University of Technology

Computer Engineering Department

Academic Year 2016 - 2017

Forth Year – no.of Semester – Name of Branch

	Subject title Queuing theory	2 Hours/Week	2 Units

Contents of Syllabus	Hours
1- **Probability Review** • Probability • Z-transform and Laplace-transform • random process • Markov chains in discrete and continuous time Poisson process.	**6**
2- **Markov Chain Queuing Models** • M/M/1 • birth-death process • time-dependent state probability • balance equation, network of exponential servers • generating function • phase-dependent arrival and service	**6**
3- **M/G/1 and G/M/1** • M/G/1 • occupancy distribution • renewal theory • waiting time and busy period • preemptive-resume LCFS • head-of-the-line priority • embedded Markov chain	**6**
4- **Open and closed Jackson queuing networks**	**6**
5- **Case Studies** problems selected from real research issues	**6**

Text book(s):-

1- D.Gross, C.M. Harris, queueing theory, wiley, 2009
2- D. Gross and C.M. Harris, “Fundamentals of Queueing Theory”, Wiley Student edition, 2004
3- John N. Daigle, “ Queuing Theory for Telecommunications”, Addison Wesley, 1992.
4- Ng Cheee Hock, “ QUEUEING MODELLING FUNDAMENTALS”,John Wiley &

Sons LTD

References

1- A.O. Allen, “Probability, Statistics and Queueing Theory with ComputerApplications”, Elsevier, 2nd edition, 2005.