**Course Profile**

**Semester: Summer**

**Year: 2020**

**Level/Term: 4/1**

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| **I. Course Code:** | EEE 485 |
| **II. Course Title:** | Data Communication and Computer Networks |
| **III. Credit:** | 3 | **IV. Pre-Requisite:** | EEE 315, EEE 323 |
| **V. Contact Hours:** | Lecture- 3 hours/week |
| **VI. Course Objectives:** |
| **The goal of this course is to familiarize students with-**1. To understand the general terminologies and trends in Data Communication and Computer Network.
2. To analyse the data transmission, interfacing, and line coding.
3. To explore the field of computer networking and communication, emphasizing network topologies and interference issues.
4. To get familiar with various network layers.
5. To analyse in-depth techniques for Computer Protocols and IP addressing.
6. To provide a brief knowledge about wireless communication.
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| **VII. Course Outcome (COs):** |
| **Sl. No.** | **COs**(Upon successful completion of this course, students should be able to) | **Corresponding POs** | **Bloom’s taxonomy domain/level\*** | **Delivery Methods & activities** | **Assessment tools** |
| C | A | P |
| CO 485-1 | **Demonstrate** and **apply** data transmission mechanisms, techniques for effective data communication | PO1 | 2,3 | 1 | - | Lectures,Tutorials | CT, Exam |
| CO 485-2 | **Analyse** different aspects of reliability in data communication | PO2 | 4 | 2 |  | Lectures,Tutorials |  |
| CO 485-3 | **Interpret and analyse** different network algorithms and protocols for effective design of computer networks | PO2 | 2,4 | - | - | Lectures,Tutorials | CT, Exam,Assignments |
| CO 485-4 | **Design** networks and subnets with IP calculations | PO3 | 6 | - | - | Lectures,Tutorials | CT, Exam, |

\* C: Cognitive, P: Psychomotor; A: Affective

**VIII. Course Plan with Detail Description:**

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| **Session** | **Contents** | **COs** |
| **Week 1** | * Familiarization with the course, Basics of Data Communication
* Transmission Impairments, Information on data capacity theorem, Shannon’s Capacity theorem, Nyquist theorem
 | 1 |
| **Week 2** | * PCM, Sampling, Quantization, Encoding, Quantization Error, Reduction of quantization error
 | 1 |
| **Week 3** | * DPCM, Delta Modulation, Error of Delta Modulation, Reducing Error
 | 1 |
| **Week 4** | * Digital to Digital Conversion-Source Coding, Line Coding
 | 1,2 |
| **Week 5** | * Block coding
 | 1 |
| **Week 6** | * Digital to Analog Conversion: ASK,FSK,PSK, BPSK
* Error detection and correction. CRC and other methods. RS232 (or EIA 232D) V.24 interface standard
 | 1,2 |
| **Week 7** | * Classification of networks according to topology and size, Relation between LAN, MAN and WAN;
 | 3 |
| **Week 8** | * Network Layer: overview of TCP/IP protocol suite and OSI model
* Internet applications, e-mail and file transfer SMTP and FTP, HTTP Wireless LAN, IEEE 802.11 and Bluetooth.
 | 3 |
| **Week 9** | * Multiple access- CSMA/CD, CSMA/CA, CDMA
* Circuit and packet Switching: Space division and time division switching, single node networks, Packet switching, Circuit switching and hybrid switching, Virtual circuit and data-grams
 | 2,3 |
| **Week 10** | * IP address and subnetting
 | 4 |
| **Week 11** | * Local Area Networks- traditional Ethernet, Fast Ethernet and Gigabit Ethernet, connecting devices, repeater, hub, bridge and switch
 | 3,4 |
| **Week 12** | * Transmission medium: guided and unguided
* Review of lectures delivered so far and discussion with the students.
 | 2 |

**IX. Evaluation Policy:**

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| **Marks Distribution:**  |

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| AttendanceQuizAssignmentPresentationMid ExamFinal Exam | 10%15%10%10%25%30% |
| **Total** | **100%** |

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| **Grading System:** | As per DIU rule |

**X. Resources:**

Textbook(s):

1. **Behrouz A. Forouzan, “**Data Communications and Networking”, 5th Edition

 McGraw Hill, 2012.

1. **Bernard Sklar,** “Digital Communications: Fundamentals and Applications”,

 2nd Edition, Prentice Hall.

Reference(s):

1. **William Stalling**,"Data and Computer Communication", 9th Edition, Pearson.
2. **Fred Halsall,** "Data Communications, Computer Networks, and Open Systems", 4th Edition,Addison Wesley.
3. **James F. Kurose, Keith W. Ross,** “Computer networking: a top-down approach”, 6th Edition, Pearson.

**XI. Course Link in Moodle/Google Class Room**

<https://elearn.daffodilvarsity.edu.bd/course/view.php?id=6807>

**XII. Course Instructor(s):**

* Name: Md. Zakir Hasan

Designation: Lecturer

Email: zakir.eee0191.c@diu.edu.bd

Cell: 01796674214

Signature of the Instructors

