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Course Title: Data Communication & Networking

Course Code: IS-360

Resource Person: Usman Sattar

Department: IS Department

**HSM Vision**

HSM envisions its success in the sustainable contribution that it will make to the industry, academia and research in public and private sector. HSM will lead by providing professionally competent and ethically conscious human resources engaged in the global and local context to foster socio-economic growth and sustainability for the society. HSM envisages having faculty with high research potential and a deep desire for cutting edge research including collaboration with national and international partners.

**HSM Mission**

Being a research-oriented and student-centric business school, we emphasize research publications in impact journals as well as state-of -the-art learning methodologies.  We will prepare our students to become the future ethical business leaders and the guiding post for the society, while equipping them with the knowledge and skills required by world-class professionals.  We will be the leading choice for organizations seeking highly talented human resource. HSM will foster internationalization with key stakeholders and actively work to exchange best practices with business schools across Pakistan through collaborations, workshops, conferences and other means.

**Program Objectives**

**Course Objectives**

In today's technologically advanced world, computers play a dominant role. No matter you are at work, in studies at college or school, or just enjoying a leisurely time in your home, it is certain that you may either switch on your computer or any other related state of the art devices. The importance of computer s further enhanced by increased usage of the internet.

Data communication and networking may be the fastest growing technologies in our culture today. One of the ramifications of that growth is a dramatic increase in the number of professionals – where an understanding of these technologies is essential for success and a proportionate increase in the number and types of students taking courses to learn about them.

Data communication and networking are changing the way we do business and the way we live. Business decisions have to be made more quickly, and the decision makers require immediate access to accurate information. Business today relay on computer networks and internet works. But before we ask how quickly we can hooked up, we need to know how networks operate, what type of technologies are available, and which design best fills which set of needs.

However, the growth of wireless networks and the increasing use of virtual private networks, which allow a user to access a business' network via the internet, have not only resulted in a wider choice of solutions for the business owner, but also a number of additional business benefits.

In modern business environments that rely heavily on information technology, the network security audit or assessment is a vital component of network maintenance and repair. Let it be of any type, an effective network security system can undoubtedly fetch you a host of benefits such as improved productivity, enhanced control and visibility, improved usage of IT resources, utmost protection as well as security of data, and legislative compliance. Adoption of a good network security system also ensures that only right personnel have the right level of access.

**Learning Objectives**

The teaching of the course will be via a series of lectures, case studies, seminars, guest lectures, quizzes, assignments and labs where applicable. This will be complemented by the use of textbook and an extensive range of web resources plus handouts.

Participants will be required to work in study groups for the final project. Participants are required to prepare and share a range of study material derived from the assessment process. The aim of the study groups is to enhance the learning environment of the class.

Participants should expect 5-8 quizzes/assignments during each semester. Quizzes will be unannounced. There shall be no makeup quizzes for missed sessions and/or low scoring quizzes. However in the last session a final quiz will be taken which will be treated as a makeup quiz for the lowest score of the participant in any quiz.

Submission deadlines for assignments, cases and the project will not be extended. Participants shall not waste their time and energies to plead for one.

**Learning Outcomes**

**Teaching Methodology (List methodologies used –example are given below)**

Interactive Classes

Case based teaching

Class activities

Applied Projects

Experiential Learning

**STUDENTS ARE REQUIRED TO READ AND UNDERSTAND ALL ITEMS OUTLINED IN THE PARTICIPANT HANDBOOK**

**Class Policy:-**

* Be On Time

You need to be at class at the assigned time. After 10 minutes past the assigned time, you will be marked absent.

* Mobile Policy

**TURN OFF YOUR MOBILE PHONE!** It is unprofessional to be texting or otherwise.

* Email Policy

**READ YOUR EMAILS!** You are responsible if you miss a deadline because you did not read your email.

Participants should regularly check their university emails accounts regularly and respond accordingly.

* Class Attendance Policy

A minimum of 80% attendance is required for a participant to be eligible to sit in the final examination. Being sick and going to weddings are absences and will not be counted as present. You have the opportunity to use 6 absences out of 30 classes. Participants with less than 80% of attendance in a course will be given grade ‘F’ (Fail) and will not be allowed to take end term exams. International students who will be leaving for visa during semester should not use any days off except for visa trip. Otherwise they could reach short attendance.

* Withdraw Policy

Students may withdraw from a course till the end of the 12th week of the semester. Consequently, grade W will be awarded to the student which shall have no impact on the calculation of the GPA of the student.A Student withdrawing after the 12th week shall be automatically awarded “F” grade which shall count in the GPA.

* Moodle

UMT –LMS (Moodle) is an Open Source Course Management System (CMS), also known as a learning Management System (LMS). Participants should regularly visit the course website on MOODLE Course Management system, and fully benefit from its capabilities. If you are facing any problem using moodle, visit <http://oit.umt.edu.pk/moodle>. For further query send your queries to [moodle@umt.edu.pk](mailto:moodle@umt.edu.pk)

* Harassment Policy

Sexual or any other harassment is prohibited and is constituted as punishable offence. Sexual or any other harassment of any participant will not be tolerated. All actions categorized as sexual or any other harassment when done physically or verbally would also be considered as sexual harassment when done using electronic media such as computers, mobiles, internet, emails etc.

* Use of Unfair Means/Honesty Policy

Any participant found using unfair means or assisting another participant during a class test/quiz, assignments or examination would be liable to disciplinary action.

* Plagiarism Policy  
    
  All students are required to attach a “Turnitin” report on every assignment, big or small. Any student who attempts to bypass “Turnitin” will receive “F” grade which will count towards the CGPA. The participants submit the plagiarism report to the resource person with every assignment, report, project, thesis etc. If student attempts to cheat “Turnitin”, he/she will receive a second “F” that will count towards the CGPA. There are special rules on plagiarism for final reports etc. all outlined in your handbook.
* Communication of Results

The results of quizzes, midterms and assignments are communicated to the participants during the semester and answer books are returned to them. It is the responsibility of the course instructor to keep the participants informed about his/her progress during the semester. The course instructor will inform a participant at least one week before the final examination related to his or her performance in the course.

**Course Outline**

Course code……………………………...... Course title………………………………………

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| --- | --- |
| Program | BBIS |
| Credit Hours | 3 |
| Duration | 15 week |
| Prerequisites (If any) |  |
| Resource Person  Name and Email | Usman Sattar  Usman.sattar@umt.edu.pk |
| Counseling Timing  (Room# ) | **Tuesday:** 12:30 – 3:30  **Wednesdays:** 9:00 – 11:00  **Thursday:** 11:00 – 2:00 |
| Contact no. | 0307-4446174 |
| Web Links:- (Face book, Linked In, Google Groups, Other platforms) | [www.facebook.com/usman](http://www.facebook.com/usman) sattar |

**Chairman/Director Programme signature………………………………….Date……………………..**

**Dean’s signature…………………………… ………………….Date………………………………………….**

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

**Marks Evaluation Marks in percentage**

Mid-Term 25%

Final exam 35%

Quizzes, Attendance 20%

Presentation & Assignments 20%

Total 100%

**Recommended Text Books:**

### Data and Computer Communications, Seventh Edition by William Stallings

* Data Communication and Networking, Fourth Edition by Behrouz A Forouzan

**Reference Books:**

**Course: ----- -Course code: ------- ------------Book: ----------------------------------------------------------------------------------------------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Topics to be**  **covered in the course** | **Learning Objective**  **of this topic** | **Expected Outcomes from Students** | **Teaching Method** | **Assessment Criteria** | **Deadlines and Homework** |
| 1 | Introduction to data communication | Data communications, Networks, The Internet, Internet and Intranet, Protocols and Standards | Simple networks communication model, concept of networks. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 2 | Network models | Detail explanation of layered tasks, the OSI Model, TCP/IP protocol suite | Students must understand layering model architecture and their in depth knowledge. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 3 | Addressing | Physical addresses, Logical addresses, Port addresses, Specific addresses | Students are expected to understand MAC Address, IP V4 and in depth knowledge of different addressing schemes. | Each and every topic will be presented to them using real time environment. | Assign. / Quiz / |  |
| 4 | Bandwidth utilization: multiplexing | A brief introduction to multiplexing. Using diagram explanation of multiplexing and de multiplexing | Band width, its importance, utilization, need of multiplexing and live scenarios of real world. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 5 | Transmission Media | Guided Media, Unguided Media: Wireless | UTP, STP, fiber optic, modes, connectors, bluetooth, infrared. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 6 | Telephone and Cable Networks | Using Telephone and Cable Networks for Data Transmission, Telephone Network, Dial-up Modems, Digital Subscriber Line, ISDN | PTCL infrastructure, wireless local loop, ISDN, PSTN and DSL. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 7 | Wired LANs | Ethernet,  IEEE Standards, Standard Ethernet, Fast Ethernet, Gigabit Ethernet | Cabling standards, connectors and different network architectures. | Each and every topic will be presented to them using real time environment. | Assign. / Quiz / Surprise Questions |  |
| 8 |  | Mid Term Exam |  |  |  |  |
| 9 | Wireless LANs, | LAN Standards, IEEE 802.11, Bluetooth | After this session students must know WLAN and it configurations. | Each and every topic will be presented to them using real time environment. | Assign. / Quiz / Surprise Questions |  |
| 10 | Connecting LANs | Connecting devices, Hubs, Repeaters, Bridges, Switches, Routers | Understanding of connecting devices and their working. | Each and every topic will be presented to them using real time environment. | Assign. / Quiz / Surprise Questions |  |
| 11 | Wireless WANs: | Cellular Telephone and Satellite Networks, first, second, third generation, satellite networks. | AIMS, GSM and understanding of satellite orbits and networks. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 12 | Network Management | Configuration management, fault management, performance management, security management, accounting management. | Understanding of network management concepts and their applications. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 13 | Client and Server | Client Server Applications, Overview of DNS, ISA, File Server, Exchange Server, DHCP, Static IP, Dynamic IP | Understanding of different network oriented servers, their working and configuration. | Practical demo of entire exercise | Assign. / Quiz / Surprise Questions |  |
| 14 | Allied Network Technologies and their Issues | Network Security Issues, Video Conferencing, Vo/IP | In depth understanding of security issues in the data traveling over networks. | Presentation / White Board | Assign. / Quiz / Surprise Questions |  |
| 15 |  | Final Project Presentation |  |  |  |  |