City College Norwich: HE Office, Quality Improvement
PROGRAMME SPECIFICATION

Form PARV (v.1)

LTC15D012

Title:	**New Course Proposal for City College Norwich**
Author:	Laurence Daly, Senior Partnerships Manager, Partnerships Office
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Issue

A new course proposals from the Royal Marsden School for the 2015/16 academic year.

Recommendation

That the following course be approved in principle and allowed to proceed to validation:

BSc (Hons) Professional Aviation Engineering Practice

Resource Implications

Not applicable.

Risk Implications

Not applicable.

Equality and Diversity

To be considered as part of the course validation process.

Further Information

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Attachments

Appendix 1 - BSc (Hons) Professional Aviation Engineering Practice Programme Specification.

Learning and Teaching Committee
PROGRAMME SPECIFICATION
FOR
AWARDS MADE BY THE UNIVERSITY OF EAST ANGLIA:
VALIDATED PROVISION at CITY COLLEGE NORWICH

This is a proposal for the revalidation of an existing programme — Tick to confirm ☐

Note that Sections 1-6 are designed to comply with the QAA guidelines for the preparation of Programme Specifications.

PROPOSED START DATE : 12th September 2016

SECTION 1: PROPOSING SCHOOL AND PROGRAMME DETAILS

(a) Proposing School: School of Higher Education

(b) Proposed programme Award and Title (including all named Pathways) BSc (Hons) Professional Aviation Engineering Practice

(c) Awarding Body UEA

(d) Teaching institution City College Norwich

(e) Additional details:

				FOR TAUGHT PROGRAMMES REQUIRING ATTENDANCE		FOR ONLINE OR DISTANCE LEARNING		
TOTAL CREDIT VOLUME FOR WHOLE AWARD	FHEQ LEVEL OF FINAL AWARD	MODE(S) OF STUDY	PLANNED DURATION OF PROGRAMME (YEARS)	PLANNED DELIVERY PATTERN (WEEKS PER SEMESTER)	PLANNED DELIVERY HOURS PER WEEK	BRIEF DETAILS OF CONTACT/ SUPPORT FOR STUDENTS	LANGUAGE OF INSTRUCTION (IF NOT ENGLISH)	UCAS CODE
360	6	FT	3	Full year delivery (2 Semesters) i.e. covering Year 1 = 39, Year 2 = 40 & Year 3 = 38 weeks.	38-40 week delivery per year. 'Contact' 30 hours per week (average over 3 years)	Contact via Lectures, workshops and emulation zones		

(f) Will the proposed programme replace an existing programme or programmes? **No**

If **YES**, please state title(s) and programme code(s) of replaced programme(s):	N/A

(g) Exit Awards below final award? YES

If YES, please specify:	HE Certificate of Education HE Diploma of Education

(h) Does the programme include **Work Based Learning/Skills for Work modules** (i.e. as incorporated in Foundation degrees) YES and
Compulsory placement(s) or work-based practice YES

If yes please give details	Practical Engineering Workshops will take place in the Aviation Emulation Zone (AEZ) in the following modules: • Workshop & Aircraft Practices • Electrical Fundamentals • Electronic Fundamentals, Digital Techniques & Aerodynamics • Aircraft Maintenance Quality, Task & Safety Practices Workshops will be opportunities for students to practise skills learned and to demonstrate competence. On completion of the three year programme, students will have completed the EASA 147 and will have also had the opportunity to complete the required maintenance experience required for the EASA 'B' licence.

(i) Will the proposed programme be operated in partnership with any other organisation? **YES**

(i) Give the name of the partner:	KLM UK Engineering
(ii) Briefly describe the nature of the collaborative arrangement/partnership:	KLM UK Engineering delivery staff approved as City College Norwich Associate Lecturers

SECTION 2: RATIONALE FOR AND AIMS OF THE PROGRAMME

2.1) Rationale
(Justify the proposal in terms of its strategic fit with School /college development plans, the College Strategy for the Development of Higher Education, regional and national priorities for addressing knowledge and skills shortages and/ or the specific needs of employers and or potential students. Pay particular attention to the provision of progression opportunities and any articulation agreements or progression accords that this proposal will underpin).

Rationale and origins of proposal

The background to the rationale and origins of this proposal are as follows (as quoted from a document entitled *the Norwich International Aviation Academy, BSc (Hons) Engineering Degree/Higher Apprenticeship, 2014):*

The rationale of the programme is to provide a work based and work related BSc (Hons) Professional Aviation Engineering Practice degree, to be delivered in purpose built premises at Norwich Airport, under the banner 'the Norwich International Aviation Academy' (NIAA).

The programmes aims to provide a joint collaborative work-based programme which targets engineer training to maintain and engineer fixed wing aircraft for commercial airlines and rotorcraft for utility and offshore operations.

City College Norwich (CCN) is the programme provider, with KLM UKE providing the technical work-based delivery expertise.

KLM UK Engineering have worked with the Aviation Skills Partnership (ASP) to adapt ASP's work-based degree framework (evolved from the successful pilot version) to create a customised version to train engineers at the NIAA. ASP have worked with industry and regulators to create work-based degrees and career pathways that map directly towards jobs in the industry. The NIAA project is one of the first of a new wave of projects that the Aviation Skills Partnership are involved in as Aviation Skills Hubs.

The degree provides an integrated work-based academic study and professional training programme. Professional training will cover Civil Aviation Authority/European Aviation Safety Agency (CAA/EASA) requirements, with an opportunity leading optionally to the issue of an EASA A and B Licence (B1 and B2) by the CAA. The BSc (Hons) Professional Aviation Engineering Practice will have generic modules and 3 pathways: EASA licence category B1.1 (Fixed Wing Mechanical), EASA licence category B2 (Avionics) and EASA licence category B1.3 (Rotary Wing Mechanical). Pathways B2 and B1.3 may not be delivered from day one. During the development of this programme the Course Team will make an application to UK Civil Aviation Authority to allow hours spent in the emulation zone during the 3 year programme to be officially counted as the required maintenance experience for a 'B' licence.

The degree will provide Higher Education training for a career in aviation maintenance engineering. The purpose is to fix commercial aircraft. Students will acquire application skills and simultaneously develop aviation engineering understanding, knowledge and critical analysis – leading to ensuring aircraft are fit to fly.

Origins of proposal. Regulations are essential to ensure safety in the aviation industry. Many regulations governing operations and those relating to the aviation footprint are those connected with air cabin crew, pilots, engineering, air traffic, operations and airport operations. Aviation Standards are set by the European Aviation Safety Agency (EASA) of which the Civil Aviation Authority (CAA) is the UK national authority. They are regulations to which companies in the aviation industry must adhere. The standards are the same for all aviation companies.

The CAA does not recognise existing sector qualifications as equivalent to the regulatory requirements and so employees also need to undertake the training stipulated by CAA. This may duplicate training undertaken whilst achieving qualifications. The key issue is around currency of competence in relation to safety skills and the specific workplace context.

Against the international, national and regional background above, there is a need to address the issue in a way that is practical, achievable, affordable and measurable in terms of benefit.

Discussions commenced in various organisations and locations during 2013 in the following main areas:
a) Aviation Skills Partnership (ASP) and KLM UK Engineering around ASP's new workbased Engineering degree based on their successful pilot programme
b) Aviation Skills Partnership (ASP) and KLM UK Engineering around ASP's new Aviation Skills Hub concept
c) KLM UK Engineering and Norwich International Airport around an Aviation Academy

This culminated in the launch of the Norwich International Aviation Academy Plan in September 2013. KLM UK Engineering and Norwich International Airport put together a partner matrix and invited key organisations to support the concept of the Norwich International Aviation Academy.

Aviation Skills Partnership became a formal project partner at this point and have led the discussions around the strands of activity to reach a point where a Business Plan can be considered as viable. These discussions have included separate and joint discussions with partners and stakeholders via a number of structured workshops, meetings and presentations.

City College Norwich and University of East Anglia rapidly became key partners for the core skills requirements. In addition, Aviation Skills Partnership have worked closely with the team to advise on future strategy, qualifications and the role of skills initiatives in supporting the Norwich International Aviation Academy. Each of the partners brings a skill set that combines to offer a unique and seamless partnership between the private and public sector, bringing together a major employer, a University and a Further Education College, working with their skills partner.

Since the early discussions, during Project Phase 1, views have been formulated on the optimum way to achieve the right result and this led to meat being placed on the bones of the September 2013 proposal to create a local Aviation Academy to create:
- local jobs for local people
- national and international jobs for local people
- local opportunities to train national and international people

The discussions led to a proposal, in Phase 2, to create a custom-designed site in a new or existing building on the south-side of Norwich Airport which would focus on aviation skills across the six areas of aviation characterised by the Aviation Skills Partnership, these being:
- pilot
- engineer
- air traffic control
- cabin crew/crew
- airport operations
- operations, planning and crewing

Out of these areas, engineering stands out as the prime area, with other areas offering interesting opportunities as demonstrated later in this plan.

The priorities for the Norwich International Aviation Academy have been selected to address these themes. The main priorities are:

i) Providing trained aviation engineers for local, national and international employment

ii) Ensuring a ready supply of airport operations staff
iii) Allowing local people who aspire to be cabin crew to gain access to jobs locally, nationally and internationally
iv) Improving leadership and management skills
v) Developing the enterprise skills of all ages
vi) Developing the skills to increase innovation and creativity
vii) Ensuring that the skills needs of the regional economy, and in key sectors in particular, are addressed at level 3 and above (including higher education)

The ability to train a pipeline of suitable engineers is critical in ensuring that the KLM UK Engineering workforce has the right skills to support future growth. In addition, capacity will be such that a national and international supply line will be created.

New recruits are not generally employed by airlines during training; they are often required to self-fund their training to the point of achieving a licence and they do not achieve a linked, recognised academic qualification. There are other degree qualifications in the sector but these do not fully integrate the training for the engineer licence with academic study.

The proposal meets regional and national priorities for addressing staff shortage (knowledge and skills) in engineering aviation and/ or the specific needs of employers and or potential students.

KLM UK Engineering, City College Norwich, Aviation Skills Partnership, and UEA have collaborated to provide and deliver this innovative BSc programme.

The degree provides an integrated work-based academic study and professional training programme. Professional training will cover Civil Aviation Authority/European Aviation Safety Agency (CAA/EASA) requirements, with an opportunity leading optionally to the issue of an EASA A and B Licence (B1 and B2) by the CAA. The BSc (Hons) Professional Aviation Engineering Practice will have generic modules and 3 pathways: B1.1 Fixed Wing Mechanical, B2 Avionics, and B1.3 Rotary Wing Mechanical. The 2400 hours of practical experience required for a 'B1' licence certificate will be provided during 3 years of the programme.

The degree will provide Higher Education training for a career in aviation maintenance engineering (fixed wing). The purpose is to fix commercial aircrafts. Students will acquire application skills and simultaneously develop aviation engineering understanding, knowledge and critical analysis – leading to ensuring aircraft are fit to fly.

The target audience is aspiring engineers seeking to enter the aviation profession in order to become engineers, and who also want to achieve a work-based professionally focussed degree level qualification.

In addition to *ab initio* recruits, engineers who are part-way through training or have recently achieved their licence through approved training constitute an important market for the programme. They may wish to enter the programme with standing based on their completed technical and practical training, to study for their Honours level as part of their initial professional development.

The proposed programme fits well with the School /College strategic development plans. Progression opportunities will be enhanced as City College Norwich students from level 3 courses will be provided with the opportunity to apply the programme. In addition application for the programme will be offered nationally.

Structure of programme

The programme structure will cover (i) Level 4 modules provide grounding in engineering aviation fundamentals and regulations; (ii) Levels 5 and 6 modules comprising specialist aviation engineering subjects and regulations. At level 6 a module(s) will include the requirement for students to undertake a major project.

Students who successfully complete the degree can progress into the aviation engineering industry, or even to higher level qualifications. Those who do not obtain an honours degree will have an opportunity to obtain an exit award.

KLM UK Engineering staff will deliver of the programme technical content via a varied teaching and learning approach. Further academic assessment will be overseen by CCN. This part of the programme It will be offered in full time mode, reflecting the current approach to training offered by KLM UK Engineering. All training is carried out on site at KLM UK Engineering in Norwich, including the practical phases in the 'emulation zone'.

The Level 5 and Level 6 modules will be incorporate academic and work-based engineer specific operational courses and operational project-based reflective practice.

Specifically the BSc (Hons) Professional Aviation Engineering Practice will provide the option either to progress directly to employment with a partner airline and *follow a specific pathway* or to be self-sponsored and find their own employment. In the latter scenario students will follow the European Aviation Safety Agency (EASA) syllabus.

Underpinning knowledge is delivered in the 'Ground School' phase. Practice based learning is introduced in the basic skills phase using both workshop and Aviation Emulation Zone®. The application of knowledge is supported in this phase through instructor supervision. The student then progresses to more emulation work on aircraft.'

Either through operational employment with an airline or completion of the course within an approved facility, application of knowledge and skill in the workplace can begin, with the student working in a supported environment, working towards carrying out tasks without supervision.

The programme will be guided by equality and diversity codes as well as the QAA Benchmark Statement, Engineering 2015.

Key information source: *Norwich International Aviation Academy, BSc (Hons) Engineering Degree/Higher Apprenticeship, 2014 or 2015.*

2.2) Aims
(Explain the purpose of the award in terms of the overarching educational and skills development a successful student will achieve, the vocational and or further personal professional development opportunities that may follow and the audience for whom the programme is intended).

Aims of BSc (Hons) Professional Aviation Engineering Practice

- 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.
- 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.

SECTION 3: POINTS OF REFERENCE

3.1) Relevant QAA Subject Benchmarking Statements

Subject Benchmark reference	Coverage in programme:
QAA Benchmark Statement, Engineering 2015 2.1 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. 2.2 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. 2.3 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.	By focusing on the outcome of an engineer who can understand how to apply the academic, practical and management skills necessary to judge the suitability of an aircraft to achieve flight post maintenance and to achieve an ongoing safe condition to a modern high-technology aircraft. To integrate the task planning, completion, work recording and reflective learning for many and varied tasks be they classroom, workshop or aircraft based. By full exposure to the life cycle of an aircraft and its major- and sub-components including the environmental aspects of flight and maintenance. By academic achievement via regulatory modules, the application of numerical reasoning to tasks and to troubleshoot unexpected defects to produce a safe outcome.

3.2) Relevant National Occupational Standards

NOS	Coverage in programme:
Aviation Skills Partnership (ASP) have developed a standards framework based on their own research and	Modules coverage of EASA Units:

development as an extension of the approach and work on the successful Higher Apprenticeship/BSc(Hons) Professional Aviation Engineering Practice. These standards are fully mapped to those covered through European Aviation Safety Agency (EASA) such that graduation from the validated degree based on ASP's framework is a full fit with the regulated outcome of the programme.	Materials, Hardware and Maintenance Practices (EASA Units: 6 Materials Hardware and 7 (Level 4 elements) Workshop/Aircraft Practices (EASA Unit 7: Maintenance Practices) Human Factors & Legislation (EASA Units: 9A Human Factors and 10 Aviation Legislation Aviation Engineering Maths & Physics (EASA Units 1 Maths and 2 Physics) Electrical Fundamentals (EASA Units: 3 Electrical Fundamentals (Level 5 elements) Electronic Fundamentals, Digital Techniques & Aerodynamics (EASA Units: 4 Electronic Fundamentals, 5 Instrumentation Systems & 8 Basic Aerodynamics) (Level 5 elements) B1 - Aeroplanes Aerodynamics, Structures & Systems (EASA Units: 11 Aeroplane Aerodynamics, Structures & Systems) (Level 5 elements) B1 – Engines & Propellers (EASA Unit: 15 Gas Turbine engine and 17 Propeller) (Level 5 elements) B2 – Aircraft Aerodynamics, Structures & Systems (EASA Unit: 13 Aircraft Aerodynamics, Structures & Systems) (Level 5 elements) B2 – Propulsion (EASA Unit: 14 Propulsion System (Avionics) (Level 5 elements) B1.3 – Helicopter Aerodynamics, Structures & Systems (EASA Unit: 12 Helicopter Aerodynamics, Structures & Systems) (Level 5 elements) B1.3 – Engines (EASA Unit: 15 Gas Turbine Engine) (Level 5 elements) Threat and Error Training (EASA Units: 6 Recap and 7 (Level 6 elements))

3.3) Sector Skills Council consultation/involvement

Sector Skills Council	Details of consultation/application of Framework:
Consultation has regularly taken place with Aviation Skills Partnership (ASP) and the programme is based on ASP's approved framework.	ASP developed the framework for the programme. ASP representatives have developed a customised version for use by KLM UK Engineering and have granted limited rights to CCN and KLM UKE to utilise it.

3.4) Accreditation endorsement or consultation by/with Professional Statutory or Regulatory Bodies

PSRB	Details of accreditation endorsement or consultation:
Aviation Skills Partnership (ASP) have taken the responsibility to achieve accreditation of this version of the programme by the Civil Aviation Authority (EASA) and the Royal Aeronautical Society (RAeS) and Institute of Mechanical Engineers (IMechE). This will determine eligibility for Chartered status on graduation.	

3.5) Employer engagement in design, development, delivery, assessment

Employer(s)	Details of consultation/engagement:
KLM Engineering	Regular meetings have taken place between KLM UK Engineering, City College and UEA.

3.6) Programme Manager

Name	Email	Telephone
Fern Jest	Fern.Jest@ccn.ac.uk	01603773439
Lawrence Britt	Lawrence.Britt@ccn.ac.uk	01603773644

SECTION 4: Development of Graduate Skills
(Please see guidance notes)

4.1 Graduate Skills

Use this section to explain how the programme will provide opportunities for students to develop and demonstrate knowledge, understanding, cognitive, subject specific and key transferable skills:

Students will develop knowledge and understanding in/of:		**This will be facilitated/supported by:**
- Mathematics - Physics - Theory of Flight - Engineering Principles - Materials and their properties - Project management - Safety Management - Systems - Aircraft Academic subjects		- Classroom work - Workshop work - Aviation Emulation Zone® work
Students will develop Key and Transferable Skills: Independent thought Critical thinking Team work Leadership Problem solving Communication Presentation Time management Flexibility Innovation Project management Engineering practice		**By:** Working in groups Data analysis Original research Project work Presentations Practical exercises Portfolios Working to deadlines Real work simulations Reflective accounts Personal diaries

***SECTION 5: Programme structures and Modules (Units). Intended Learning Outcomes, Credit Volumes* and Award requirements.**

a) Introductory statement
A general statement about programme structure, including special features such as work placement opportunities or requirements, field trips or residentials etc:

The programme will run over three years and adhere to the conditions of the Norfolk and Regulatory Framework (NRF).

KLM UK Engineering staff will deliver the programme technical content via a varied teaching and learning approach, with emulation of the real world professional practice provided. Academic assessment will be overseen by CCN.

The programme will be offered in full time mode, reflecting the current approach to training offered by KLM UK Engineering. All training is carried out on site at KLM UK Engineering in Norwich, including the practical phases in the 'emulation zone'.

The final module at Level 5 and all of Level 6 will be fully work-based, incorporating engineer specific operational courses and operational project-based reflective practice. Specifically the BSc (Hons) Professional Aviation Engineering Practice will provide the option either to progress directly to employment with a partner airline/ Maintenance, Repair and Overhaul (MRO: an organisation approved to service aircraft and associated components) and follow the Level 6 pathway or to be self-sponsored and find their own employment. In the latter scenario students will follow the European Aviation Safety Agency (EASA) syllabus delivered by KLM UK Engineering in [*collaboration]* with CCN. The research and reflective practice based modules are core to both pathways.

Programme structure will be audited and also delivered with adherence to University, industry and quality assurance process.

Source: Norwich International Aviation Academy, version 3, September 2015

b) Student learning experience
Describe the arrangements for learning and teaching in terms of hours required each week of a "typical" student according to each proposed mode of study. This should include class contact time, tutorial time and assessment time and give an indication of personal study time. If blended learning then specify the nature of the mix of methods to be used and the commitment in time to each:

Because of the combination of academic (lecturer, tutorial and assessment), practice and work-based requirements the programme will run in year one for 39 weeks, in year two 40 weeks and in year three 38 weeks. At the end of each Semester, Assessment Boards will receive results and within the context of the Norfolk Regulatory Framework (NRF) make appropriate decisions.

c)
Insert Structure Diagrams for each variant of the award.

(Please also refer to Appendix 1)

	YEAR 1							
Module No.	**Module Title**	**Level**	**Credits**	**EASA Units**	**Contact**	**Information**	**University & Independent Learning ***	**Total Notional Learning Hours**
6E/M & 7E/M	Materials, Hardware and Maintenance Practices	4	40	6 Materials Hardware	120	11 wks classroom	15	135
				7 (Level 4 elements)	210		15	225
7 Practical	Workshop & Aircraft Practices	4	30	7 Maintenance Practices	360	13 wks w/shop; 3 wks emulation	N/A	360
9 & 10	Human Factors & Legislation	4	20	9A Human Factors	60	4 wks classroom;; 2 wks emulation	40	100
				10 Aviation Legislation	60		40	100
1 & 2	Aviation Engineering Maths & Physics	4	30	1 Maths	90	6 wks classroom;	60	150
				2 Physics	90		60	150
	39 weeks		**120**		**1170**			1220
	YEAR 2							
Module No.	**Module Title**	**Level**	**Credits**	**EASA Units**	**Contact**		**University & Independent Learning ***	**Total Notional Learning Hours**
3	Electrical Fundamentals	5	30	3 Electrical Fundamentals	270	6 wks classroom; 3 wks w/shop;	15	285
4, 5 & 8	Electronic Fundamentals, Digital Techniques & Aerodynamics	5	30	4 Electronic Fundamentals	30	6 wks classroom; 3 wks w/shop; 2 wks emulation	25	55
				5 Instrumentation Systems	120		25	145
				8 Basic Aerodynamics	120		15	135
Option 1 - B1								
11	Aeroplanes Aerodynamics, Structures & Systems	5	30	11 Aeroplane Aerodynamics, Structures & Systems	390	9 wks classroom;; 4 wks emulation	15	405
15 & 17	Engines & Propellers	5	30	15 Gas Turbine engine	120	5 wks classroom; 0 wks w/shop; 2 wks emulation	15	135
				17 Propeller	30		15	45
Option 2 - B2								
13	Aircraft Aerodynamics, Structures & Systems (Avionics)	5	**40**	13 Aircraft Aerodynamics, Structures & Systems (Avionics)	**480**	12 wks classroom;; 4 wks emulation	tbc	tbc
14	Propulsion	5	**20**	14 Propulsion System (Avionics)	**120**	2 wks classroom;; 2 wks emulation	tbc	tbc
Option 3 – B1.3								
12	Helicopter Aircraft Aerodynamics, Structures & Systems	5	**30**	12 Helicopter Aircraft Aerodynamics, Structures & Systems	**420**	10 wks classroom;; 4 wks emulation	tbc	tbc

15	Engines	5	**30**	15 Gas Turbine Engines	**180**	4 wks classroom;;2 wks emulation	tbc	tbc
	40 weeks		**240**		**1200**			
	YEAR 3							
Module No.	**Module Title**	**Level**	**Credits**	**EASA Units**	**Contact**		**University & Independent Learning ***	**Total Notional Learning Hours**
	Aircraft Maintenance Task Orientation **	6	30	N/A	240	2 wks classroom: 6 wks emulation	20	260
	Aircraft Type	6	30	N/A	360	6 wks classroom; 6 wks emulation	10	370
	Threat and Error Management	6	20	N/A	240	2 wks classroom;; 6 wks emulation		240
	Aircraft Maintenance Quality, Task & Safety Practices	6	40	N/A	300	2 wks classroom; 2 wks w/shop; 6 wks emulation	40	340
	38 weeks		**360**		**1140**	**B Licence**		0

Notes

i) tbc = to be confirmed

ii) All modules will include academic content to the appropriate standard and credit value.

iii) * Notional University and Independent Learning hours have been included to demonstrate the broad equivalence of each module in HE terms: ...they are not precise reflections of the level of independent learning undertaken by students which will vary according to ability and inclination

iv) ** Module include Honours Level orientation e.g. project and research skills

v) European Aviation Safety Agency: https://www.easa.europa.eu/

(Structure diagrams may, alternatively, be attached as Appendices, with a note here to that effect) **d) Applicable regulations for Awards and Classifications**

This programme will operate without exception under the regulations for classification, assessment and quality assurance as set down in the currently approved version of the Norfolk Regulatory Framework.

e) Module details: List all modules to be offered within the programme

Note re Status: A module may be Compulsory (C), Designated (D) or Optional (O) (refer to NRF 1.4.1 for guidance)

i) LEVEL 4 Modules

Module Title	Credit value	Brief description	Principal assessment methods	Status
Materials, Hardware and Maintenance Practices	40	Materials Hardware	Exam and assignment	Level 4
Workshop & Aircraft Practices	30	Process in aircraft practice	Exam and assignment	Level 4
Human Factors & Legislation	20	Human factors	Exam and assignment	Level 4
Aviation Engineering Maths and Physics	30	Maths, Physics, Workshops	Exam and assignment	Level 4

ii) LEVEL 5 Modules

Year two - Pathway B1 (Fixed Wing Mechanical)

Module Title	Credit value	Brief description	Principal assessment methods	Status
Electrical Fundamentals	30	Electrical Fundamentals	Exam and assignment	Level 5
Electronic Fundamentals & Digital Techniques	30	Electrical Fundamentals	Exam and assignment	Level 5
Aeroplanes Aerodynamics, Structures & Systems	40	Basic Aerodynamics,	Exam and assignment	Level 5
Propulsion	20	Gas Turbine engine, Propeller	Exam and assignment	Level 5

Year two - Pathway B2 (Avionics)

Module Title	Credit value	Brief description	Principal assessment methods	Status
Electrical Fundamentals	30	Electrical Fundamentals	Exam and assignment	Level 5
Electronic Fundamentals & Digital Techniques	30	Electrical Fundamentals	Exam and assignment	Level 5
Aeroplanes Aerodynamics, Structures & Systems	40	Fundamental Aerodynamics	Exam and assignment	Level 5
Propulsion	20	Gas Turbine engine, Propeller	Exam and assignment	Level 5

Year two - Pathway B1.3 (Rotary wing Mechanical)

Module Title	Credit value	Brief description	Principal assessment methods	Status
Electrical Fundamentals	30	Electrical Fundamentals	Exam and assignment	Level 5
Electronic Fundamentals & Digital Techniques	30	Electrical Fundamentals	Exam and assignment	Level 5
Helicopter Aerodynamics, Structures & Systems	30	Fundamental Helicopter Aerodynamics	Exam and assignment	Level 5
Engines	30	Rotary Engines	Exam and assignment	Level 5

iii) LEVEL 6 Modules

Module Title	Credit value	Brief description	Principal assessment methods	Status
Aircraft Maintenance and Task Orientation	30	Specific engineer training module built by KLM UKE or client MRO/Airline around specific work practices and systems designed to 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	Exam	Level 6
Aircraft Type	30	Approved type course to allow the engineer to be knowledgeable on the aircraft type – in this case the A320 in the Aviation Emulation Zone	Exam	Level 6
Threat and Error Management	20	Include company standard Safety Management and Human Factors course	Exam	Level 6
Aircraft Maintenance Quality, Task & Safety Practices	40	Specific module to encapsulate final stages of engineer authorization to carry out tasks on KLM UKE or specific customer aircraft	Project	Level 6

SECTION 6: STRATEGY, MARKET DEMAND AND ADMISSIONS
(for all new programme proposals)

6.1 Academic Strategy

a)	*Give brief details of consultation with UEA Academic Link to date (name, date(s) brief summary of discussion points)* UEA Academic Link to be confirmed. For example, discussion taken place on 8.10.15 covered the final year project. The Course Team will ensure this aspect is covered in the final year.
b)	*Does the programme contain any overlap of material with existing programmes at either CCN or UEA? If so, please give details, naming the School concerned, identifying the programme code and title, and summarising the outcome of prior consultations with that School(s) on the overlap issue.* *There is no overlap of materials on existing programmes.*

6.2 Evidence of Market Demand

a)	*Are identical or similar programmes offered elsewhere in the UK? If so, give brief details (Award title and location) explain why you can be confident of demand to support this proposal.* The proposal recognises the present situation in the International Skills Environment. There is a worldwide shortage of skilled people in the aviation (operating sector). The International Civil Aviation Organisation (ICAO) – part of the United Nations – has set up a task force – the Next Generation of Aviation Professionals (NGAP) to coordinate activity. The Royal Aeronautical Society (RAeS) has the international links for the UK and the new Education & Skills Committee has been established to provide the 'engine' in the UK. The UK has, in the past, been the traditional source of recruitment for international organisations and in recent times, this has resulted in a drain of resources that has not been replaced. This has led to UK and international organisations recruiting from a decreasing pool. The proposal also recognises the present situation in National Skills Environment. 'The UK has the number one aerospace industry in Europe, and globally is number 2 behind the USA. We have key strengths in some of the most complex parts of aircraft. The sector supports 230,000 jobs; has an annual turnover of around £24billion of which over 70% is exported. The sector offers huge growth opportunities; for example, between now and 2030 some 27,000 new large passenger aircraft are required, worth almost $4trillion; and in the same period some 40,000 new civil helicopters worth $165billion are needed. Whilst the focus is often on order books and new aircraft, the role of the people that operate the aircraft is often misunderstood and the routes into the industry are very unclear. The classic positions within the operating industry include pilots, cabin crew, engineering, airport and air traffic control. The target audience is aspiring engineers seeking to enter the aviation profession in order to become engineers, and who also want to achieve a work-based professionally focussed degree level qualification through part-time study. In addition to *ab initio* recruits, engineers who are part-way through training or have recently achieved their licence through approved training constitute an important market for the programme. They may wish to enter the programme with advanced standing based on their completed technical and practical training, to study for their Honours level as part of their initial

	professional development'. Level 3 students from City college Norwich will be expected to apply for this programme. *With reference to competitors, Kingston University offers a BSc programme in Aircraft Engineering*, delivered in Kingston and Norwich. However this model of delivery is different and not aligned to the needs of industry*, for example it does not integrate the study with the context of engineer training. The BSc offered at the UEA (City College Norwich) is located nearly 120 miles away from Kingston and has a different local catchment area and student progression from level 3 programmes.* Source of information: Norwich International Aviation Academy, BSc (Hons) Engineering Degree/Higher Apprenticeship, 2014.
b)	*What are the career/employment opportunities for students successfully completing the programme?* *Aviation engineering employment (or related area)*
c)	*What are the educational progression opportunities for students successfully completing the programme?* • *Masters (e.g. Cranfield University, MSc. Aircraft Engineering)* • *M.Phil. (e.g. Manchester University, Aerospace Engineering)* • *PhD (e.g. Manchester University and University of Bristol)*

6.3 Admissions

a)	*Admissions Criteria: give full details:*	
	Minimum UCAS points *Normal offer UCAS points*	*240*
	Level 3 qualifications acceptable (give any special terms or conditions)	Equivalent to 240 UCAS points
	GCSE English or equivalent mandatory? *GCSE Maths or equivalent mandatory?*	NO YES
	Must an applicant be employed to be considered for this programme? If so give details and minimum expectations	No
	Mature student entrance criteria: details	Mature students with a relevant industrial background may also be considered subject to interview.
	Progression accords: Are holders of any qualifications guaranteed acceptance or are any other applicants given any kind of preferential consideration	No
b)	*Will applications be received via UCAS?:*	Yes
c)	*If b) = YES give UCAS Code :*	To be announced

NB. KLM UK Engineering and CCN will provide the final entry decision on the programme

Please note:
This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the study module guide and programme handbook. The accuracy of the information contained in this document is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Section 7: Technical Appendix

T1. RESOURCE REQUIREMENTS
Please identify all new resources required to operate the programme over and above those which are required to support the present programme.
If no additional resource requirements are identified please tick to confirm;

NO ADDITIONAL RESOURCES ARE REQUIRED TO SUPPORT THE ONGOING DELIVERY OF THIS PROGRAMME ☐ Now proceed directly to T2

If new and/or additional resources are required complete the table below:

(a) Will additional resources be required from central college funds or from a school or other budget earmarked for the purpose?

Central College funds. Yes – initial set up required ☐
Budget allocated. To be confirmed ☐

(b) **ACCOMMODATION AND SPACE**: include general and specialist accommodation requirements and any refurbishment required.

Initially it is planned to utilise rooms at KLM UK Engineering and City College Norwich prior move to new £10 million building complemented by the availability of new classrooms, workshops and the aircraft in the Aviation Emulation Zone. Please refer to the visual representations in Appendix 2.

Students have full access to CCN and KLM UK Engineering libraries. A number of general and aircraft engineering specific publications related to the course are available in hard copy or electronic formats. Staff and students also have access to the e-book library facility. Student will also be able to have access to CCN Library resources (including online).

(c) **EQUIPMENT**: include all new expenditure and estimate cost.

Initially it is planned to utilise equipment at KLM UK Engineering and City College Norwich prior to the move to new building complemented by the availability of new classrooms, workshops and the aircraft in the Aviation Emulation Zone.

The interim practical workshop environment consists of an electrical workshop, a practical hand skills workshop, an advanced skin repair training area and a small refectory area. These resources will be added in the new centre.

The practical hand skills workshop houses work benches, each capable of accommodating students. The area's equipment includes bench mounted vice (one per student), guillotine, bending machine, 2 x pillar drills and a comprehensive tool and consumables store. Additional training resources include 2 x Gas turbine engines, a power transfer gearbox and numerous hand skill activity boards used for a variety of differing aircraft fasteners, locking devices and locking methods. These resources will be added in the new centre.

The Electrical workshop houses work benches sufficient for a maximum of 14 students. The workshop's equipment includes bench power supplies, a variety of analogue and digital multimeters, oscilloscopes, signal generator and various activity boards. Tooling is provided by individual student tool kits as well as a comprehensive Electrical Wiring Installation System tool kit. These resources will be added in the new centre.

The Advance Skin Repair area houses 2 x aircraft wing sections, individual student tool kits, guillotine and bending machine. These resources will be added in the new centre.

KLM UK Engineering buildings, house a full-sized aircraft fuselage along with necessary tooling and ground support equipment to allow for emulation of an aircraft maintenance environment. In addition and within the course curriculum, students are programmed to work within KLMUK's Maintenance Repair facilities, where they carry out supervised tasks on 'Live' aircraft and associated components. These resources will be added in the new centre.

Students are provided with access to computer suites to allow them to use online resources to assist them in their studies. Additionally, laptop PC's are available for in-class activities. Wi-Fi is available throughout the main college buildings and workshop areas. These resources will be added in the new centre.

(d) **CONSUMABLES**: estimate total annual cost of all consumables required, including photocopying.

(d) **LIBRARY AND LEARNING SUPPORT MATERIALS**: Identify Essential Start Up and Essential Annual maintenance expenditure on: books, journals, on-line services, other media

ESSENTIAL START UP: ITEMS	AS ABOVE
ESSENTIAL ANNUAL MAINTENANCE ITEMS	AS PER NEW AVIATION CENTRE PLAN

(e) **IT REQUIREMENTS**: identify additional requirements for:

HARDWARE: ITEMS	AS PER NEW AVIATION CENTRE PLAN
SOFTWARE: ITEMS	AS PER NEW AVIATION CENTRE PLAN

(f) **TEACHING STAFF**: ADDITIONAL STAFFING RESOURCE REQUIRED: STAFF FROM KLM UK ENGINEERING AND CCN

(g) **TEACHING STAFF**: STAFF DEVELOPMENT OR PROFESSIONAL UPDATING REQUIRED - STAFF FROM KLM UK ENGINEERING AND CCN WILL BE INVOLVED IN STANDARDISATION DEVELOPMENT

(h) **OTHER RESOURCE REQUIREMENTS** not identified in (a) to (g): N/A

T2 Performance targets

T2a) Enrolment & In-year Retention Targets:

	Yr1	Ret %	Yr2	Ret%	Yr 3	Ret%
First year of operation	80	95	76	95	72	100
Subsequent years:						

In-Year Retention %: Students 'Live' at each Year end/Students enrolled during year x 100

T2b) Enrolment targets
Minimum viable annual intake (FTEs)

Maximum viable annual intake (FTEs)

T2c) Target Retention, Achievement and Success Rates

	Started Programme* (a)	'Live' at end of completion Year (b)	Nº. Achieving Award (c)	Overall retention % (X)	Achievement rate (Y)	Success rate % (Z)
First year of operation :	80	72	72	90	100	90
Subsequent years:						

*Started programme = those who originally enrolled in year 1 + transfers in and later starts

Overall Retention 'x' = b / (a - transfers out) x 100
Achievement Rate 'Y' = c / b x 100
Success Rate 'Z' = c /(a - transfers out) x 100

T3 Fees and Resources

T3a) Tuition Fees

Please specify whether the income to be generated by the programme is to be from:

		Tick one:
i)	*tuition fees plus any HEFCE recurrent grant for teaching that the student numbers may generate?*	√ *Home fees and International student fees (set to cover costs)*
ii)	*some other source*	

T3b) New Modules

Does the programme require the validation of new modules (i.e. modules which are not listed on the current CCN module catalogue)?	*YES*

*If YES, please list the titles, level and credit value of the proposed **new modules**:*

T3c) Modules to be validated and added to the CCN module Catalogue:

i) LEVEL 4 Modules

Module Title	Level 4	**Credit value**
Materials, Hardware and Maintenance Practices	4	40
Workshop & Aircraft Practices	4	30
Human Factors & Legislation	4	20
Aviation Engineering Maths and Physics	4	30

ii) LEVEL 5 Modules

Year two - Pathway B1 (Fixed Wing Mechanical)		
Module Title	**Level**	**Credits**
Electrical Fundamentals	5	30
Electronic Fundamentals & Digital Techniques	5	30
Aeroplanes Aerodynamics, Structures & Systems	5	30
Engines and Propellers	5	30
		120

Year two - Pathway B2 (Avionics)		
Module Title	**Level**	**Credits**
Electrical Fundamentals	5	30
Electronic Fundamentals & Digital Techniques	5	30
Aeroplanes Aerodynamics, Structures & Systems	5	40
Propulsion	5	20
		120

Year two - Pathway B1.3 (Rotary wing Mechanical)		
Module Title	**Level**	**Credits**
Electrical Fundamentals	5	30
Electronic Fundamentals & Digital Techniques	5	30
Helicopter Aerodynamics, Structures & Systems	5	30
Engines	5	30

iii) LEVEL 6 Modules

Module Title	Level 6	Credit value
Aircraft Maintenance and Task Orientation	6	30
Aircraft Type	6	30
Threat and Error Management	6	20
Aircraft Maintenance Quality, Task & Safety Practices	6	40

T3d) Student Support Services

Please give detail of other resources and support services to be provided for students on this programme e.g. :

i) Financial support, advice and guidance	As for current programmes
ii) Teaching accommodation	College and KLM UK Engineering
iii) Careers	As for current programmes
iv) Counselling	As for current programmes

T4 REGULATORY FRAMEWORK FOR PROGRAMMES

T4a) See 5.d)

T4b) Board of Examiners

i)	Is a new Board of Examiners to be responsible for the programme(s)/programme **No**
ii)	If NO, please specify which Board of Examiners will be responsible for the programme(s)/programme: **Existing MAB (Linked to HND Engineering) and CCN Awards Board (within NRF framework)**
iii)	Is (are) any additional external examiner(s) required? **Yes**
iv)	If iii) = YES, how many? One to be identified. Have they been: Identified Approved Appointed

SECTION 8: SIGNATURE SHEET

Please ensure that all Sections completed before submission to the HE Office which will check the document for accuracy and sufficiency before presentation to CCN HELTC and then to the UEA Partnerships Office.

1) Date of approval of programme specification by CCN Academic Management Board

Date	Name: Signed for AMB:

2) Joint Board of Study approval:

Date	Name: Signed for JBoS:

For CCN:

3) Signature of Principal or Deputy Principal:

Date	Name: Signed:

4) Chair of HELTC:

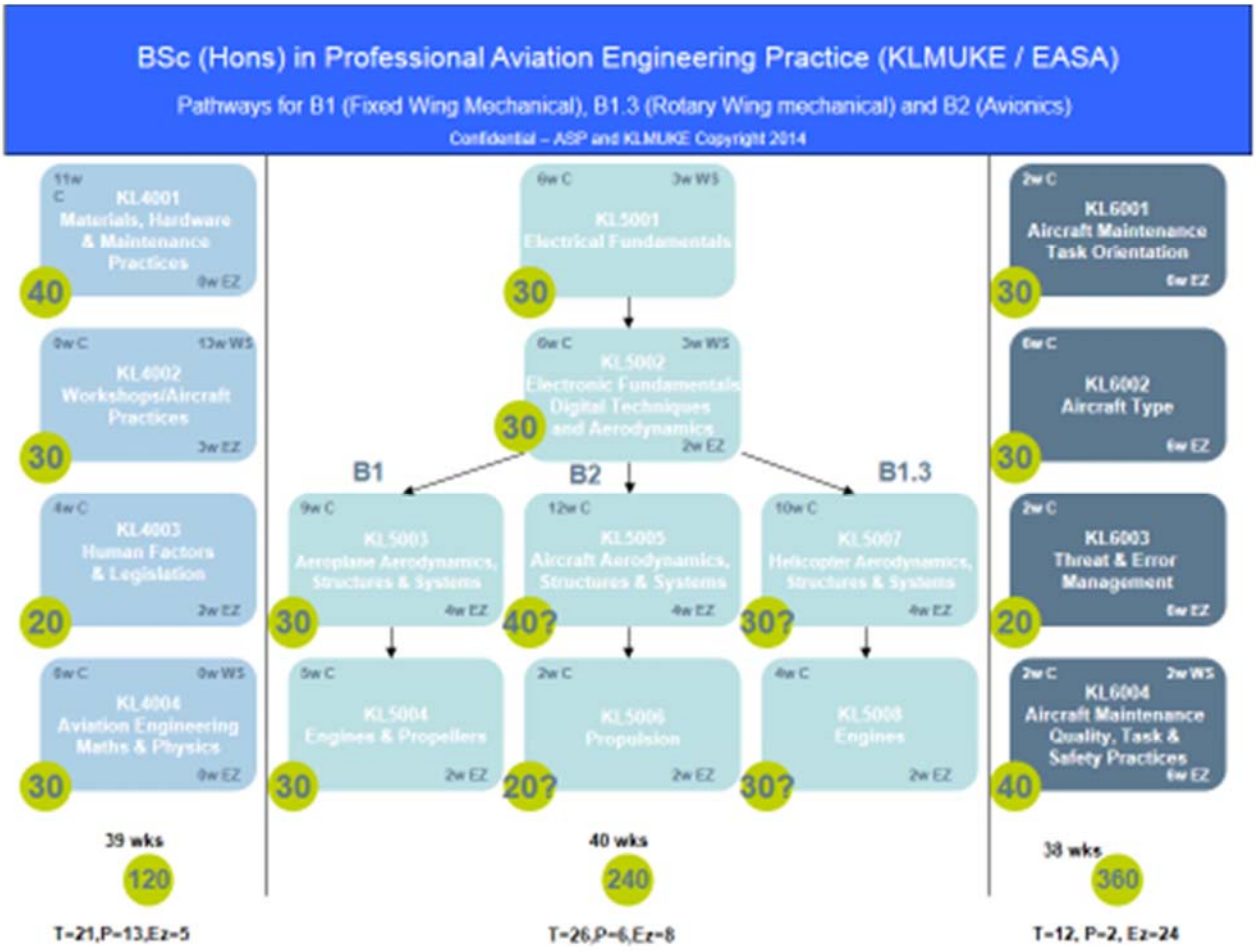
Date	Name: Signed:

After signatures in 1 -4 have been obtained, please forward this form to the Partnerships Office.

5) UEA Learning and Teaching Committee Approval:

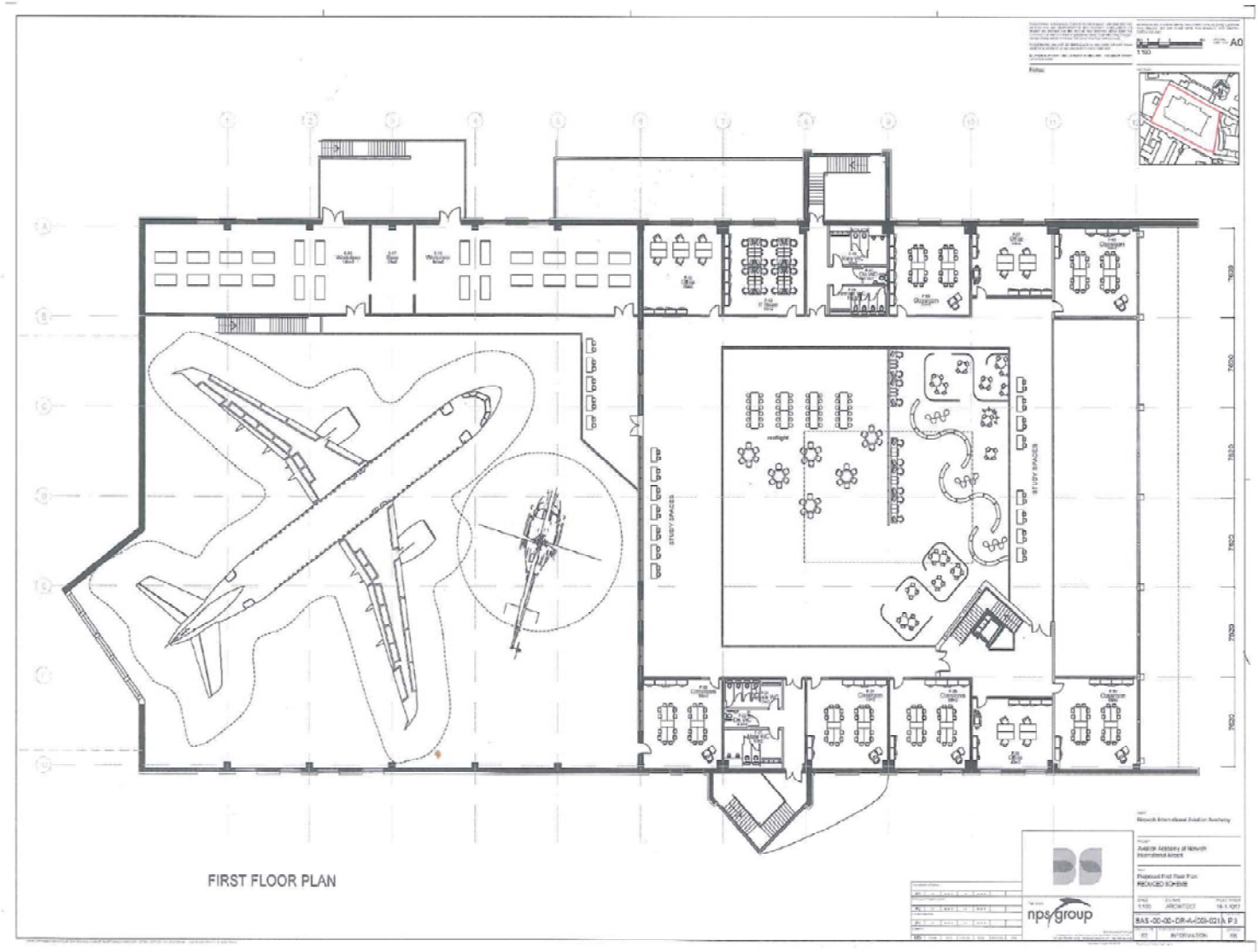
Date	Name: Signed:

Appendix 1


BSc (Hons) in Professional Aviation Engineering Practice (KLMUKE / EASA)
Pathways for B1 (Fixed Wing Mechanical), B1.3 (Rotary Wing mechanical) and B2 (Avionics)
Confidential – ASP and KLMUKE Copyright 2014
KL4001 Materials, Hardware & Maintenance Practices
KL4002 Workshops/Aircraft Practices
KL4003 Human Factors & Legislation
KL4004 Aviation Engineering Maths & Physics
39 wks
120
T=21,P=13,Ez=5
KL5001 Electrical Fundamentals
KL5002 Electronic Fundamentals Digital Techniques and Aerodynamics
B1
B2
B1.3
KL5003 Aeroplane Aerodynamics, Structures & Systems
KL5005 Aircraft Aerodynamics, Structures & Systems
KL5007 Helicopter Aerodynamics, Structures & Systems
KL5004 Engines & Propellers
KL5006 Propulsion
KL5008 Engines
40 wks
240
T=26,P=6,Ez=8
KL6001 Aircraft Maintenance Task Orientation
KL6002 Aircraft Type
KL6003 Threat & Error Management
KL6004 Aircraft Maintenance Quality, Task & Safety Practices
38 wks
360
T=12, P=2, Ez=24

Appendix 2.

External images of new building


FIRST FLOOR PLAN
nps group