

## Template C4



# Programme Specification

**Title of Course:** *MSc Mobile Networks and Media Streaming*

<b>Date first produced</b>	29/04/2020
<b>Date last revised</b>	23/08/2020
<b>Date of implementation of current version</b>	23/08/2020
<b>Version number</b>	6
<b>Faculty</b>	Faculty of Engineering, Computing and the Environment
<b>School</b>	School of Computer Science and Mathematics
<b>Department</b>	Department of Networks and Digital Media
<b>Delivery Institution</b>	Kingston University

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 module can be found in the course VLE site and in individual Module Descriptors.

## SECTION 1: GENERAL INFORMATION

<b>Award(s) and Title(s):</b> <i>Up to 10 pathways</i>	MSc Mobile Networks and Media Streaming
<b>Intermediate Awards(s) and Title(s):</b> <i>There are 4 Intermediate awards for each pathway</i>	PgCert inNetwork Communications PgDip inMobile Networks and Media Streaming
<b>Course Code</b> <i>For each pathway and mode of delivery</i>	
<b>UCAS code</b> <i>For each pathway</i>	NA

<b>RQF Level for the Final Award:</b>	
<b>Awarding Institution:</b>	Kingston University
<b>Teaching Institution:</b>	Kingston University
<b>Location:</b>	Penrhyn Road, Kingston upon Thames
<b>Language of Delivery:</b>	English
<b>Modes of Delivery:</b>	Part-time Full-time
<b>Available as:</b>	Full field
<b>Minimum period of registration:</b>	Part-time - 2 years Full-time - 1 year (+1 year with prof placement)
<b>Maximum period of registration:</b>	Part-time - 4 years Full-time - 2 years (+1 year with prof placement)
<b>Entry Requirements:</b>	<p>The minimum entry qualifications for the programme are:</p> <ul style="list-style-type: none"> <li>• A good second class honours degree in a subject with significant computing science or mathematics/statistics content. Typical appropriate first degree subjects would include: computer science (including software engineering, cyber security etc.), mathematics, statistics, and engineering.</li> <li>• Exceptionally, applicants with qualifications that do not meet the requirements, but with considerable relevant professional experience will be considered.</li> <li>• Overseas students are required to satisfy the Admissions Tutor that they have reached an equivalent academic standard as those required for home students.</li> </ul>

	<ul style="list-style-type: none"> <li>A minimum IELTS score of 6.5 with 6.0 in Writing and no sections less than 5.5, or equivalent is required for those for whom English is not their first language.</li> <li>Disclosure and Barring Services (DBS) clearance will not be required (unless, exceptionally, for the placement).</li> </ul>
<b>Programme Accredited by:</b>	<i>NA</i>
<b>QAA Subject Benchmark Statements:</b>	<i>Computing (Master's) October 2019</i>
<b>Approved Variants:</b>	<i>None</i>
<b>Is this Higher or Degree Apprenticeship course?</b>	

***For Higher or Degree Apprenticeship proposals only***

<b>Higher or Degree Apprenticeship standard:</b>	
<b>Recruitment, Selection and Admission process:</b>	
<b>End Point Assessment Organisation(s):</b>	

## **SECTION 2: THE COURSE**

### **A. Aims of the Course**

The recent evolution of Internet services, with video representing more than 80% of the data traffic, and the growth of on-demand video streaming (as offered by YouTube, Netflix, Amazon) and live streaming (as offered by Facebook, Twitch, etc.) require new professional roles. The parallel evolution of wireless networks (with 5G and in particular the Internet of Things paradigm) requires strong knowledge of the latest wireless communications strategies and standards for such professional roles.

The MSc Course in Mobile Networks and Media Streaming will address both areas above and the graduates will be able to apply for jobs in the wide market opened by such evolution.

The overarching aim of the MSc Mobile Networks and Media Streaming programme is to provide practically based education and training for students seeking employment in the areas of networking, media streaming, and wireless communications. The course offers postgraduates the opportunity to develop their skills in networking, media streaming and wireless communications and relevant security aspects, preparing them for careers in this fast-growing and exciting area, which spans virtually all areas of wireless, networking, and media communications.

*The Aims of the Course are to:*

- Provide students with knowledge, skills and a critical appreciation of the principles of network and media communications, including streaming services.
- Enable students to analyse a networking and media communication system and design an appropriate, custom solution.
- Develop students' practical skills to design secure and dependable wireless and media communication systems.
- Prepare students for employment, research, further study and lifelong learning by developing their intellectual, problem-solving, practical and key (transferable) skills, including written and oral communication skills.
- Practice the theoretical concepts and knowledge acquired from the taught modules in a substantial research or industrial based project and sustain a disciplined personal effort during the project leading to an academic dissertation.

### **B. Intended Learning Outcomes**

The course outcomes are referenced to the relevant QAA subject benchmarks Computing (Masters) October 2019 and the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies in England, Wales and Northern Ireland, and relate to the typical student.

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).

<b>Programme Learning Outcomes</b>					
	<b>Knowledge and Understanding</b>		<b>Intellectual Skills</b>		<b>Subject Practical Skills</b>
	On completion of the course students will be able to:		On completion of the course students will be able to		On completion of the course students will be able to
A4	Demonstrate knowledge of ethical, legal and professional issues in the deployment of networks and media communication systems, including knowledge of the main stakeholders.	B6	Specify and design architectures for networks to transmit multimedia data as appropriate and consider the necessary design trade-offs.	C3	Analyse the performance and specify user requirements, including security polices and countermeasures for network services, for the transmission of multimedia data.
A3	Analyse and design the latest relevant networking and communication systems and standards.	B5	Build upon the experience and responsibility gained as a result of the practical application of the skills acquired during the course to make a significant contribution as a computing and networking professional within an organization	C2	Design, deploy, and test secure and dependable network infrastructure showing a detailed understanding of fixed and wireless media communications principles and practical techniques.
A1	Demonstrate knowledge of the convergence of multimedia data representation with communication infrastructures and also wireless and wireline technologies.	B4	Identify current issues in the area of networking and media communications.	C1	Select and use effectively a wide range of methods, tools and techniques used in the design of networks and media streaming and communication systems.
A2	Design secure and dependable network architectures, showing a detailed understanding of network communications principles and practical techniques.	B2	Understand and be able to define the context within which networking applications can sit within and across the business as a whole (e.g. a collaborative service scenario).	C4	Analyse and process different types of data, including audio and video.
		B1	Learn independently, think logically and critically and demonstrate a systematic approach to problem-analysis and to finding solutions		

		B3	Critically analyse and evaluate research in their chosen area.		
--	--	----	--	--	--

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

#### Level 7 core modules (30 credits):

CI7120 Multimedia Communications <b>TB1</b>	CI7150 Wireless Communications and Networks <b>TB1</b>
CI7170 Emerging Communication and Networks Technologies <b>TB2</b>	

#### Either of the following Level 7 optional modules (30 credits):

CI7130 Network and Information Security <b>TB2</b>	CI7520 Machine Learning and Artificial Intelligence <b>TB2</b>
--	---

#### Level 7 Core (60 credits)



CI7000  
Project Dissertation  
(September, January, March)

CI7900  
Professional Placement  
(Following completion of project  
dissertation)

### **Level 7 Core (120 credits) for Professional Placement only**

A detailed plan is shown in the Appendix.

This course operates within the framework of the University's Postgraduate Regulations (PR). Courses in the PR are made up of modules that are designated at level 7. Single taught modules in the courses are valued at 30 credits and the course contains a project that has 60 credits. The minimum requirement for a Postgraduate Certificate is 60 credits, for a Postgraduate Diploma 120 credits and a Master's Degree 180 credits.

For the Professional Placement route only (an additional 120 credit points), students will work on the placement after their dissertation for between 10 and 12 months. The suitability of the placement requires approval of the Course Leader.

Students on placement must complete a portfolio assessment which includes a reflection on how the theories they have learnt during their teaching year have helped them in their placement and demonstrate ability to apply their teaching in a real world situation.

The course is offered as 1 year full-time, and normally 2-3 years part-time. The course design fully considers all student groups. Delivery of modules is in week-long blocks (each module is typically delivered in three weeks). The course recruits at multiple entry points (typically September, January, and March).

Overseas students are also able to complete their degree within visa limitations.

Full-time students will complete the programme of study and assessment in 52 weeks. The normal study pattern for part-time students is that they should complete 4 modules over a two year period and complete their project within the same period.

Because of the structure of the course, part-time students may be able to commence the course at different times during the academic year after discussion with the Course Leader of relevant issues, including the need for specific preparatory study.

Normally, each module will include approximately 60 hours of contact time, followed by directed learning resulting in a total of 300 hours of student effort. The project is the equivalent of two modules and requires 600 hours of student effort.

A January intake is accommodated by ensuring that two, technical core modules are delivered in the teaching block 2. This ensures that all students, including January starters, can complete the individual project in the summer without disadvantage. For the March intake, students take one module in teaching block 2, two in teaching block 1 and the final module in teaching block 2. There is additional support provided to these March intake students to ensure they are not disadvantaged when they start the project.

Ethical, legal and professional issues relevant to the course are addressed within the context of the Research Methods induction module, the Individual Project and throughout the course.

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).

Optional modules will provide useful skills for the job market complementing those acquired with the core modules.

Full details of each module will be provided in module descriptors and student module guides.

## MSc Mobile Networks and Media Streaming

<b>Level 7</b>							
<b>MSc Mobile Networks and Media Streaming</b>							
<b>Core modules</b>	<b>Module code</b>	<b>Credit Value</b>	<b>Level</b>	<b>Teaching Block</b>	<b>Pre-requisites</b>	<b>Full Time</b>	<b>Part Time</b>
Emerging Communications and Network Technologies	CI7170	30	7	2	None		
Multimedia Communications	CI7120	30	7	1	None		
Project Dissertation	CI7000	60	7	1+2	None		
Wireless Communications and Networks	CI7150	30	7	1	None		
<b>Optional Modules</b>							
Machine Learning and Artificial Intelligence	CI7520	30	7	2	None		
Network and Information Security	CI7130	30	7	2	None		
Professional Placement	CI7900	120	7	One year	None		

## D. Principles of Teaching, Learning and Assessment

Students on postgraduate courses in the School of CSM come from diverse social, cultural and educational backgrounds and their past learning experiences are varied. The School's broad strategy of aiming for problem-centred teaching and accessible, relevant (authentic) artefact-based assessment (assessment of learning by doing/creating) was created in recognition of this. The course adopts the University's Inclusive Curriculum Design Principles to cater for this diversity and define the approaches to learning, teaching and assessment (LTA), pastoral care and employability with the following broad principles:

1. An inclusive curriculum with the student at the heart of the learning process encouraging choice in their focussed topics for investigation within modules and assessments (where practicable) and sharing experiences and perspectives within the course through discussion and presentation of results.
  - Module descriptors adopt common problem-centred approaches to create an inclusive learning environment.
  - Curricula and approaches to LTA allow for expression of cohorts' experiences and perspectives, ultimately for sharing and shaping understanding together.
  - Teaching sessions are problem-centred, predominantly workshop-based, and necessarily interactive to make best use of the intensive weeks of study interspersed with directed study. Workshops and the use of the VLE (and other cohort-inspired networking tools) allow students to investigate and share their understanding of new concepts, techniques and technologies. This approach is also designed to enhance their practical competency and confidence when dealing with a range of "users".
  - The delivery is research-informed, taking advantage of CSM's diverse research portfolio, dynamically updated in accordance with advances in the field.
  - Modules incorporate opportunities to explore current developments in the field, in practical and applied settings incorporating student perspectives, real world situations, problem solving and task-based learning. Content includes the opportunity for students to personalise the topics being explored and allow them to adapt summative assessments towards their personal interests and motivations.
  - Teaching teams draw on the academic strengths and research interests of staff and use invited research seminar speakers and experts from industry to bolster the curriculum. This offers students up-to-date learning experiences from experts in these areas.
  - Students complete their MSc by conducting an individualised capstone research project, designed in collaboration with the Course team.
2. Assessment *for* learning (rather than solely *of* learning) enabling an inclusive student perspective in their design and application, permitting a degree of individual choice and direction for assessed tasks work.
  - All assessments have been designed at level 7, as appropriate for the MSc, to be inclusive, accessible, artefact-based and authentic to the field.
  - Students' induction at the start of the course includes an introduction to the language of UK HEI assessment and the tools used to measure the quality of their academic performance.
  - The assessment strategy is to provide an element of choice within a carefully-designed framework of assessments that align with the diversity of needs, and encourage students to be personally involved in their assessments.
  - Students have formative tasks and feedback available within the workshops preceding all assessments. Teaching sessions adopt a range of activities (including practical tasks, case studies, group discussion) to enrich the learning experience in a problem-centred, predominantly workshop-based setting, which directly supports the formulation of summative assessments.

- Feedback on both formative tasks and summative work enables students to learn from assessment experiences, reflect alongside directed study and feed-forward that learning to future assessments, most critically to the final dissertation project.
3. An approach to the personal tutor system appropriate to an MSc course, which provides opportunities for students to personalise their experience and track their academic and personal skills development.
- The Course Leader is the nexus of the postgraduate personal tutor system and normally acts as the formal Personal Tutor, supported day-to-day during the intensive week-blocks of teaching by the course's module leaders.
  - Students will have a Dissertation Supervisor from the Course team and in cases where that is the Course Leader, an independent Personal Tutor will also be appointed so that all students have the opportunity for independent pastoral and academic advice.
  - The Course Leader and/or Personal Tutor will meet with students regularly to provide guidance on assessment and personal development choices, discuss progress on the course, career plans, goals, development and recognition of personal and graduate attributes.

The assessment during the Professional Placement year will include a reflective practice piece of work, a professional development portfolio (PDP) and the employer's appraisal. The performance and attendance will be regularly monitored through the placement year. The marking of the placement is "pass" or "fail".

The Course is designed to give students a balance of theoretical and practical experience, and in accordance with the KU Curriculum Design Principles. It utilises a wide range of teaching and learning methods to enable all students to be actively engaged throughout the course. The learning, teaching and assessment strategies reflect the programme aims and learning outcomes, student background, potential employer requirements, and the need to develop a broad range of technical skills with the ability to apply them appropriately.

Formal lectures are used in order to give the students a good background understanding in the area and to develop the theoretical aspects. These are then often reinforced by practical sessions and/or industry specialists who contribute throughout the course in order to give informative insight into industry developments.

MSc students from all the courses and all cohorts are invited to these sessions. In addition, students from all cohorts are invited to attend research seminars and guest lecturer events organized by the Digital Information Research Centre and by the different research groups in the area (e.g. Wireless and Multimedia Networking research group). As part of the project dissertation, students perform an interim presentation where they demonstrate their progress to the supervisors and their peers, which facilitates their learning through sharing ideas and experience across the class.

Practical workshops, open forums, newswires (e.g. CBDiForum, earthweb, ebiz) and group presentations are introduced into the modules to provide students with a detailed understanding of the approaches taken in industry. The students are often given an opportunity to work with a client organisation on their coursework thus enabling them to experience a real-life work environment and enhancing their employability.

The course ensures that the students are exposed to team working through group presentations, joint report writing, joint research and lab work. The students develop presentation and communication skills through these activities as well as practise analytical thinking, focused literature reviewing and academic essay writing as part of their coursework portfolio. In this way, they also improve their research and evaluation skills.

The student is required to further explore and exploit the information given in the modules through guided self-study.

Students will be given close guidance to select a project that is relevant to their background and specialisation. During the project, the student will be expected to apply the knowledge acquired during the course. Key skills in communication, presentation, literature surveying, problem analysis, project planning, report writing and solution justification are all part of the learning outcomes defined in this course.

### **Contact Time**

The programme consists of modules in which the learning outcomes are achieved through a combination of scheduled tutor lead activities and practice. Scheduled contact time with students given within each module guide consists of lectures, tutorials, and practical sessions. Contact with staff often takes place in the context of giving feedback on assessed work but will not necessarily be scheduled. In addition, there are daily drop-in sessions at the School's Academic Skills Centre where support is provided on a one-to-one basis.

### **Canvas**

Canvas, the University's virtual learning environment, is used extensively in all modules as a means of providing blended learning experience by facilitating both the online lecture materials availability and an interactive participation, by students, to workshops, seminars and other live sessions. It also serves as a repository of assignments, reference materials, links, videos and a lecturer's annotated slides – for the students to refer to at any point in their learning cycle. In this way it actively promotes exchange of ideas and acquired knowledge amongst students, via a peer-to-peer facilitated communications, discussion fora and the whole eco-system of tools including web conferences that can be recorded and file exchange mechanisms that facilitate a repository for learning materials to be used by the students for independent study and for regularly receiving formative and summative feedbacks for their interim work progress. Feedback is often provided through Canvas, in addition to other established ways of communicating comments.

For fully interactive, conference-like sessions we will be using MS Teams as the university's standard tool for communication in this way. It is well integrated into the university's system and it is envisaged that the integration with Canvas will soon become available, too.

### **Assessment and Feedback**

The use of a variety of assessment methods is adopted as an appropriate assessment strategy to ensure all aspects of learning outcomes are covered and achieved. In particular:

- A **portfolio of coursework assignments** is designed to develop analytical and practical skills in a student.
- An **unseen exam** is designed to develop skills required in problem solving situations, commonly found in practice.

The **formative assessment** is used to help students answer particular components of the assessment by giving them timely feedback on exercises specially designed to simulate the exam questions or elements of the coursework assignments.

The **feedback** is typically provided in a **written form** thus presenting an additional learning resource helping the student to build the knowledge throughout the learning process and prepare for the summative assessment. Feedback can also be provided in the form of audio recording and students will be invited to meetings to discuss their feedback.

The **exercises** may take various forms including:

- Lab projects,

- essay writing or
- analysing past exam questions.

At the end of the course every student undertakes a **project dissertation** which is a significant activity that draws on and enhances the skills and knowledge developed throughout the programme. As such, the assessment places greater emphasis on ability to plan work, manage time effectively, and research background information, culminating in portfolio of written reports and an interview.

### **Research Informed Teaching**

The **Wireless Multimedia and Networking (WMN) Research Group** carries out fundamental and applied research on wireless communications and networking, media streaming and closely related topics. It investigates adaptive delivery of media information with an adequate quality of service. The research activity relies on the different fields of information theory, signal processing and applied mathematics, communication theory, wireless networking and security. This expertise feeds directly into the content of the course maintaining it current with respect to the state-of-the-art.

The team has an established international reputation in the area of wireless and multimedia communications, including 5G systems, media streaming and relevant security aspects – publishing routinely in international journals, owning patents and contributing to international industry standards (IEEE, ITU-T). The research is funded by the UK research councils as well as by the European Commission, Innovate UK, Royal Society, British Council, governmental bodies and international industry partners.

The team members have a leading role in the international professional bodies and working groups, such as IEEE, European Technology platforms, World Wireless Research Forum (WWRF). The team is also part of the Board of the Video Quality Expert Group, together with international partners such as Google, Netflix, Amazon, Apple, Intel. Team members have been editors of the main international journals in the area (such as IEEE Transactions on Multimedia, IEEE Multimedia, IEEE Signal Processing Magazine, IEEE Journal of Selected Areas of Communications, IEEE Journal of Biomedical and Health Informatics) and have organized/chaired the Programme Committees of several international conferences.

Students can access state-of-the art research laboratories and equipment and be trained to use the latest technologies. They can therefore develop their research skills through an opportunity to **engage directly** in current research projects (often in collaboration with international industries and universities), in addition to the mandatory part of the curriculum that covers research methodology. They are also invited to actively participate **in research seminars** and presentations.

The participation of the students in international events held locally is encouraged, with the suggestion of the relevant events. Students are also encouraged and supported to present the work done in their final dissertation in **international conferences**, where they can meet leading experts in the area and interact with potential employers. The results partly originated from final dissertations realised within WMN have already been presented in high quality international conferences (such as QoMEX, IEEE ICME, IEEE ICASSP), often by the students themselves.

These skills and experiences enable students to distinguish and present appropriate evidentiary information in an argument, which are greatly valued by employers. To further set the material in context and inspire our students, leading practitioners from industry are invited to give guest lectures and workshops.

Staff in the School also engage with research into teaching and learning in Higher Education which feeds through to support learning in lectures and other forms of student engagement during contact time.

## **E. Support for Students and their Learning**

Students are supported by a highly qualified team of academic staff that includes individuals in the following roles:

- A Course Leader to help students understand the programme structure
- A Personal Tutor to help and guide the student throughout the course
- A Module Leader for each module

Additional support is provided by the following specialist staff:

- Technical Support to advise students on IT and the use of software
- A designated Programme Administrator
- English language support for international students

Matters outside the academic arena are supported by:

- Student support facilities that provide advice on issues such as finance, regulations, legal matters, accommodation, international student support etc.
- Disability and dyslexia student support
- A substantial Study Skills Centre that provides academic skills support
- Careers and Employability Service
- The Students' Union
- An induction week at the beginning of each new academic session
- Staff Student Consultative Committee
- Canvas – a versatile on-line interactive learning management system available on the university's intranet

### **Support for Academic Skills**

There is a range of support available within the School, which includes but is not limited to:

Faculty-wide Student Support team  
SEC Academic Support Centre (SASC)  
Drop-in Programming Sessions (Java Aid, C++ Aid)  
Drop-in Maths Aid sessions

**SASC** 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. Mathematical skills and referencing are addressed by **MathsAid** and **dIScover, respectively**.

The Student Support Team help students with any problem which has an effect on their studies. This can range from illness, problems writing an assignment, questions about academic regulations to serious confidential issues.

The students are introduced to all these mechanisms during induction sessions at the beginning of each new academic year. It is here that the students first encounter the university's computer network, which includes their personal access to Canvas and how to use it as a learning environment. They are also encouraged to make use of the substantial

Study Skills Centre, an important resource that provides additional help across a range of academic skills.

Students are expected to be involved in the development of their programme. On an individual level through meetings with their Course Leader and personal tutor at which they can discuss their academic progress, personal development and can seek advice on course and module choices in the light of their career aspirations. As a cohort, students can contribute to many aspects of programme evolution, for example by student representation on committees including Staff Student Consultative Committees as well as by their formal and informal feedback such as the mid-module and end-of-module reviews.

In addition, LinkedIn Learning is available to all students

### **The Personal Tutoring Scheme**

A **Personal Tutor** is allocated to each MSc student. Personal Tutors are recruited from the Course team – to ensure the students have the opportunity to benefit from various aspects of the profession that each individual academic brings. The personal tutors will meet with their students sufficiently frequently to maintain close communication and manage to provide information/advise on the matters relevant at the start of the course, address the progression and advise on the personal development leading to relevant career choices. Typically, there will be **at least 2 individual meetings per teaching block** specifically at:

- The start of the teaching block/course to discuss the work patterns on the course and/or the choice of electives
- At the end of the teaching block to review the progress of individual students

There are also planned **group meetings** – one per teaching block – to discuss issues of common interest. At each of these meetings the students are encouraged to raise issues of their concern so that they can be resolved effectively and timely in due course.

At Level 7, the role of the personal tutor is:

- To help students to make the transition to Masters level study and understand how to use feedback on the postgraduate course
- To encourage students to be proactive in making links between their course and their professional and/or academic aspirations
- To explore students' research aspirations
- To help students gain confidence in contributing to, and learning from, constructive peer review
- To encourage students to become part of a wider disciplinary and/or professional community
- To help students to prepare for the dynamics of supervision

### **Placement**

Additional support is available for students undertaking a placement.

- While the responsibility for finding and securing a professional placement rests ultimately with the students, those who are intending to undertake a placement are supported by a comprehensive structured programme of activities and events designed to help them. This starts with an additional separate day of induction at the start of the course (over and above the induction for other students) – introducing some of the fundamentals of career development and job-hunting, as well as the place of the professional placement module within the academic structure. There follows over the next few months a scheduled programme of assignments (built into the module structure in Canvas) including personal



awareness/development portfolio, CV writing, and commercial awareness research etc. combined with webinars and workshops on such things as building your personal brand in LinkedIn as well as networking events. This work is supported by a placements team within the Faculty who, in addition to sourcing potential placement job opportunities and expanding the university's pool of employer contacts, work with students to help them utilise the resources available and complete the assignments. In addition, staff from the university Careers and Employability team introduce all of their facilities and resources and also work with the students in one-to-one sessions e.g. for CV review. As well as acting as consultants, support staff also visit the students in timetabled sessions for 'maximum exposure' and students who have completed the placement in the past are also invited back for presentations and Q & A sessions.

- The appropriateness of placement positions is vetted by the Course Leader and while out on placement students are supported by a placement tutor who monitors progress and visits the students on site.
- The aim from start to finish is to ensure that students have a successful and rewarding placement experience which develops their knowledge and skills and prepares them for higher levels of employment.

## **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
- Periodic review undertaken at subject level
- Student evaluation including Module Evaluation Questionnaire (MEQs), level surveys.
- Moderation policies
- Feedback from employers

## **G. Employability and work-based learning**

Computing qualifications are amongst the most versatile and enable graduates to find employment in a wide spectrum of careers ranging from systems and business analysts, and software engineers, through to programmers and network specialists in a wide range of public and private sector industries. Recent graduates from similar courses found employment with large organisations such as IBM, Hewlett Packard, Cap Gemini, JDA Software, Thomson Reuters, GlaxoSmithKline, Axa, BAA, British Telecom, Ernst & Young, Marks & Spencer, Waitrose, Virgin Media, NHS Institute for Innovation and Improvement as well as in smaller companies. Graduates often join PhD programmes (at Kingston and other universities worldwide) in digital imaging, wireless and multimedia communications, network security, and user experience. Some of these then progress to academic careers.

The course is designed to produce highly employable professionals due to its unique blend of conceptual and applied knowledge. Therefore, this Master's programme will prepare graduates for roles across a broad spectrum of employers, including broadcasters (e.g., BBC, Sky), content and service providers (e.g., Netflix, Amazon), Internet Providers and wireless operators (e.g., British Telecom, Vodafone, O2, Virgin), companies like Twitch, Facebook, Google/YouTube, technological manufacturers (e.g., Samsung, Ericsson, Siemens, Huawei), public bodies, and many others.

The topics addressed will prepare the students to work in the market outlined above, with the possibility to further specialise in security or machine learning, also highly demanded skills in the job market, via the optional module. They will learn to use software in specific programming languages such as MatLab or Python, and to work with hardware and software tools.

Working on case studies designed to simulate the working environment, typically in teams, gives students experience of applying the theoretical concepts to practice in a professional manner. Furthermore, they have the opportunity to **work with client organisations** on real-life problems as part of their coursework assignments in modules and/or their project dissertation. There is therefore an opportunity for a student to develop communication and interpersonal skills throughout the course. They learn about time management and the value of prioritising and planning by involvement in such projects, and in the learning activities outlined in Section D above.

In the training provided in the induction week, students are encouraged to reflect on and identify what they have previously learned, whether academically or in terms of transferable skills, and how these may be relevant to their choice of subject discipline and employment opportunities. They are also encouraged to explore the job market and possible career paths at an early stage of the course, and to consider attributes that employers look for in graduates above and beyond essential academic skills. The cohort are then encouraged to continue to build on their key skill attributes learned from their previous education and experiences, and focus on the importance of the following KU graduate attributes that are particularly relevant to the MSc, including being inventive and experimental, finding original solutions to problems, influencing change, being more resilient and self-aware and able to consider their actions in the context of the wider community. As the course progresses, students are further encouraged to develop clearer ideas about career options, and are offered assistance and guidance in the preparation of *curriculum vitae* and for job applications and interviews. For students already in employment, the course offers an opportunity to enhance their knowledge and to develop their practical, intellectual and key skills to assist them in their career development, obtaining recognition for current and acquired skills.

In preparation for their future employment we make extensive use of industry standard software and hardware, giving students a rich variety of the opportunities to specialise in networking and multimedia communications.

In addition, LinkedIn Learning is available to all students and suggestions are provided on relevant material useful for expanding their knowledge, particularly with a view to their final dissertation.

### **Curriculum, Employability and Practical Skills**

If students are already in employment, they will be actively encouraged to share typical workplace issues during discussions in the class, and to use past or present scenarios from work for their projects. The experience of the subject team in working with companies will facilitate these discussions: the School and Course Team have strong links with both industry and professional bodies, including the BCS, the Chartered Institute for IT.

The project dissertation will enable students to showcase their ability to manage and develop their work. Curriculum developments are discussed with the School's Industrial Advisory Panel.

Employability is signposted in the curriculum where the emphasis is on applying knowledge, developing practical skills and applying them in case studies as part of their coursework reports.

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

Computing qualifications are amongst the most versatile and enable graduates to find employment in a wide spectrum of careers ranging from systems and business analysts, and software engineers, through to programmers and network specialists in a wide range of public and private sector industries. Recent graduates from similar courses found employment with large organisations such as IBM, Hewlett Packard, Cap Gemini, JDA Software, Thomson Reuters, GlaxoSmithKline, Axa, BAA, British Telecom, Ernst & Young, Marks & Spencer, Waitrose, Virgin Media, NHS Institute for Innovation and Improvement as well as in smaller companies. Graduates often join PhD programmes (at Kingston and other universities worldwide) in digital imaging, wireless and multimedia communications, network security, and user experience. Some of these then progress to academic careers.

The course is designed to produce highly employable professionals due to its unique blend of conceptual and applied knowledge. Therefore, this Master's programme will prepare graduates for roles across a broad spectrum of employers, including broadcasters (e.g., BBC, Sky), content and service providers (e.g., Netflix, Amazon), Internet Providers and wireless operators (e.g., British Telecom, Vodafone, O2, Virgin), companies like Twitch, Facebook, Google/YouTube, technological manufacturers (e.g., Samsung, Ericsson, Siemens, Huawei), public bodies, and many others.

The topics addressed will prepare the students to work in the market outlined above, with the possibility to further specialise in security or machine learning, also highly demanded skills in the job market, via the optional module. They will learn to use software in specific programming languages such as MatLab or Python, and to work with hardware and software tools.

Working on case studies designed to simulate the working environment, typically in teams, gives students experience of applying the theoretical concepts to practice in a professional manner. Furthermore, they have the opportunity to work with client organisations on real-life problems as part of their coursework assignments in modules and/or their project dissertation. There is therefore an opportunity for a student to develop communication and interpersonal skills throughout the course. They learn about time management and the value of prioritising and planning by involvement in such projects, and in the learning activities outlined in Section D above.

In the training provided in the induction week, students are encouraged to reflect on and identify what they have previously learned, whether academically or in terms of transferable skills, and how these may be relevant to their choice of subject discipline and employment opportunities. They are also encouraged to explore the job market and possible career paths at an early stage of the course, and to consider attributes that employers look for in graduates above and beyond essential academic skills. The cohort are then encouraged to continue to build on their key skill attributes learned from their previous education and experiences, and focus on the importance of the following KU graduate attributes that are particularly relevant to the MSc, including being inventive and experimental, finding original solutions to problems, influencing change, being more resilient and self-aware and able to consider their actions in the context of the wider community. As the course progresses, students are further encouraged to develop clearer ideas about career options, and are

offered assistance and guidance in the preparation of curriculum vitae and for job applications and interviews. For students already in employment, the course offers an opportunity to enhance their knowledge and to develop their practical, intellectual and key skills to assist them in their career development, obtaining recognition for current and acquired skills.

In preparation for their future employment we make extensive use of industry standard software and hardware, giving students a rich variety of the opportunities to specialise in networking and multimedia communications.

In addition, LinkedIn Learning is available to all students and suggestions are provided on relevant material useful for expanding their knowledge, particularly with a view to their final dissertation.

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

QAA Benchmark statement website:

QAA Credit Framework

<https://www.qaa.ac.uk/quality-code/qualifications-and-credit-frameworks>

Module guides

Guidance on Enterprise and Entrepreneurship Education

[https://www.qaa.ac.uk/docs/qaas/enhancement-and-development/enterprise-and-entrepreneurship-education-2018.pdf?sfvrsn=15f1f981\\_8](https://www.qaa.ac.uk/docs/qaas/enhancement-and-development/enterprise-and-entrepreneurship-education-2018.pdf?sfvrsn=15f1f981_8)

Student handbook

## 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 7						
		C17900	C17130	C17520	C17150	C17000	C17170	C17120
Knowledge & Understanding	A4		S		S	S	S	S
	A3				S	S	S	S
	A1				S	S	S	S
	A2		S		S	S	S	S

<b>Intellectual Skills</b>	B6				S	S	S	S
	B5		S	S	S	S	S	S
	B4				S	S	S	S
	B2				S	S	S	S
	B1		S	S	S	S	S	S
	B3		S	S	S	S	S	S
<b>Practical Skills</b>	C3		S		S	S	S	S
	C2		S		S	S	S	S
	C1			S	S	S	S	S
	C4			S	S	S		S

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