SYLLABUS

Date/ Revision	07 October 2016 / Rev.0
Faculty	Engineering
Approval	Dean of Engineering Faculty

SUBJECT : INTRODUCTION TO TELECOMMUNICATIONS

1. Identification of Subject:

Name of Subject	: Introduction to Telecommunications
Code of Subject	: TELE-2100
SKS	: 2
Semester	: 5
Study Program	: B-ELE, B-MTE (Semester 5)
Lecturer	: To be announced

2. Competency

After studying the Introduction to Telecommunications course, the student able to:

- Describe the nature and kinds of telecommunication.
- Define telecommunication and contrast it to other communication systems.
- Recount and explain the development of telecommunication in general.
- Compare and contrast the communication industries.
- Perform a contemporary analysis of a specific telecommunications outlet (newspaper, radio station, television station, magazine etc.).
- Describe current issues in telecommunication.
- Understand the OSI Layer.
- Understand the communication Protocols.
- Describe the analog- and digital-modulation principle

3. Description of Subject:

This course is designed to provide basic information and an overview of the telecommunications principle. The course covers the telecommunication principles, standardization and regulation, the evolution of data communications, the data protocols, analog- and digital-modulation and demodulation.

4. Learning Approach

Approach	: Combination of Expository - inquiry and colaborative
Method	: Discussion, question answer, sample problem, group work
Student Task	: Home work, presentation
Media	: LCD projector, Teaching Aids (components), Simulation SW, film.

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5. Evaluation

a) Absence maximum : 25%
b) Participation in discussion : 5 points
c) Homework, Classwork : 5 points
d) Presentation, Simulation : 10 points
e) Daily Quiz : 20 points
f) Final Examination : 60 points

Total : 100 points

6. Contents/ Topics of Lecturing:

Week	Content/ Topics of Lecturing	Text Book Chapter	Remark
1	**History of Telecommunications** • The Beginning • Analog Telephony Era • Wireless Era	Ch1 Part 1.1, 1.2	
2	**The Telecommunications Scene:** • Current Information Sources • Telecommunications Market • Effect of Video Services • Network Scalability • How to Handle Increased Smartphone Signaling • Effects of Online Video	Ch1 Part 1.3,	
3-4	**Standardization and Regulation:** • Introduction • Standardization Bodies, Industry Forums, Other Entities **Frequency Regulation** • National Regulators • Guideline for Finding and Interpreting Standards	Ch2: Part 2.1, 2.2, 2.3 ... part 2.7	Quiz
5	**Telecommunications Principles** • Introduction • Terminology and Planning Principles: Decibel, Erlang, Noise and Interferences, • Other Typical Telecommunications Units	Ch3 3.1, 3.2 3.3	
6	**Evolution:** • Mobile Networks, • Mobile Data • Demand for Multimedia • Spectrum Allocations	Ch3 3.3, 3.4, 3.5	Quiz
7	**Physical Aspects:** • Radio Interface and Radio Links • Electrical Wires: Copper Lines, Fiber Optics	Chapter 3 Part 3.5	

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8	**MIDTERM SEMESTER BREAK**		
9	**Protocols:** • Introduction • OSI : Physical Layer (1), Data Link Layer (2), Network Layer (3), Transport Layer (4), Session Layer (5), Presentation Layer (6), Application Layer (7) • Practice	Ch4 4.1, 4.2,	Quiz
10	**Fixed Networks :** SS7, SIGTRAN • Mobile Networks • Data Networks: TCP/IP, UDP	Ch4 4.3, 4.4, 4.5	
11	**Error Recovery: Message,** Error Correction Methods • LAP Protocol Family • Cross-Layer Protocol Principles	Ch4 4.6, 4.7, 4.8	
12	**Modulation and Demodulation** • Analog Modulation Methods: Amplitude Modulation, Frequency Modulation, Phase Modulation	Ch 10 10.1, 10.2,10.3	Quiz
13	**Digital Modulation and Demodulation:** • Amplitude Shift Keying (ASK) • Phase Shift Keying (PSK) • Combinations of ASK and PSK • Frequency Shift Keying (FSK)	Ch 10 10.4, 10.4.1 – 10.4.4	
14	**Modulation from a Mathematical Perspective:** • Pulse Shaping and Power Spectral Density of Modulated Signals • Typical Transmitter- and Receiver-Side Signal Processing • Digital Modulation Schemes Used in Practical Systems • Multiplexing, Multiple Access and Duplexing • Orthogonal Frequency Division Multiplex	Ch 10 10.4, 10.4.5 – 10.4.10	
15	**REVIEW and FINAL EXAM Preparation**		
16	**Final Exam**		

7. Book Reference:

Text Book: "*The Telecommunications Handbook, Engineering Guidelines for Fixed, Mobile* and Satellite Systems" , Authors / Edited by: Jyrki T. J. Penttinen, Publisher: John Wiley, 2015, ISBN: 9781119944881

[Subject to Change / MaS /Rev. 01]

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