UG3 Computer Communications & Networks (COMN)

2017-18, Semester 1

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Overview

• Introductory course on Computer Communications & Networks
  – Focus on fundamental concepts, highly successful design principles and widely used techniques
  – Advanced topics: multimedia network, software-defined networking
• 20 credit course revised from the previous 10 credit one

• No pre-requisite courses
• Assumes familiarity and programming (in Java) on Linux platforms
• A pre-requisite for UG4/MSc Computer Networking course
• Must be familiar with this course’s material if planning on doing 4th year project on a networking topic
Administrative Details

• Instructor: Myungjin Lee
  – Informatics Forum 1.03

• Teaching Assistants: Mah-Rukh Fida & Mohamed Kassem
  – Informatics Forum 1.17
  – M.Fida@sms.ed.ac.uk & M.M.M.Kassem@sms.ed.ac.uk

• Office Hours: 1-2pm on Tuesday

• Out-of-class communication
  – Course mailing list: comn-students@inf.ed.ac.uk
  – Q&A via Piazza (https://piazza.com/class/j7a9hnwbwr626j)
  – Meetings with TA: by appointment
Administrative Details

• When and Where: **Semester 1**
  – 16:10-17:00 on Tuesdays and 15:10-17:00 Fridays
  – Lecture venue: Lecture Theatre 2, Appleton Tower

• Course descriptor

• Course webpage
  – Schedule w/ lecture slides, assignments, TA contact info, past exam papers, examinable material, etc.
Activities & Assessment

• Three lectures per week
  – 1hr on Tue & 2hr back-to-back (with break) on Fri

• No formal tutorials

• Exam (60% of course mark)
  – Past exam papers: http://www.inf.ed.ac.uk/teaching/exam_papers/
  – List of examinable material will be provided on course webpage
Activities & Assessment

• Coursework (40% of course mark): one assignment, split in two parts
  – Will involve programming using Java and socket API
  – Implementation and experimentation of application-level protocols for reliable end-to-end communication

  – Part 1: 30% of coursework mark / 12% of course mark
    • Due by 4pm on Fri, 20th Oct 2017

  – Part 2: 70% of coursework mark / 28% of course mark
    • Due by 4pm on Fri, 24th Nov 2017
Activities & Assessment

• **(High-level) coursework marking policy**
  – **Stricter** than the previous year
  – Detailed marking criteria under revision

  – For example,
    – Compilation error: 0 mark
    – Runtime error: \( \leq 80\% \) of full mark

  – Marks will be deducted when features/mechanisms are implemented incorrectly
Syllabus

• Introduction to Computer Networks, the Internet, TCP/IP architecture and protocols
  – Protocol, network architecture, reference models, layering, service, interface, multiplexing, switching and standards

• Application Layer
  – Network applications (Web/HTTP, e-mail, …) and socket API

• Transport Layer
  – Connectionless vs. connection-oriented communications
  – Congestion/flow/error control
Syllabus

• **Network Layer**
  – Routing and internetworking

• **Data Link Layer and Medium Access Control Sub-Layer**
  – Data link protocols, error detection and correction, channel allocation and multiple access protocols, Ethernet

• **Multimedia networking**
  – Audio/video streaming, content distribution networks, real-time protocol, session initiation protocol, quality of service

• **Software-defined networking (SDN)**
  – Introduction to SDN, OpenFlow, applications of SDN
Textbooks

Main text:

Secondary texts:

Courtesy note on course slides:
- Slides borrowed/modified from others
  - Jim Kurose and Keith Ross