Template C4

Kingston University London

Programme Specification

Title of Course: *BEng (Hons) Aviation Engineering top-up*

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Version number	2
Faculty	Faculty of Engineering, Computing and the Environment
School	School of Engineering
Department	Department of Aerospace and Aircraft Engineering
Delivery Institution	Cardiff and Vale College

This Programme Specification is designed for prospective students, current students, academic staff and employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes and content of each modules can be found in the course VLE site and in individual Module Descriptors.

SECTION 1: GENERAL INFORMATION

Award(s) and Title(s): *Up to 10 pathways*	BEng (Hons) Aviation Engineering top-up
Intermediate Awards(s) and Title(s): *There are 4 Intermediate awards for each pathway*	
Course Code *For each pathway and mode of delivery*	
UCAS code *For each pathway*	

RQF Level for the Final Award:	
Awarding Institution:	Kingston University
Teaching Institution:	Cardiff and Vale College
Location:	International Centre for Aerospace Training, Cardiff and Vale College
Language of Delivery:	English
Modes of Delivery:	Full-time
Available as:	Full field
Minimum period of registration:	Full-time - 1 year
Maximum period of registration:	Full-time - 2 years
Entry Requirements:	n/a
Programme Accredited by:	Accreditation will be sought from the Royal Aeronautical Society which already accredits the BEng(Hons) Aviation Engineering delivered at Kingston
QAA Subject Benchmark Statements:	Engineering
Approved Variants:	There are no variants to the Undergraduate Modular Scheme (UMS)
Is this Higher or Degree Apprenticeship course?	

For Higher or Degree Apprenticeship proposals only	
Higher or Degree Apprenticeship standard:	n/a

Recruitment, Selection and Admission process:	n/a
End Point Assessment Organisation(s):	n/a

SECTION 2: THE COURSE

A. Aims of the Course

This programme is only available for direct entry from the HND Aerospace Engineering at CAVC or an equivalent programme.

Aims of the Course
The general aims of the course are:

- To equip graduates with the engineering, design, management, business and general skills required to become aviation professionals, as well as enabling them to follow careers in related professional disciplines.

- To aligns with the current edition of the UK Standard for Professional Engineering Competence (UK-SPEC) and to meet the academic requirements for Incorporated Engineering (IEng) Membership of the Royal Aeronautical Society (RAes) by ensuring that the course is accredited by that body.

More specific aims of the course are:

- Produce aviation graduates who are equipped with the technical knowledge, understanding and skills; and behaviours required to be competent in the job roles within the aviation sector.

- To prepare graduates with an ability to solve design problems and the technical skills needed to realise these solutions in the fields of aircraft operation and maintenance.

- To equip students with a broader set of professional skills and attitudes that will enable them to manage their own continuous professional development when they leave the university; and to encourage them to be life-long learners.

- Provide students with the requisite skills and knowledge to progress to higher level study and work towards becoming aviation managers of the future.
- To furnish graduates with a firm grasp of sustainability, ethics, risks, legal obligations and economics.

B. Intended Learning Outcomes

The course outcomes are referenced to the relevant QAA subject benchmarks and the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014) And relate to the typical student. The course provides opportunities for students to develop and demonstrate knowledge and understanding specific to the subject, key skills and graduate attributes in the following areas:

The programme learning outcomes are the high-level learning outcomes that will have been achieved by all students receiving this award. They must align to the levels set out in the 'Sector Recognised Standards in England' (OFS 2022).

	Programme Learning Outcomes					
	Knowledge and Understanding On completion of the course students will be able to:		**Intellectual Skills** On completion of the course students will be able to		**Subject Practical Skills** On completion of the course students will be able to
A1	Apply their knowledge and understanding of essential facts, concepts, theories and principles associated with aviation engineering and the underpinning mathematics and science.	B1	Recognise, evaluate and analyse problems; identify and investigate possible solutions and make sound decisions regarding the solution to adopt and/or the course of action to be taken.	C1	Apply aircraft engineering principles to design and implement operational procedures and solve logistical problems through the use of engineering analysis
A2	Demonstrate a knowledge and understanding of aircraft maintenance operations and project planning.	B2	Locate, collect, collate, interpret and critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), and use it to make judgements, and to frame appropriate questions to help achieve a solution.	C2	Use workshop and laboratory equipment safely for manufacture and experimental investigation
A3	Demonstrate a clear understanding of the legal obligations pertaining to aircraft engineers, the rules and regulations under which they must work and the need to always consider aviation safety.	B3	Communicate clearly and succinctly orally, graphically and in writing having due regard for the receiving audience and intellectual property rights.	C3	Apply numerical and statistical methods to operational and commercial data to improve safety, procedures and gain a commercial advantage in the aviation industry and the wider transport sector.
A4	Demonstrate understanding of the economical, ethical and sustainability challenges facing aviation and recognise the wider benefit of aviation to developing economies.	B4	Manage their own personal and professional development by identifying gaps and/or shortfalls in their knowledge, understanding and skills and taking the necessary action to rectify it.	C4	Use a range of office, engineering and aircraft industry related IT equipment and software confidently and effectively.
A5	Apply business methods to assess the economic and financial aspects of air transport and/or engineering projects.			C5	Work independently or as part of a team to initiate, investigate, plan, manage and drive projects to a successful conclusion and produce the associated documentation

					(proposals, plans, reports, presentations).

In addition to the programme learning outcomes, the programme of study defined in this programme specification will allow students to develop the following range of Graduate Attributes:
1. Creative Problem Solving
2. Digital Competency
3. Enterprise
4. Questioning Mindset
5. Adaptability
6. Empathy
7. Collaboration
8. Resilience
9. Self-Awareness

C. Outline Programme Structure

The course structure diagram is shown in figure 1. Each level is made up of four modules each worth 30 credit points. Typically, a student must complete 120 credits at each level. All students will be provided with the University regulations and specific additions that are sometimes required for accreditation by outside bodies (e.g., professional or statutory bodies that confer professional accreditation). Full details of each module will be provided in module descriptors and student module guides.

The programme is operated in accordance with the KU Undergraduate Regulations and modules are compulsory; there are no optional modules available. All students must complete 120 credits worth of modules at each Level to progress to the next Level. To be awarded a BEng (Hons) Aviation Engineering degree, students must pass all 360 credits. A student is eligible for the award of an unclassified bachelor degree if they successfully complete 300 credits of the programme.

BEng (Hons) Aviation Engineering top-up

Progression to Level 5

Progression to Level 5 requires completion of 120 credits worth of modules at Level 4. Students exiting the programme at this point who have successfully completed 120 credits are eligible for the award of Certificate of Higher Education (CertHe)

Progression to Level 6

Progression to Level 6 requires completion of 120 credits worth of modules at Level 5. Students exiting the programme at this point who have successfully completed 120 credits are eligible for the award of Diploma of Higher Education (DipHE).

Level 6

BEng (Hons) Aviation Engineering top-up							
Core modules	Module code	Credit Value	Level	Teaching Block	Pre-requisites	Full Time	Part Time
Aerospace Technology	AE6204	30	6	TY13		1	
Air Transport Economics	AE6601	30	6	TY13		1	
Aircraft Maintenance Operations	AE6201	30	6	TY13		1	
Individual Project – I (Ref: IEng)	EG6017	30	6	TY13		1	
Optional Modules							

Level 6 requires the completion of

120 credits worth of modules at Level 5.

Level 7 information

N/A

D. Principles of Teaching, Learning and Assessment

The BEng course in Aviation has been designed, taking into account the Kingston University Curriculum Design Principles, to help develop students into graduates that are professional, thoughtful, creative, resilient, proactive and globally aware independent, equipping them to be lifelong learners. The programme as delivered at CAVC only includes the final year because the skills developed in Levels 4 and 5 are delivered through the CAVC HND in Aerospace Engineering which enables them to enter the final year of the programme.

Development of Independent learning through the course
At level 6 students will be expected to take greater ownership of their independent study with academics taking on more of a supervisory role of student independent study, this is exemplified in the individual and **EG6017 Individual Project** and the Project-Based group work of **AE6201 Aircraft Maintenance Operations.**
Module guides set out clear expectations for guided independent learning. Students will be directed to reading and Technology Enhanced Learning (TEL) packages to prepare for individual topics or sessions and also to problem sets or exercises to consolidate and test their learning afterwards. The Virtual Learning Environment (VLE) will support learning throughout the course through a variety of TEL objects such videos, screencasts, on-line MCQs, discussion boards and interactive teaching packages. It will also deliver teaching material such as lecture notes/presentations, problems sets and worked examples.

At level 6, students will consolidate their group working skills in **AE6201 Aircraft Maintenance Operations** when undertaking a group design project in their own engineering discipline, using the team working skills learned in earlier years.

Focus on active learning and enhancing student engagement

A feature of the learning, teaching and assessment strategy in the School of Engineering is that many instructional lectures have been replaced by collaborative, problem solving or enquiry-based learning workshops and tutorials. These require students to prepare for,and participate in, the classroom activities, rather than passively listening to the lecturer. Students are expected to engage with the guided learning to prepare for these teaching sessions and consolidate their learning after the session. These interactive sessions also provide students with opportunities for peer learning, group work and presentation practice. In these sessions the lecturer facilitates learning by supporting students in creating their own knowledge and understanding. Lecturers may also introduce and summarize key concepts with short mini-lectures. Project based Learning (PBjL) is developed further in **EG6201**. These collaborative activities encourage students to draw on their own set of experiences and cultural backgrounds when tackling real world challenges. The Flipped classroom approach is **AE6204 Aerospace Technology**.

Active and collaborative learning is also incorporated in traditional lectures which may have question-and-answer sessions, brief student discussions, clicker activities integrated into the lecture. These methods ensure that valuable contact time is focussed on the application and critical analysis of knowledge and the development of key skills such as problem-solving, communication, and group-work.

The high percentage use of active learning sessions in the teaching hours is aimed at improving student engagement, creativity, confidence and self-reliance. The course endeavours to further secure student engagement by making students feel part of a community and increasing their sense of belonging which is supports to improve retention and progression. This is achieved by providing opportunities to interact with staff and students both socially and academically. In addition, to the active learning sessions and group work, this is achieved through: the PT scheme, field work, industrial visits, extra-curricular seminars, research internships, course representative system, student ambassador work, peer mentoring, PAL civic engagement and outreach opportunities.

Developments of employability skills

Since students are entering the programme at Level 6, they will already have developed a significant range of skills.

At level 6, in the **EG6017 Individual Project** module, students will be taught how to synthesise and critical review information from a variety of sources and report this and their research results in a formal research report and an oral presentation.

To complement the development of employability skills within the curriculum, Personal tutors will encourage students to engage in a range of extra-curricular activities such as student representation, part-time work, sports and recreation, society membership, volunteering; student ambassadorship, leadership and mentoring; cultural and creative activities; academic and professional collaboration; placement activity; enterprise activity; Careers and Employability Service events and opportunities.

In **EG6201 Aircraft Maintenance Operations** , a major group project is embedded within the module. This encourages students to consider the broader business context in their project work.

Hands-on Practical work
Hands-on practical experience in workshops and laboratories is fundamental in developing practical skills as well as enhancing data collection and analysis skills. This is done as part of the HND programme. At level 6 students and expected to select and apply requisite practical skills in their own independent research work in **EG6017 the Individual project** module.

Research Informed Teaching
The majority of the course team are either engineering research active or are involved in industry related professional activities, through KTPs or other direct involvement with industry. These activities played a major part in informing the course design and content, as did the direct input from industry through the activities of the Industrial Advisory Board.
Most of the teaching staff are also actively involved in the various Research Centres and/or Research Groups of the Faculty or may be following interest areas of their own. These activities take them into, amongst other areas, materials research both coatings and compound, fire and explosion research both cause and prevention, dynamics and control research and on through sustainable power generation to electric vehicle technology with the particular success of the zero emissions electric motorbike. The modules at level 6 are mainly taught and managed by academic staff, who are engaged in research in areas such as materials, aerodynamics, aero elasticity, control engineering and structural analysis. Students are encouraged to develop their own research skills which are a fundamental part of the curriculum throughout all levels of the programme. They are often encouraged, through project work, to work with research active staff on elements of live projects, and these research skills enable students to determine, distinguish and present appropriate evidence in an argument, which is of great value to employers.
Academic staff are also engaged widely with the research and development of ideas in teaching and learning in Higher Education and into wider pedagogic issues which will then feed through to support learning in lectures and other forms of student engagement the programme, both formal and extra-curricular. As parts of pedagogic research computing resources in fundamental subjects such as Maths and Mechanics/Physics have been developed and been embedded into VLE system. The use of an Electronic Voting System in the class room for summative and formative assessments is another example of pedagogic research undertaken by the teaching staff. This reflective, evidence-based professional practice by academic staff serves as exemplar to students in their future professional practice

Assessment for Learning
The assessment strategy has been designed help students to learn and prepare them for employment, rather than just a tool to measure their learning. The assessment is designed to be authentic, inclusive and transparent. The assessment tasks focus on the real world-engineering activities that enhance students' employability. For example, the **AE6201 Aircraft Maintenance Operations** module provides students opportunities to work on a collaborative group work based on a virtual industrial environment in which they have to develop a realistic and cost effective maintenance solution for an airline operation. Students will develop the ability to solve open-ended problems with real-world constraints and airline regulatory requirements. All modules have explicit formative assessments to provide opportunities for practice and the chance to use 'feed-forward' to help students

improve their work in subsequent summative assessments (give examples- module codes). Examinations are still used as they are an effective way of assessing basic knowledge and understanding, and professional bodies expect to see examination covering key curriculum content. However, the strategy recognises that other assessment methods are better suited to assessing higher level problem-solving skills. This is reflected in the limited use of examination in only two modules at level 6. The use of a well-balanced range of assessment methods is a key part to of our inclusive assessment strategy. Group and teamwork assessment is instrumental in developing and recognising this important employability skill.

Engineering curriculum

Level 6 of the programme continues the aviation theme but it emphasises the development of self-management, independent learning, professional skills, and deep understanding of knowledge required in aviation engineering.

In the **AE6201 Aircraft Maintenance Operations** module students are taught about maintenance logistics, maintenance cost drivers and the key aspects of project planning before engaging in a group project based in this field and drawing on knowledge and experience gained previously. It will consist of substantial Project-Based Learning (PjBL) driven by the students with supervisor/facilitators encourage professionalism and leadership in a group activity support. It provides students with an understanding of the process of project planning and an opportunity to put theory into practice in a virtual industrial project. The module encourages professionalism and leadership in a collaborative group setting in which sustainability and ethics are embedded within the project context. (virtual industrial)

The **AE6204 Aerospace Technology** encompasses the principles of aerodynamics, propulsion, structures and materials science and performance of fixed and rotary wing aircraft. The module enables students to apply engineering analyses and modelling techniques to solve engineering problems and to optimise the performance of an aircraft system or components. The module develops the analytical and problem-solving skills of the students.

The **EG6017 Individual Project** module combines the technical and academic facets of the programme and provides students with an opportunity to complete a capstone project applying the knowledge and skills learnt during the course to achieve agreed deliverables. It enables students to develop their research skills using and applying information from the technical literature.

Inclusive Teaching Practice

Student Voice Committees and Boards of Study provide opportunities for student to make suggestion on how to develop a more inclusive curriculum by taking into account the specific circumstances of the student body. The variety of teaching activities also takes account of the student's different learning preferences and experiences and there is a careful balance of individual and group based activities. Marking criteria are provided for all assessments as part of the assessment booklet at the beginning of the year for each module and care is taken to ensure that the language used is clear. Assessment and marking criteria for all substantial assessments are discussed in class so all students have an opportunity to interrogate the criteria.

In the programme, as a whole the following components are used in the assessment of the various modules:

- Practical exercises: to assess students' understanding and technical competence
- Individual and group-based case project work: to assess ability to understand requirements, to provide solutions to realistic problems and to interact and work effectively with others as a contributing member of a team. The outcomes can be:
- Written reports, where the ability to communicate the relevant concepts, methods, results and conclusions effectively will be assessed.
- Oral presentations, where the ability to summarise accurately and clearly communicate the key points from the work in a brief presentation will be assessed.
- Video, which may replicate features of oral presentations but allows advance preparation away from the audience (which may suit some students better).
- Multiple choice or short answer questions: to assess competence in basic techniques and understanding of concepts.
- Long answer structured questions in coursework assignments: to assess ability to apply learned techniques to solve simple to medium problems and which may include a limited investigative component
- Long answer structured questions in end-of-module examinations: to assess overall breadth of knowledge and technical competence to provide concise and accurate solutions within restricted time
- Project: The individual project module represents an opportunity for students to draw together different aspects of their learning on the course and to apply the techniques learned in an extended study. As such the assessment here will place a greater emphasis on ability to plan work, manage time effectively, and research background information, culminating in a written report and interview.
- Individual and group practical laboratory reports

Employability/Placement
As noted above the delivery at CAVC in only one year of full time study but students are able to take a year in industry after completing their HND before starting their final year.

E. Support for Students and their Learning

Student support recognises that the student experience is unique to each student. A key part of our approach to an inclusive curriculum is that we acknowledge and where possible accommodate their individual circumstances. The personal tutor scheme is central to the efforts to provide a personalised learning experience. (See PT section of programme specification). These cover the whole curriculum for a particular level. Students are required to work through these formative assessment problems as they cover the relevant curriculum. This allows students to test their learning and measure their progress. Discussion of progress on these problem sets will be a key part of the personal tutor scheme. Students are required to upload their progress on these activities onto the **Learning Log** created on the University VLE system. The Learning Log will be available to the relevant personal tutors for further

discussion during one-to-one meetings. There will be milestones for students to meet at every level, and it will be one of the personal tutor's roles to monitor the students' progress and give appropriate advice.   Where difficulties are encountered PTs will be able to help or direct students to available support including peer mentoring schemes, PAL, Maths aid and on-line resources etc.

Students are supported by:
- **A Module Leader** for each module
- **A Course Leader** to help students understand their programme structure and provide academic support
- **A Personal Tutor** (PT) to provide academic and personal support
- There is a **Student Support and Engagement Team** to help students with any problem that is affecting their studies.
- A dedicated Undergraduate Course Administrator
- **An induction programme** and study skills sessions at the start of each academic year
- **Academic Success Centre** is a one-to-one drop-in Study Skills session for students every weekday. Help is available on a range of academic skills from writing reports, note-taking, to exam revision, referencing, programming and mathematical skills.
- **VLE** – a versatile on-line interactive intranet and learning environment accessible both on-site and remotely
- **Course Representative scheme**
- **University Careers** and Employability Service
- Comprehensive University support systems including the provision of advice on finance, regulations, legal matters, accommodation, international student support, disability and equality support.
- The Students' Union
- An Academic Team that seeks to maintain an open door policy in the spirit of supporting students.

Personal Tutor Scheme (PTS) in the School of Engineering
The following provides the aims and structure of the Personal Tutor Scheme (PTS) for the School of Engineering. It is intended that the PTS be embedded within the provision of the BEng programme.
Overall Aims
- To build a rapport between staff and students and contribute to personalising students' experience within the School of Engineering
- To support students in the development of their academic skills providing appropriate advice and guidance to students throughout their time at Kingston, while monitoring their progress, helping to identify individual needs and referring students to other University services as appropriate
- To help students to develop the ability to be self-reliant and confident self-reflective learners who use feedback to their best advantage
- To encourage students to reflect on how their learning relates to a wider context and their personal career progression

Allocation of Personal Tutors
- Personal tutors will be allocated during induction week

- Tutors will be allocated on a course basis where appropriate with student numbers being equally divided amongst the staff within the school
- Students will keep the same tutor throughout their course of study
- If they change discipline at the end of TB1 a change of PT is likely to occur to allow comprehensive support through the programme.

There are specific aims and outcomes for each level, as the PTS is progressive and cumulative students will find that they are building on the skills developed in previous levels. Formative assessment will be provided in the form of regular feedback during meetings.

Level 6: Maximising success and moving on
Aims and Learning Outcomes
- To support students with the planning necessary to maximise success in their final undergraduate year
- To encourage students to reflect on the employability skills they have developed and be proactive in moving towards a professional life and/or further study
- To help students to make best use of the feedback they have received so that they can build on their strengths and take steps to address any weaknesses

Contact:
- One-to-one meeting in week 1
- Email contact at the end of teaching block 1
- Individual 'wrap up' email at end of academic year

Personal Tutors would have access to all the formative and summative assessment results of their tutees and would be responsible to discuss them with their tutees and assist them to prepare plans for further improvements and advise on any academic issues they may have. The personal tutors are also responsible for giving a bigger and more complete picture of learning, teaching, learning outcome and assessment and their linkage to the tutees.

F. Ensuring and Enhancing the Quality of the Course

The University has several methods for evaluating and improving the quality and standards of its provision. These include:

- External examiners
- Boards of study with student representation
- Annual Monitoring and Enhancement
- Continuous Monitoring of courses through the Kingston Course Enhancement Programme (KCEP+)
- Student evaluation including Module Evaluation Questionnaires (MEQs), level surveys and the National Student Survey (NSS)
- Moderation policies
- Feedback from employers

G. Employability and work-based learning

The BEng (Hons) Aviation Engineering focuses on the key technical and employability skills, and desired attributes required to be a competent aviation engineer. It aligns with the knowledge, skills and behaviours defined in the accreditation of Incorporated Engineering (IEng) programmes by the Royal Aeronautical Society. The mapping of the learning outcomes with the current edition of the UK Standard for Professional Engineering Competence (UK-SPEC) is shown in section M. With the rapid growth of air transport industry, there are strong demands for Incorporated Engineers within the Aviation sector. The BEng Aviation Engineering graduates are destined to work primarily with airworthiness, aviation management, systems integration, design, support and manufacturing. The employability skills will be developed through a range of aviation and general engineering modules in the programme described in Section F. The programme provides students with opportunities to take personal responsibility for their actions, managing projects and developing leadership in Project Based Learning (PjBL) activities such as formal group projects, hands-on mini-projects, enquiry based case studies, co-and extra-curriculum activities. The development of transferable skills such as communication, interpersonal, team-working skills, analytical and problem-solving skills is embedded within the programme. Students will be aware of the professionalism, code of conduct and the ethical standards required in self-directed PjBL activities.

The curriculum embeds the development of employability skills throughout the Course and is designed to equip students with the ability to relate the knowledge and skills that they have learnt to the real world contexts in which they may work in the future. Group work in conjunction with external organisations at level 4 will provide students with relevant experience to add to their CV when they are applying for placement in level 5. Students are required to produce a CV early at level 5 and to improve this following feedback. The School strongly encourages and supports all students in applying for positions in industry for an Industrial Placement year between levels 5 and 6, the School emphasises the benefits to be obtained from an approved placement in industry.

Work-based learning, including sandwich courses and higher or degree apprenticeships

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H. Other sources of information that you may wish to consult

Engineering subject benchmark:
www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/Subject-benchmark-statement-Engineering-.aspx

Professional bodies:
www.raes.org/

I.   Development of Course Learning Outcomes in Modules

This table maps where course learning outcomes are **summatively** assessed across the modules for this course. It provides an aid to academic staff in understanding how individual modules contribute to the course aims, a means to help students monitor their own learning, personal and professional development as the course progresses and a checklist for quality assurance purposes.

Module Code		Level 6			
		AE6601	EG6017	AE6201	AE6204
Knowledge & Understanding	A1				
	A2				
	A3				
	A4				
	A5				
Intellectual Skills	B1				
	B2				
	B3				
	B4				
Practical Skills	C1				
	C2				
	C3				
	C4				
	C5				

Students will be provided with formative assessment opportunities throughout the course to practise and develop their proficiency in the range of assessment methods utilised.