of a given case study. • Reflective Essay - A reflective essay related to the significance of aviation legislation will also form part of assessment for this module.

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. Assessment: • Essay • Presentation
Materials and 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 as well as the use of sealing and bonding agents. The module examines the chemical fundamentals related to corrosion and current methods of corrosion prevention and removal on metallic structures. The hardware element of the module involves a comprehensive study of typical hardware as used on and in engineering operations and maintenance processes. This includes the properties, characteristics, uses and identification of fastening devices, fluid and pneumatic lines, bearings, drives and transmission systems, system controls, and electrical cables and connectors. Assessment: • Assignment / Individual Report • Presentation
Workshop and Aircraft Practices	20	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. The hand-skills experience will include: reading engineering drawings, marking out, cutting, filing, drilling, and thread cutting etc. Assessment: • Student portfolio/ Reflective Handbook - Portfolio should include student's personal reflection and analysis of practical tasks completed as part of the formative assessment in this module

Application of the Principles of Physics	20	The module extends physics and mathematics knowledge to a level sufficient to underpin key engineering principles. It prepares students for the applied mathematics and physics required in further study. Assessment: • Applied Assignment - The assignment will incorporate an exploration of student knowledge of key principles of Physics.
Year 2 – Level 5 Modules		
Module Title	**Credit Value**	**Module Summary (including associated assessments)**
Electrical Fundamentals	30	This module starts by looking at electrical charge and how electricity is created, before moving on to look at resistors, capacitors, and inductors. The construction and identification of each component is described before their uses, properties and characteristics are studied. To aid theoretical information, explained later in the module, where the operation of generators, motors and transformers is explored, the principles of magnetism and induction are studied. A look at DC generators and motors then completes the DC element of electrical fundamentals. Assessment: • Presentation • Practical Competency Task 1 • Practical Competency Task 2 • Practical Competency Task 3 Practical Tasks in Laboratory report style.
Aeroplane Aerodynamics, Structures and Systems	30	This module is split into two parts: mechanical / aerodynamic and electrical / avionic. It has structures, aerodynamics, and mechanical systems as its primary focus, requiring an in-dept understanding of the underpinning principles and a developed understanding of systems layout, function, and interaction. The mechanical section provides opportunities to analyse and assess elements of aircraft design, construction, and mechanical systems. Aerodynamic principles are used to examine the Theory of Flight and how airflow affects the design and operation of aircraft. The system elements evaluate and describe the layout and operation of the main aircraft mechanical systems including: - flight controls, fuel, hydraulics, pneumatics, and air conditioning / pressurization. The electrical / avionics section is investigated in the context of the interrelationships with aircraft structures and other systems particularly those requiring electrical power for their operation. This section

		includes an evaluation of Electrical Power Generation and Distribution along with Internal and External lighting systems. The module also introduces air data, gyroscopic and compass flight instrument systems, and an overview of a number of avionic systems including onboard maintenance systems, integrated modular avionics and Information systems. Assessment: • Portfolio - demonstrating detailed understanding of aircraft structures and mechanical systems including review of practical tasks completed in the Emulation Zone • Coursework Essay - Electrical Systems & Avionics

Engines and Propellers	30	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. Topics covered include: - propeller pitch control, overspeed mechanisms, protection devices, synchronising, and synchrophasing. Assessment: • Coursework essay - Turbine Engine design / construction / performance / maintenance • Evaluative Report – assess the construction and operation of propeller systems.
Electronic Fundamentals, Digital Techniques and Aerodynamics	30	The electronic fundamentals section evaluates semiconductor components such as diodes and transistors and leads into basic logic gate operation and operational amplifiers. Transducers and synchronous data transmission systems found on aircraft are also considered. Digital techniques include review and analysis of combinational and sequential logic circuits and an introduction to the basic layout and operation of computers and the use of computer technology in aircraft. Aircraft specific databus and network systems along with display panel technologies are also studied. Aircraft digital systems involves investigating the layout, operation and built-in-test equipment (BITE) of a selection of electronic and digital aircraft systems including: Electronic Flight Instrument systems (EFIS), Electronic Centralised Aircraft Monitor system (ECAM), Engine Indicating and Crew Alerting System (EICAS), ARINC Communication and Addressing and Reporting System (ACARS), Fly-by-Wire (FBW), Inertial Reference Systems (IRS), and the Flight Management System (FMS). Assessment: • Student Portfolio - Theory of Electronic Components + practical tasks • Essay - Aerodynamics

Year 3 – Level 6 Modules		
Module Title	**Credit Value**	**Module Summary (including associated assessments)**
Aircraft Engineering Specifics	20	The aim of this module is to guide and support students in the application of general knowledge and understanding of aircraft maintenance quality, task, and safety practices. This module provides an understanding of the importance of detailed knowledge of specific aircraft types – in this case the B737 300 Classic replicated through the aircraft within the Aviation Emulation Zone. Assessment: • Examination
Aviation Maintenance Planning	20	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 maintenance planning and reliability monitoring related to specific engineering tasks. Investigation of specific work practices and systems will implant real working practices on top of EASA regulated training. Assessment: • Portfolio • Individual Presentation

Evaluating and Managing Aviation Engineering Risk Dissertation	40	This module is a dissertation designed specifically to encapsulate final stages of engineer problem solving. Further it is a development of professional skills, bringing together an established body of knowledge and theory and relating these to issues of aviation engineering risk. The module is a research-based opportunity to focus on the expansion and re-interpretation of the concept of 'fit to fly' and 'airworthiness' – to explore issues relating to engineering, maintaining and certifying an aircraft as fit to fly whilst considering and practising the nontechnical skills of more advanced decision-making and judgement. This negotiated dissertation will take into account human and environmental factors affecting task, maintenance activity and flight. The module provides the opportunity to demonstrate explicit evidence of the integration of independent learning, technical knowledge, understanding, skills and professional competencies drawn from engineer training, operational practice, and airline/operator specific requirements. Assessment: • Dissertation (written)
Group Project	20	This module will provide students with the opportunity to develop the application of key management skills relevant to the organisation and operational development of an aircraft maintenance facility. Working within the EASA Part 145 regulated framework students will complete a group project which addresses the key elements required to gain approval for a new aircraft maintenance facility. The module will require students to address the practical application of aviation regulations. In addition, the development and assessment of internal company procedures, Quality Assurance and Management structure in order to demonstrate regulatory compliance will be a key focus of the module. The module will also develop skills related to team working, communication, record keeping and professional responsibility. Assessment: • Group Project Report • Group Presentation • Individual Reflective Report
Safety Systems and Error Management		The aim of this module is to develop an understanding of the critical importance of safety systems in an engineering context. It will identify and evaluate key elements of safety systems and their contribution to error management and mitigation. It will investigate the concepts of responsibility and legislative requirements and will explore the key principles which underpin the application of safety management. This module has been designed to develop students understanding of standard Safety Management

		Systems and Human Factors that impact on the effective delivery of aircraft maintenance practices. Assessment: • Individual Presentation • Case Study

Awards

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

Course Delivery

The full BSc programme will run over 3 years with students attending five days per week, with 120 credits completed each year on a full-time basis. Contact hours for this programme will be significantly higher than many other degree programmes, in order to meet EASA requirements, so that these students successfully passing the EASA examinations can be issued with a Part147 Training Certificate In addition to the timetabled contact hours, students also receive 3 hours of personal tutoring per year.

Aviation students are based at the International Aviation Academy Norwich (IAAN) on Anson Road, Norwich. Where lectures and practical's take place will be dependent on the facilities required; some of the more practical elements of the course will be based in the Emulation Zone at the IAAN. Students also have access to a broad range of facilities and support across the College, regardless of the site they are based at.

Course Assessment

The programme is assessed through a combination, academic assignments, presentations, portfolios, and project work.

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.

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.

Students are likely to incur other costs for books, printing, and other learning materials they may choose to buy, and the cost incurred for printing two copies of their final year dissertation. This should amount to a total of not more than £300 per year.