Course Code	ECE636/CSE636
Course Name	Communications Networking - An analytical approach
Credits	4
Course Offered to	UG/PG
Course Description	The course introduces the student to analytical tools that help understand the performance of various aspects of a communications network. We will analyze various aspects of the layer 2 of the OSI model, including automatic repeat request, multiple access, and flow control. We will learn how to apply simple queueing models to analyze the delay and throughput performance of networks. Finally, we will analyze the performance of the transmission control protocol (TCP). It is hoped that the exposure to analysis will help us design good real world protocols.

Pre-requisites		
Pre-requisite (Mandatory)	Pre-requisite (Desirable)	Pre-requisite(other)
MTH201 Probability & Statistics	ECE501 Probability and Random Processes	

*Please insert more rows if required

Post Conditions*(For suggestions on verbs please refer the second sheet)			
CO1	**CO2**	**CO3**	**CO4**
Students are able to apply queueing models to analyze the throughput, delay, and stability of networks.	Students are able to carry out, explain, and summarize analysis of aspects of the layer 2 of the OSI model, including automatic repeat request, multiple access, and flow control techniques.	Students are able to carry out, explain, and summarize the performance analysis of the transmission control protocol.	

Weekly Lecture Plan			
Week Number	**Lecture Topic**	**COs Met**	**Assignment/Labs/Tutorial**
1,2,3	OSI Model and ARQ	CO2	End of chapter problems from the text
4,5,6,7	Delay analysis (Little's theorem, M/M/* queues, M/G/1, networks of queues)	CO1	End of chapter problems from the text
8,9,10,11	Aloha and its variants, carrier sensing, multi access reservations, token ring, flow control	CO2	End of chapter problems from the text
12,13	Performance analysis of TCP	CO3	End of chapter problems from the text

*Please insert more rows if required

Weekly Lab Plan			
Week Number	**Laboratory Exercise**	**COs Met**	**Platform (Hardware/Software)**
Course does not have a lab component			

*Please insert more rows if required

Assessment Plan	
Type of Evaluation	% Contribution in Grade
Quiz	40
Mid-sem	20
Assignment	10
End-sem	30

*Please insert more row for other type of Evaluation

Resource Material	
Type	**Title**
Textbook	Data Networks by Gallager
Reference	Communication Networking, An analytical approach, by Anurag Kumar, Majunath, and Kuri
Reference	Communication Networks by R. Srikant and Lei Ying