ICE-3261 [Communication Engineering]

B.Sc. Engg. Part-3 Even Semester

75 Marks 3 Credits 33 Contacts Hours

Course Instructor:

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Lectures:

Begins: 11/12/2022

Class Room: Google classroom ICE-3261-22 (Even)

Topics included:

Communication engineering fundamentals, analog communication, digital communication, various modulation-demodulation techniques, error control, block control, propagation techniques, satellite communication, Fiber optic communication

Course materials:

1. **Text books**:

i) Data Communication and Networking, **5th Edition**, Behrouz A. Forouzan
ii) Data and Computer Communications, William Stallings, **8th Edition**

2. **Reference books**:

i) Data Communication, Computer Network and Open Systems, F. Halsall
ii) Computer Networks, Andrew S. Tanenbaum
iii) Optical Fiber Communications, John M. Senior

Course outcome: After completing the course the students will be able to

- Use different modulation and demodulation techniques used in digital/analog communication
- Classify digital/analog modulation techniques
- Identify and solve basic communication problems
- Analyze transmitter and receiver circuits
- Compare and contrast design issues, advantages, disadvantages and limitations of digital/analog communication systems

Pre-requisite: Not applicable

Assumed Knowledge: The students will have background knowledge of physics and mathematics background obtained at a high school (or equivalent) level. In particular, working knowledge of basic mathematics including differentiation, integration and probability theories are assumed.

Examinations:

Total three class tests and one surprise test will be taken in between classes and the final examination will be held at the end of the course. No electronic devices other than a calculator will be allowed during the examinations (including phones, PDAs, MP3/CD players). The tentative schedule of the examinations are:

Test	Tentative Date	Duration	Portions
Class Test I	4th Week	1 Period	Sessions from 1st week to 4th week
Class Test II	8th Week	1 Period	Sessions from 6th week to 8th week
Surprise Test	-	1 Period	Sessions from 1st week to 8th week
Class Test III	11th Week	1 Period	Sessions from 9th week to 11th week
Final Examination	According to academic calendar	3 Hours	All sessions

Assignments:

Assignments will be given periodically. The assignments are to be worked individually. **Any work directly copied from the internet, other students, text etc. will result an automatic zero for the assignment**. All late submission will have points subtracted from them. Assignment must be returned in hardcopy. However, an email containing your complete and finished assignments as document, JPEG or PDF will suffice until you can turn in the hardcopy. A week after the due date the assignments will no longer be accepted.

Tentative class schedule:

1st week:	Fundamentals of communication engineering, Data and Signals – fundamental concepts
2nd week:	Digital communication fundamentals – transmission modes, impairments
3rd week:	Digital transmission: digital to digital conversions – Line coding scheme
4th week:	Digital transmission: digital to digital conversions – Block coding schemes
5th week:	Digital transmission: analog to digital conversions – PCM, DM, Transmission modes
6th week:	Analog transmission: Digital to analog conversions
7th week:	Analog transmission: Analog to analog conversions – AM, FM, PM
8th week:	Error detection and correction
9th week:	Multiplexing
10th week:	Transmission Media: Guided media, fiber optic communication, Unguided media, Propagation
11th week:	Satellite Communication

Teaching Strategies: The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies:

Class Test – I	–	4%
Class Test – II	–	4%
Class Test – II	–	4%
Surprise Test	–	4%
Assignments	–	4%
Attendance	–	10%
Final exam	–	70%