## Internet Measurement

**Academic Year: ( 2021 / 2022 )**　　　　　　　　　　　　　　　　　　**Review date: 16-07-2020**

**Department assigned to the subject:**

**Coordinating teacher: CUEVAS RUMIN, RUBEN**

**Type: Electives  ECTS Credits : 3.0**

**Year : 1 Semester : 2**

### REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Previous knowledge on the TCP/IP architecture and in routing protocols is required.

### OBJECTIVES

The students will learn the methodologies required to perform measurements in large complex distributed systems (with focus in the Internet) and to analyze the results. At the end of the term the student is expected to be able to:

-　　　　Understand the different methodologies to perform measurements (active versus passive measurements)  and their limitations.
-　　　　Use available Internet measurement tools
-　　　　Design a measurement strategy for observing a specific aspect of the network.
-　　　　Understand the measurement results

### DESCRIPTION OF CONTENTS: PROGRAMME

-　　　　Introduction to Internet measurement, active versus passive measurements.
-　　　　Overview of the main tools for Internet traffic measurement and available repositories (e.g. CAIDA, NLANR, DIMES, CRAWDAW, iPLANE, etc)
-　　　　Netowkr topology measurement (e.g. Internet AS topologies, optical network topologies)
-　　　　Tools for the creation of synthetic topologies
-　　　　Monitoring tools
-　　　　Methodology for measuring traffic parameters (e.g. throughput, delay)
-　　　　Tools for inspecting traffic
-　　　　Control plane measurements
-　　　Network Infrastructure Measurements for large scale applications (e.g., Content Distribution applications suchas Youtube or BitTorrent, Online Social Networks, etc.)
-　　　Measurement and Characterisation of Online Social Networks

### LEARNING ACTIVITIES AND METHODOLOGY

-　　　　Theoretical classes. Presentation of the main concets following by debate with the class about the additional material covered by the student during the self learning process.
-　　　　Project presentation classes. Students present the progress achieved in the assigned project to be developed during the course.

### ASSESSMENT SYSTEM

Preparation of a measurement work that will be presented in class at the end of the term (100% of the grade)

**% end-of-term-examination:**　　　　　　　　　　　　　　　　　　0

**% of continuous assessment (assigments, laboratory, practicals…):**　　　100

### BASIC BIBLIOGRAPHY

- Mark Crovella, Balachander Krishnamurthy Internet Measurement: Infrastructure, Traffic and Applications, Wiley, 2006