|  |  |
| --- | --- |
| **Course Title:** | **Data communication and Computer Networks** |
| **Course Code:** | **230CCN-3** |
| **Program:** | **Computer Networks** |
| **Department:** | **Department of Network and communications Engineering** |
| **College:** | **College of Computer Science and Information Systems** |
| **Institution:** | **Najran University** |

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# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours:** | | | | 3 (2, 2, 1) [**Theory, Lab, Tutorial**] | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | |  | Department | | | | **✓** | Others |  |  |
| **b.** | | Required | | | | **✓** | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:** | | | | | | | | | | | | **Level 4th** | | | | |
| **4. Pre-requisites for this course** (if any)**: NA** | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**: NA** | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage** |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 75 | 100% |
| **2** | **Blended** |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Distance learning** |  |  |
| **5** | **Other** |  |  |

**7. Contact Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Contact Hours** |
| **1** | **Lecture** | 30 |
| **2** | **Laboratory/Studio** | 30 |
| **3** | **Tutorial** | 15 |
| **4** | **Others** (specify) |  |
|  | **Total** | 75 |

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description Overview of Computer Networks, communication models, TCP/IP Protocol suit, Network Performance Management, Transmission Media, Network Devices, Network Addressing, Error Detection and Correction, Network Routing, and Network Protocols |
|  |
| 2. Course Main Objective |
| The main objective of the course is to introduce the concepts: Computer Networks. Addressing and Data Comm. |

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge and Understanding** |  |
| 1.1 | Explain the key terminologies and concepts of data communications and networking. | K2 |
| 1.2 | Illustrate the services and features of the various network layers. | K2 |
| 1... |  |  |
| **2** | **Skills :** |  |
| 2.1 | Classify the network protocols, devices, Mediums and types that can be used in a real world network. | S4 |
| 2.2 | Analyze the Network Performance Management issues. | S4 |
| 2.3 | Design different types of networks based on IP classes and network topologies. | S1, S6 |
| 2.4 | Setup different types of network using proper network simulator. | S2 |
| **3** | **Values:** |  |
| 3.1 | Troubleshoot the network errors in real world environment. | C1 |
| 3.2 |  |  |
| 3.3 |  |  |
| 3... |  |  |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Introduction to Data Communication And Computer Networks | 4 |
| 2 | Data representation and Physical structures | 4 |
| 3 | OSI model | 4 |
| 4 | TCP/IP protocol suit | 4 |
| 5 | Logical Addressing | 4 |
| 6 | Network Devices | 4 |
| 7 | Data and Signals | 4 |
| 8 | Network Transmission Media | 4 |
| 9 | Protocols | 4 |
| 10 | Routing and Switching Protocols | 8 |
| 11 | Network Security | 4 |
| 12 | Network Performance | 4 |
| 13 | New Topic in Data Communication And Computer Networks | 4 |
| 14 | Revision | 4 |
| **Total** | | 60 |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge and Understanding** | | |
| 1.1 | CLO\_1: Explain the key terminologies and concepts of data communications and networking. | Lecture | Tests,  Quizzes, and Assignments |
| 1.2 | CLO\_2: Illustrate the services and features of the various network layers. | Lecture | Tests,  Quizzes, and Assignments |
| … |  |  |  |
| **2.0** | **Skills** | | |
| 2.1 | CLO\_3: Classify the network protocols, devices, Mediums and types that can be used in a real world network. | Lecture, Lab | Tests,  Quizzes, Assignments , and Lab |
| 2.2 | CLO\_4: Analyze the Network Performance Management issues. | Lecture, Lab | Tests,  Quizzes, Assignments , and Lab |
| 2.3 | CLO\_5: Design different types of networks based on IP classes and network topologies. | Lecture, Lab | Tests,  Quizzes, Assignments , and Lab |
| 2.4 | CLO\_6: Setup different types of network using proper network simulator. | Lecture, Lab | Tests,  Quizzes, Assignments , and Lab |
| 2.5 |  |  |  |
| **3.0** | **Values** | | |
| 3.1 | CLO\_7: Troubleshoot the network errors in real world environment. | Lecture, Lab | Tests,  Quizzes, Assignments , and Lab |
| 3.2 |  |  |  |
| … |  |  |  |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Quiz and Assignment | TBA | 10% |
| **2** | Midterm Examination 1 | 5th week | 15% |
| **3** | Midterm Examination 2 | 9th week | 15% |
| **4** | Lab Activities | 8th week | 10% |
| **5** | Lab Final Examination | 14th week | 10% |
| **6** | Final Examination | 15th week | 40% |
| **7** |  |  |  |
| **8** |  |  |  |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :** |
| Office hours, and using emails. There is also an academic advisor assigned for each student. |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | B.A. Forouzan, Data Communications and Networking, fourth edition, McGraw – Hill. |
| **Essential References Materials** | 1. Tanenbanum A., Computer Networks, Seventh edition., Prentice Hall. 2. Stallings, W., Data and computer communications, Seventh edition, Prentice-Hall. |
| **Electronic Materials** | Available in Blackboard |
| **Other Learning Materials** |  |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | Room B-57  Laboratory B-41 |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | data show, PCs. |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Routing and switching Lab |

# G. Course Quality Evaluation

| **Evaluation**  **Areas/Issues** | **Evaluators** | **Evaluation Methods** |
| --- | --- | --- |
| Feedback about Course Learning Outcomes (CLOs) | Students, Faculty | Direct (A course survey is distributed to students to take their opinion) |
| feedback about the teaching strategies, assessment methods, textbooks, instructor | Students | Direct (A course survey is distributed to students to take their opinion) |
| feedback about the teaching strategies, assessment methods, textbooks, instructor | Faculty | Direct (Meeting with course coordinator and college coordinator periodically.) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** |  |
| **Reference No.** |  |
| **Date** | January 19, 2019 |