

# **National Institute of Technology Karnataka Surathkal**

## **Department of Information Technology**



### **IT 200 Computer Communication and Networking**

### **IT 205 Computer Network Lab**

## **Course Plan [2022-23]**

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# Course Description

- This course introduces the concepts of data communication and Computer networks. It mainly focuses on theory and design aspects computer network and performance issues.
- The main objective of the course is to learn the protocols of computer network. Focus is given on the concept of networking and performance comparison.

After completion of the course the students will be able to

- Identify basic protocols of Computer network
- Compare protocols for performance analysis
- Explain the working of existing protocols in network layers.

# Course Outcome

- Aim: On completing this course the students should have acquired the following Capabilities:
- CO1. To explain the functionality of each layer in the OSI and TCP/IP network model.
- CO2. To explain and solve problems related to encoding, framing, flow control and error handling in physical and MAC layer, routing and transport layer.
- CO3. To create/design suitable techniques for different networks for a given scenario.
- CO4. Evaluation of various methods and performance analysis

# Course Outline

- Evolution of Data Communication and Networks,
- Transmission Fundamentals: Signaling Schemes, Encoding and Modulation,
- Data Transmission over Networks – Switching Techniques, Layered Architecture of Computer Networks,
- OSI & TCP/IP Architectures and Layers with protocols,
- Data Link Control and Protocols, Error Detection and Correction,
- Internetworking & Routing,
- Transport Layer Protocols,
- Applications: E-Mail, HTTP, WWW, Multimedia;
- Implementation of Signaling and Modulation, Bit, Byte & Character Stuffing and Error Detection/Correction Coding Techniques, TCP/IP Level Programming, Routing Algorithms, Exercises comprising simulation of various protocols.

# Course Outline lab: IT 205

- Implementation of Datalink Layer Protocols, Network Layer Protocols and Application Layer Protocols.
- Simulate different types of network topology, configure Router and Switches using open source tool such packet tracer. By writing a program/script measure incoming and outgoing network traffic, power consumption and storage status on networking device(s)/server.

# Evaluation Plan IT 200

30% Midsem Theory Exam

50% Endsem Theory Exam

20% Quiz/Assignment/Test

100%

# Evaluation Plan IT 205

20% Regular lab

40% Endsem Lab Exam

40% course project

Course project (40%)

- 10% Mid sem Evaluation
- 30% End sem Evaluation

{Project Report submission in IEEE Conference format}



# Evaluation Plan

- **10% Mid sem Evaluation (Mini Project) – Proposal and methodology**

Evaluation component: Evaluation in 30 Marks

- Relevance of problem statement (5 Marks)
- Literature survey (5 Marks)
- Methodology: Identifying concurrent region for parallel execution (5 Marks)
- Individual contribution (5 Marks)
- Report (5 Marks)
- Presentation (5 Marks)

# Evaluation Plan

- **30% End Evaluation- Work done, results and analysis**

Evaluation component: Evaluation in 60 Marks

- Methodology (10 Marks)
- Implementation (10 Marks)
- Result and analysis (10 marks)
- Report (10 Marks)
- Presentation (5 Marks)
- Individual contribution (15 Marks)

# Evaluation Plan IT 200

Assessment Type	Course Outcomes (CO)			
	CO1	CO2	CO3	CO4
Mid Sem Theory Exam	X	X	X	X
End Sem Theory Exam	X	X	X	X
Quiz/Assignment/Test	X	X	X	X

# Evaluation Plan IT 205

Assessment Type				Course Outcomes (CO)			
				CO1	CO2	CO3	CO4
End Sem lab Exam				X	X	X	X
Regular Lab				X	X	X	X
Mid	Sem	Mini	Project	X	X	X	X
Evaluation							
End	Sem	Mini	Project	X	X	X	X
Evaluation							

# Reference Books

- “Computer Networks”, Andrew S. Tanenbaum and David J Wetherall, 5th Edition, Pearson, 2013.
- “Data Communications and Networking”, Behrouz A. Forouzan, 4th Edition, McGraw Hill, 2017.
- “Data and Computer Communications”, William Stallings, 10th Edition, Pearson, 2013.
- “Communication Networks”, Leon, Garcia and Widjaja, 2nd Edition, McGraw-Hill, 2003.
- “Computer Networking: A Top-Down Approach”, James Kurose; Keith Ross, 7th Edition, Pearson, 2016.
- “Computer Networks: A Systems Approach”, Larry Peterson and Bruce Davie, 5th Ed., Morgan Kaufmann, 2011.

**Thank You**