|  |  |
| --- | --- |
| **Course Title:**  | **Network Protocols** |
| **Course Code:** | **311CCN-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 6th**  |
| **4. Pre-requisites for this course** (if any)**: 230CCN-3** |
| **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 This course provides the principles and practice of computer networking with emphasis on the Internet and related protocols, including HTTP, FTP, POP, IMAP, SMTP, DNS, UDP, and TCP/IP with a focus on the application, transport and network layers. The course also introduces the structure, components, and functionality of network architectures including packet switching, error control, flow control, and congestion control. |
|  |
| 2. Course Main Objective |
| Upon the successful completion of this course, students will be able to:* Understand what a network protocol is and how it is specified.
* Describe the purpose and operation of key application and transport protocols, including HTTP, FTP, POP, IMAP, SMTP, DNS, UDP, and TCP.
* Demonstrate the operation of the network layer and IP protocol.
* Write applications using socket connections.
* Design and implement a simple web server and email client.

Use a monitoring tool to view and interpret network communication. |

## 3. Course Learning Outcomes

| **CLOs** | **Aligned****PLOs** |
| --- | --- |
| 1 | **Knowledge and Understanding** |  |
| 1.1 | Understand what a network protocol is and how it is specified. | K2 |
| 1.2 | Describe the purpose and operation of key application and transport protocols, including HTTP, FTP, POP, IMAP, SMTP, DNS, UDP, and TCP. | K2 |
| 1.3 | Demonstrate the operation of the network layer and IP protocol. | K2 |
| 1... |  |  |
| **2** | **Skills :** |  |
| 2.1 | Write applications using socket connections. | S5 |
| 2.2 | Design and implement a simple web server and email client. | S1, S2 |
| 2.3 | Use a monitoring tool to view and interpret network communication. | S5 |
| **3** | **Values:** |  |
| 3.1 | Write applications using socket connections. | S5 |
| 3.2 |  |  |
| 3.3 |  |  |
| 3... |  |  |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Introduction to networking terminology, layering, and basic concepts | 6 |
| 2 | Network applications | 3 |
| 3 | HTTP, FTP, SMTP, and DNS protocols | 8 |
| 4 | Socket programming | 4 |
| 5 | Transport layer, UDP and TCP protocols | 9 |
| 6 | Network layer, virtual circuits, datagrams | 10 |
| 7 | IP protocol, forwarding, and routing | 9 |
| 8 | Link layer, Ethernet | 4 |
| 9 | Network security, cryptography, SSL/TLS protocols | 5 |
| .. |  |  |
| **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 | Understand what a network protocol is and how it is specified. | Lectures, Small Group Work, Small Group Discussion  | Quiz 1,Midterm-1 Exam, Final Exam  |
| 1.2 | Describe the purpose and operation of key application and transport protocols, including HTTP, FTP, POP, IMAP, SMTP, DNS, UDP, and TCP. | Lectures, Small Group Work, Small Group Discussion  | Quiz 1,Midterm-1 Exam, Final Exam  |
| 1.3 | Demonstrate the operation of the network layer and IP protocol. | Lectures, Small Group Work, Small Group Discussion  | Quiz 1,Midterm-1 Exam, Final Exam  |
| **2.0** | **Skills** |
| 2.1 | Write applications using socket connections. | Lectures, Small Group Work, Small Group Discussion  | Quiz, Midterm-1 Exam, Final Exam  |
| 2.2 | Design and implement a simple web server and email client. | Lectures, Small Group Work, Small Group Discussion  | Midterm-1 Exam, Final Exam  |
| 2.3 | Use a monitoring tool to view and interpret network communication. | Lectures, Small Group Work, Small Group Discussion  | Midterm-2 Exam, Final Exam  |
| 2.4 |  |  |  |
| 2.5 |  |  |  |
| **3.0** | **Values** |
| 3.1 | Developing oral presentation skills. | Lectures, Small Group Work, Small Group Discussion  | Group presentation assignment |
| 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 :** |
| 1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (Include amount of time teaching staff are expected to be available each week) During the whole semester, 10 hours/week are reserved for students to guide them, to help them, to explain them topic which is not clear to them etc.  |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | 1. James F. Kurose , Keith W. Ross, Computer Networking: A Top-Down Approach, Pearson; 6th edition. |
| **Essential References Materials** | 1. Jeff Doyle, Routing TCP/IP, Volume I, 2nd Edition Cisco Press, 2016.
2. Jeff Doyle, Routing TCP/IP, Volume II, 2nd Edition Cisco Press, 2016.
 |
| **Electronic Materials** | Available in Blackboard  |
| **Other Learning Materials** |  |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**(Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture Rooms with 20 seats with smart table, Mic, Speaker, PC, Auto Projector with Screen and a white board or a smart board (male Section). |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | 1. Desktop/ Laptop computer Multimedia Projector
2. Laboratory contains an enough number of PC to accommodate all students with Java-related software like JCreator , J2SE , NetBean, Eclipse and JRE licensed version with network package should be installed.
 |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | 1. A File cabinet to keep class stuffs, papers and students files, and a printer to print program screen shots.  |

# 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.) |
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**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  |