1. **Title of the module**

EENG6770 (EL677) Communication Networks and IoT

1. **Division or partner institution which will be responsible for management of the module**

Computing, Engineering and Mathematical Sciences

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 6

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn

1. **Prerequisite and co-requisite modules**
2. **The programmes of study to which the module contributes**

BEng Electronic and Communications Engineering

BEng Electronic and Communications Engineering with a Year in Industry

MEng in Electronic and Communications Engineering

MEng in Electronic and Communications Engineering with a Year in Industry

BEng/MEng in Electronic and Computer Engineering

BEng/MEng in Electronic and Computer Engineering with a Year in Industry

BEng in Biomedical Engineering

BEng in Biomedical Engineering with a Year in Industry

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**

1. Demonstrate a systematic understanding of RF and optical communication components and systems;

2. Demonstrate an advanced understanding of communication network architectures and protocols.

3. Demonstrate a critical understanding of the concepts of the Internet of Things (IoT) and its application.

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**
2. manage their own learning, and make use of ICT
3. apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding,
4. **A synopsis of the curriculum**

RF receivers, transmitters and components. Optical fibres, optical sources, optical components, system power budget and dispersion.

Network architecture, topology. Access networks, and data traffic. Transport networks and multiplexing. Local area networks, WiFi. TCP/IP networks, the Internet and cloud.

IoT wireless channel. sensing, actuation, processing, and energy harvesting. IoT sensor networks

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

Recommended Reading

* Computer Networking and the Internet, F Halsall, Addison Wesley
* Communication Systems, Simon Haykin, 5th Edition, 2010
* Communication Systems Engineering, Proakis, Salehi, Prentice Hall
* Designing the Internet of things, Adrian McEwen; Hakim Cassimally, 2014, John Wiley & Sons Ltd

1. **Learning and teaching methods**

Total contact hours: 38

Private study hours: 112

Total study hours: 150

1. **Assessment methods**
   1. Main assessment methods

RF and Optical Communications -simulation lab, 3 A4 pages (5%),

Communication Networks experimental lab, 3 A4 pages (5%),

IoT Networks mini project, 5 A4 pages (10%),

Exam, 3 hours (80%)

13.2 Reassessment methods

like-for-like

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 9.1 | 9.2 |
| **Learning/ teaching method** |  |  |  |  |  |
| Private Study | **x** | **x** | **x** | **x** | **x** |
| Lectures | **x** | **x** | **x** |  |  |
| Example classes | **x** | **x** | **x** |  | **x** |
| **Assessment method** |  |  |  |  |  |
| RF and Optical Communications lab | **x** |  |  | **x** | **x** |
| Communication Networks experimental lab |  | **x** |  | **x** | **x** |
| IoT Networks mini-project |  |  | **x** | **x** | **x** |
| Exam | **x** | **x** | **x** |  | **x** |

1. **Inclusive module design**

The Division recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Canterbury

1. **Internationalisation**

Engineering is an international discipline with techniques developed and refined by scientists across the globe. Mastery of the subject-specific learning outcomes, will equip students to apply the theories and techniques of this module in a wide range of international contexts. International standards for communications/telecommunications are covered. The module team includes many members of staff with international experience of teaching and research collaboration. In compiling the reading list, consideration has been given to the range of texts that are available internationally and a selection of texts has been identified to complement the delivery of the material. The support provided to the students is also internationally attuned given our international student body.

**DIVISION USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 15/10/2020 | Minor | Sept 2023 | 1,5,6,7,8,10,11,12,13,14,17 | No |
|  |  |  |  |  |

Revised FSO September 2020