| Institute / College Name : | Bakhtiyarpur College of Engineering, Bakhtiyarpur | | |
|---|---|---|---|
| Program Name | B.Tech (CSE) | | |
| Academic Year | 2020-21 | | |
| Course Code | 051708 | | |
| Course Name | Fundamentals of Data Communication | | |
| Semester | 7th | | |
| Lecture / Tutorial (per week): | 3 | Course Credits | 3 |
| Course Coordinator Name: | RAJEEV RANJAN | | |

## 1. <u>Scope and Objectives of the Course</u>

To provide a solid conceptual understanding of the fundamentals of data communications and computer networks. More specifically,

1. To learn the basic concepts of data communications.
2. To learn the layered architecture of communication protocols.
3. To learn digital signal transmission and encoding techniques.
4. To learn multiplexing techniques.
5. To learn the concepts and techniques in error detection and correction.
6. To learn data link control and its related protocols.
7. To learn LAN architectures and systems.
8. To learn switching techniques.
9. To learn the main protocols and standards of the Internet.
10. To learn basic concepts of internetworking, addressing, and routing.

## 2. <u>Textbooks</u>

**TB1:** *Data Communications and Networking*, 4th ed**.**, Behrouz A. Forouzan, McGraw-Hill, 2007.

## 3. <u>Reference Books</u>

**RB1:** *Data and Computer Communications*, 8th ed., William Stallings, Prentice Hall, 2006.
**RB2:** *Computer Networks*, 5th ed., Andrew Tanenbaum, Prentice Hall, 2008.

## <u>Other readings and relevant websites</u>

| S.No. | Link of Journals, Magazines, websites and Research Papers |
|---|---|
| 1. | https://nptel.ac.in/courses/106/105/106105082/ |

## 1. **Course Plan**

| Lecture Number | Date of Lecture | Topics | Web Links for video lectures | Text Book / Reference Book / Other reading material |
|---|---|---|---|---|
| **2** | | **Introduction** | | TB1 |
| | | Data Communication, Network Architecture, Protocol and Standard | https://nptel.ac.in/courses/106/105/106105082/ | |
| **3** | | Signal, Noise, Modulation & Demodulation | | TB1 |
| | | Signal analysis, Signal-to-noise ratio, Bit rate, Baud, Digital Modulation | https://nptel.ac.in/courses/106/105/106105082/ | |
| **2** | | Transmission Media | | TB1 |
| | | Guided Transmission, Wireless Transmission, Digital Transmission | https://nptel.ac.in/courses/106/105/106105082/ | |
| **4** | | Multiplexing | | TB1, RB1, RB2 |
| | | Time division multiplexing, Frequency Division Multiplex, Frequency Division Multiplexing | https://nptel.ac.in/courses/106/105/106105082/ | |
| **4** | | Data Communication codes, Error Control and Data Format | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB2 |
| **3** | | Data Communication hardware | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB2 |
| **5** | | Data Communication equipment | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB2 |
| **5** | | Data Switching | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB1 |
| **2** | | Packet Switching | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB1 |
| **4** | | Asynchronous Transfer Mode | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB1 |
| **5** | | Routing in switched network | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB2 |
| **4** | | Integrated Service Data network | https://nptel.ac.in/courses/106/105/106105082/ | TB1, RB1 |

**Evaluation Scheme:**

| Component 1 | Mid Semester Exam | 20 |
|---|---|---|
| Component 2 | Assignment Evaluation | 10 |
| Component 3** | End Term Examination** | 70 |
| | **Total** | **100** |

** The End Term Comprehensive examination will be held at the end of semester. The mandatory requirement of 75% attendance in all theory classes is to be met for being eligible to appear in this component.

**This Document is approved by:**

| Designation | Name | Signature |
|---|---|---|
| Course Coordinator | RAJEEV RANJAN | |
| H.O.D | SAHAB SAQUIB | |
| Principal | Dr. KUMAR SURENDRA | |
| Date | | |

**Evaluation and Examination Blue Print:**
Internal assessment is done through quiz tests, presentations, assignments and project work. Two sets of question papers are asked from each faculty and out of these two, without the knowledge of faculty, one question paper is chosen for the concerned examination. Examination rules and regulations are uploaded on the student's portal. Evaluation is a very transparent process and the answer sheets of sessional tests, internal assessment assignments are returned back to the students.
The components of evaluations along with their weightage followed by the University is given below

| | |
|---|---|
| Attendance | 05% |
| Mid-Semester Examination | 20% |
| Assignments/Quiz Tests/Seminars | 05% |
| End term examination | 70% |