|  |  |
| --- | --- |
| **Course Title:** | Multimedia Networks and Applications |
| **Course Code:** | **521CCN-3** |
| **Program:** | **Bachelor of Science in Computer Networks** |
| **Department:** | **Department of Computer Networks** |
| **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)** | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | |  | Department | | | |  | Others |  |  |
| **b.** | | Required | | | |  | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:**  **Level 8** | | | | | | | | | | | |  | | | | |
| **4. Pre-requisites for this course** (if any)**:**  N/A | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**:** | | | | | | | | | | | | | | | | |
| N/A | | | | | | | | | | | | | | | | |

## 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) | 45 |
|  | **Total** | 120 |

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description This course explains and discusses key concepts of Multimedia networking, including: Introduction: Digital Audio, Graphics and Video, Voice over IP (VoIP); Characteristics of Multimedia; Multimedia perceptual quality: Frame rate, Delay, Jitter, Loss; Compression standards; QoS; an overview of current multimedia applications (e.g., media-on-demand, Internet Telephony, online gaming). |
|  |
| 2. Course Main Objective 2. Course Main Objective  After completing the course student will be able to  Describe multimedia compression techniques and standards,  Describe and analyze QoS mechanisms and protocols,  Conduct performance analysis  Discuss and evaluate multimedia over wireless networks.  Demonstrate understanding of how to conduct performance evaluation through a basic evaluation of the VoIP application  Demonstrate understanding of streaming audio by building a Voice over IP (VoIP) application from scratch  Apply the knowledge and methods of multimedia applications in real networks. |
|  |

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge and Understanding** |  |
| 1.1 | Define the concepts and terminologies of multimedia networks and applications. | K1 |
| 1.2 | Analyze QoS mechanisms and protocols | K2 |
| 1.3 |  |  |
| 1... |  |  |
| **2** | **Skills :** |  |
| 2.1 | Evaluate the performance and different issues of multimedia networks and applications. | S1,S6 |
| 2.2 | Explain various VoIP, Wireless VoIP, IPTV, media-on-demand. | S6 |
| 2.3 | Apply the knowledge and methods of multimedia networks and applications in real multimedia networks. | S5 |
| 2... |  |  |
| **3** | **Values:** |  |
| 3.1 |  |  |
| 3.2 |  |  |
| 3.3 |  |  |
| 3... |  |  |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Introduction to Multimedia Networking | 4 |
| 2 | Multimedia compression | 4 |
| 3 | QoS mechanisms (scheduling, admission control) | 8 |
| 4 | multicasting techniques | 7 |
| 5 | Multimedia Streaming | 7 |
| ... | Protocols for Real-Time Interactive Applications | 5 |
|  | Synchronization and Adaptation | 5 |
|  | Integrated Services and Differentiated Services | 5 |
|  | VoIP | 10 |
|  | Wireless VoIP | 5 |
| **Total** | |  |

# 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 | Define the concepts and terminologies of multimedia networks and applications. | Lectures, Small Group Work, Small Group Discussion | Quiz 1,Midterm-1 Exam, Final Exam |
| 1.2 | Analyze QoS mechanisms and protocols | Lectures, Small Group Work, Small Group Discussion , Giving students tutorial related to QoS mechanisms and protocols. | Midterm exam (Each exam consists of multiple choice questions, true/false, fill in the blanks, and theoretical questions.) |
| … |  |  |  |
| **2.0** | **Skills** | | |
| 2.1 | Evaluate the performance and different issues of multimedia networks and applications. | Lectures, Small Group Work, Small Group Discussion , Giving students tutorial related to scheduling algorithms, thread, memory management etc. Motivating students to work in the home | Midterm exam (Each exam consists of multiple choice questions, true/false, fill in the blanks, and theoretical questions.) |
| 2.2 | Explain various VoIP, Wireless VoIP, IPTV, media-on-demand. | Lectures, Small Group Work, Small Group Discussion | Quiz 1,Midterm-1 Exam, Final Exam |
| … | Apply the knowledge and methods of multimedia networks and applications in real multimedia networks. | Lectures, Small Group Work, Small Group Discussion | Quiz 1,Midterm-1 Exam, Final Exam |
| **3.0** | **Values** | | |
| 3.1 |  |  |  |
| 3.2 |  |  |  |
| … |  |  |  |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Quiz and Assignment | 2 |  |
| **2** | Midterm Examination 1 | 5 |  |
| **3** | Midterm Examination 2 | 9 |  |
| **4** | Lab Activities | 8 |  |
| **5** | Lab Final Examination | 14 |  |
| **6** | Final Examination | 15 |  |
| **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 :** |
| 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** | Multimedia Networks: Protocols, Design and Applications, Hans W. Barz, Gregory A. Bassett, Wily, 2016. |
| **Essential References Materials** | 1. Multimedia: Concepts and Practice, Stephen McGloughlin, November 2000, Prentice Hall 2. Multimedia Communication Systems, K. Rammohanarao, Z. S. Bolzkovic, D. A. Milanovic, 1st edition, Prentice Hall, May 2002. 3. Multimedia Communications: Applications, Networks, Protocols, and Standards. Fred Halsall. Pearson Education, 2001 |
| **Electronic Materials** | Available in Blackboard |
| **Other Learning Materials** | Collaboration Networks Lab (VoIP & Video) |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. 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). 2. Collaboration Networks Lab (VoIP & Video) |
| **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) | . 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.) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# 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 |