Queuing Networks for Computer and Communication Systems
Dr. S. Dharmaraja

1. Course Title:
Queuing Networks for Computer and Communication Systems

2. Status of course:
 Department elective

3. Pre-requisites of the course:
Knowledge of probability at undergraduate level and knowledge of C/C++ or Matlab

4. Course objective:
The objective of this course is to use basic stochastic models to gain insight into the design and operation of computer and communication systems. Stochastic models are introduced and studied; used for the analysis and evaluation of communication systems, wired networks and wireless networks. Stochastic models such as queueing models, fault trees, reliability block diagrams, stochastic Petri nets and networks of queues are discussed. Different solution methods (such as analytical, numerical and simulation) are used to evaluate these models and to gain insight into the behaviour of the above systems.

5. Course contents:
Communication systems: wired networks, wireless networks, ad hoc networks, telecommunication networks and their stochastic modelling
Fault trees, reliability block diagrams and stochastic Petri nets, queueing models, networks of queues
Solution techniques, steady state and transient analysis, availability, reliability, performance measures such as throughput, delay, response time, utilization, mean value analysis

6. Course Material:
The course material roughly corresponds to the lecture notes, and will be given in 20 lectures. Throughout the course, examples of computer and communication systems will be considered.

7. Course Completion:
The completion of the course requires solving the tutorial sheet problems /assignments and passing the examination.
(Attached Appendix: A)