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| **logo University of Management & Technology**  School of Engineering  Department of Electrical Engineering | | | |
| EE 375 Telecom Switching and Transmission | | | |
| **Lecture Schedule** | Monday, Wednesday 09:30 – 10:45 (Sec C) | **Semester** | Fall 2014 |
| **Pre-requisite** | EE-310 Electromagnetics | **Credit Hours** | 3 |
| **Instructor(s)** | Khalid Asghar (Sec A) | **Contact** | [khalid.asghar@umt.edu.pk](mailto:khalid.asghar@umt.edu.pk) |
| **Office** | 2nd Floor, 3S-41, Cabin 3, | **Office Hours** | See office window |
| **Teaching Assistant** | None | **Contact** | N/A |
| **Course Website** |  | | |
| **Course Description** | This course is a fundamental course of Telecommunication systems. It covers following topics. Overview of different switching systems including the Manual, Electromechanical, Electronic and Digital Switching. Voip, soft switch , Media gateway and NGN will be discussed. Transmission systems like PCM, PDH, SDH and Ethernet will be discussed. Most modern communication techniques like Optical fiber communication will be discussed exclusively. Telecom Traffic and Signaling will also be discussed The course contributes to HEC Electrical Engineering Curriculum **objectives** a, d, e and f. | | |
| **Expected Outcomes** | In accordance with HEC curriculum **outcomes** a, b, d, e, g, h and I, the students at the end of the course should be able to   * Understand the Telecom Switching System. * Understanding of Telecom Transmission Systems * Understanding of Telecom Traffic and signaling systems | | |
| **Textbook(s)** | **Recommended Text:**   1. Telecommunications Switching, Traffic and Network by J.E Flood   2-Optical Communications Latest Edition by Gerd Keiser, Tata McGraw-Hill”    **Reference:**  “Telecommunication Transmission System by Robert Winch latest Edition | | |
| **Grading Policy** | Final Term: 50% Mid Term: 25%  Quizzes & Assignments: 15% Project: 10% | | |

**Course Schedule**

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| **Lecture** | **Topics** | **Textbook (TB) /**  **Reference (Ref) Readings** |
| 1-2 | Motivation for Telecom Systems Introduction to Basic Telephone System. Introduction to basic switching systems. Introduction to OSP. Establishment of local call. Establishment of National call  Establishment of International call. | T.B¹ 1.1 – 1.7 |
| 3-5 | Mechanical Switching, Electromechanical Switching, Electronic Switching. Digital Switching. | TB¹ 3.1 – 3.7  T.B¹ 3.10 – 3.13 |
| 6-8 | VoIP, Soft - switch, Media Gateway and NGN Network | TB¹ 9.1 –9.2  9.3.1-9.3.3  9.5 |
| 9-11 | Packet Switching, Telecom Traffic , Congestion, Traffic measurements, Queuing Systems, Lost Call system, Signaling Systems | TB¹ 9.4, 4.1 - 4.7 |
| 12-15 | Basic Transmission Systems, Z12F, Coaxial Cable System, Radio Transmission System Including Microwave System | TB 2.1 – 2.6 |
| **Mid Term Exam (8th Week)** | | |
| 17 - 24 | Basic V.F Bandwidth, ITU-T standards. Sampling, Quantizing,  Uniform Quantizing, Quantization Noise, Quantization Detail  Companding , A-LAW,µ-Law. Encoders, Operating Principle of the iterative encoder,Recent Coding development. | RB 2.1 – 2.4 |
| 25-27 | Plesiochronous Digital Hierarchy, 1st, IInd, IIIrd, IVth and Vth Order System, Synchronous Digital Hierarchy, Sychronous Optical Network, Framing and Mulitplexing | RB 2.5-2.6 |
| 28-30 | Overview of WDM, Passive Optical Couplers, Isolators and Circulators, Fiber Grating Filters, Dielectric Thin film filters, | TB(2) 10.1-10.5 |
| 31-32 | Optical Networks | TB(2) 11.1 – 11.5 |
| **Final Term Exam (Comprehensive)** | | |