Module Name: Internet Multimedia Systems

Module Acronym: IMS

Module Manager: Dr Ioannis Andreopoulos

Course Summary:

The course begins with a summary of the fundamentals of analogue and digital transmission of multimedia. It then goes into specific aspects of services for media transport over IP, IPTV, middleware for multimedia transport, and interactive multimedia services. Specific topics such as: MPEG coding formats and applications, multimedia-enabled devices, streaming systems and infrastructure support, etc., are covered in depth.

For their project assignment, the students are given an experimental video streaming testbed (developed and maintained at UCL) and a list of recommended papers. They will have to review the testbed and benchmark its performance, link ideas proposed in related literature to potential improvements in the testbed and potentially deploy and test their own improvements in the media streaming algorithm and report their results. Pointers for further reading and specialisation are provided. The best projects are integrated in the testbed, which is used in the subsequent academic year. The testbed used in this course is also available as open-source project in Sourceforge (called UNVedu), having been downloaded more than 1200 times within 2 years by users from more than 40 countries.

Course Content

- Fundamentals of analogue and digital multimedia transmission
- MPEG formats for media coding and transport
- Services and transport over IP
- IPTV
- Middleware for multimedia support over heterogeneous networks and devices
- Experimentation with real-time video streaming systems

Intended Learning Outcomes

On completion of this course, students should be able to:

- Develop the ability to use fundamental knowledge to investigate new and emerging technologies
- Develop the ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques

- Develop the ability to generate an innovative design for multimedia products, systems, components or processes to fulfil new needs of emerging media communications systems
- Develop a thorough understanding of current practice in internet multimedia systems and its limitations, and some appreciation of likely new developments
- Via invited guest lecturers from the Industry, develop the ability to apply multimedia content and traffic engineering techniques taking account of a range of commercial and industrial constraints

Assessment:

Examination will be by project assignment

Workshop:

A two hour workshop will take place in the week following the course. The students will make a brief presentation of their envisaged project assignment topic, including: the project justification, literature review and the envisaged outcomes.