Poornima Group of Colleges, Jaipur

Session: 2011-12 (ODD Sem.)

Name of College: Poornima College of Engineering

Department of Electronics &Communication Engineering

Zero Lecture

Name of Faculty: Krishan Kr. Garg

1). Name of Subject with Code: **Signals &System (5EI01)**

2). Self-Introduction:

a). **Name: Krishan Kr. Garg**
b). Qualification: B.Tech.-ECE
c). Designation: Lecturer
d). Research Area: Communication systems and signals & system
e). E-mail Id:krishang@poornima.org
f). Other details:

1) Areas of proficiency/ expertise:-

1.1. Subject taught:-

1.1.1-Digiatal Electronics
1.1.2.-Analog Electronics

1.2 Laboratory taken:-

1.2.1- Digital Electronics
1.2.2- Power Electronics Lab-II

1.3 Academic Proficiency

1.3.1.- Hindi and English

1.4 Book Authored:- none

1.6 Paper published in National and International Conference/Journals:-none

3). Introduction of Students:

a). Identifying and keeping records of students based on merit/ weak in academics, smart/ dull in extra & co-curricular activity, day scholar/ hosteller, Hindi or English medium, urban or rural family background, their learning style (seeing, hearing, doing) etc.

b). Achievement of students in previous years

Sr. No.	Year	Result At PCE	Univ. Result (In %)	Name of student scored highest marks with the scored marks.	Fail (no. of students)	Marks between 40%-60% (no. of students)	Marks 60% above (no. of students)
1	2007-08						
2	2008-09						
3	2009-10						

4). Instructional Language: - 60%English; 40% Hindi (English not less than 60%)

5). Introduction to subject: -

a). Relevance to Branch:

As you all belongs to electronic and communication so it is very important for you to have the basic knowledge about the communication process from transmitter to the receiver it depends upon different

types of signals and their properties. This subject give you a brief idea about the signals .Signals and system covers important issues like what is the basic building block of every processing system, how digital system works. We'll learn how processing of any system works at the basic level and how different levels of processors perform.

b). Relevance to Society:
Signal & System helps in understanding the basics of signal processors and help in day to day life as it will lead to understanding of various practical systems and many day to day functions and since it is a building block of any digital system, we can make any new system using it which can help in new inventions and help in the development of human race.

c). Relevance to Self:
This subject moves us to the depth of Signal & Systems. Being a Electronics Engineer we must know about the different types of signals and their properties with various transformation. Response of a system depends upon the applied signals as a input to the system. Also we must know that how actually the different parts of a digital system work in the practical digital communication systems and other signal processing systems.

d). Relation with laboratory:
We shall also implement sampling theorem, linear and circular convolution using DSP kits with the theory knowledge of these topics using MATLAB.

e). Connection with previous year and next year:
In this year we will study Signals & Systems which gives us basic knowledge of various signals, LTI systems, Z- transform and Fourier Transform. Next year we'll study how digital data is processed. Various M. Tech programs in signal processing, image processing are also conducted.

6). Syllabus of Rajasthan Technical University, Kota

a). Index Terms/ Key Words:
1. Different signals
2. Convolution
3 .Fourier series
4. Fourier transform
5. z transform
6. Laplace transform
7. Sampling theorem
8. Aliasing.

b). RTU Syllabus with Name of Subject & Code

5EC1 SIGNALS AND SYSTEMS

UNIT 1: **INTRODUCTION :** Continuous time and discrete time systems, Properties of systems. Linear time invariant systems - continuous time and discrete time. Properties of LTI systems and their block diagrams. Convolution, Discrete time systems described by difference equations.

UNIT 2 : FOURIER SERIES REPRESENTATION OF SIGNALS : Fourier series representation of continuous periodic signal & its properties, Fourier series representation of Discrete periodic signal & its properties, Continuous time filters & Discrete time filters described by Diff. equation.

UNIT 3 : **FOURIER TRANSFORM:** The continuous time Fourier transform for periodic and aperiodic signals, Properties of CTFT. Discrete time Fourier transform for periodic and aperiodic signals. Properties of DTFT. The convolution and modulation property.

UNIT 4 : **Z-TRANSFORM & LAPLACE TRANSFORM** : Introduction. The region of convergence for the Z-transform. The Inverse Z-transform. Two dimensional Z-transform. Properties of Z transform.Laplace transform, Properties of Laplace Transform, Application of Laplace transform to system analysis.

UNIT 5 : **SAMPLING** : Mathematical theory of sampling. Sampling theorem. Ideal & Real sampling.Interpolation technique for the reconstruction of a signal from its samples. Aliasing. Sampling in freq.domain. Sampling of discrete time signal.

c). ABC analysis (RGB method) of unit & topics

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UNIT 2 : FOURIER SERIES REPRESENTATION OF SIGNALS : Fourier series representation of continuous periodic signal & its properties, Fourier series representation of Discrete periodic signal & its properties, Continuous time filters & Discrete time filters described by Diff. equation.

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7). Books/ Website/Journals & Handbooks/ Association & Institution:

a). Recommended Text & Reference Books and Websites:

S. No.	Title of Book	Authors	Publisher	Cost (Rs.)	No. of books in Library
Text Books					
T1	Signals & system	Farooq husain	Umesh	175/-	10
T2	Signal & system	Sanjay sharma	Ketson	275/-	60
T3	Signal & system	Oppenheim-Willsky	pearson	225/-	35
Reference Books					
R1	Signal & system	Rodger william	pearson	350/-	07
R2					
R3					
Websites related to subject					
1	www.gigapidea.com				
2	library.nu				

b). Journals & Handbooks: - To give information about different Journals & Handbooks available in library related to the subject and branch.

1. Research journal of IETE.
2. Technical review of IETE

c). Associations and Institutions: - To give information about different Associations and Institutions related to the subject and branch.

1. ISTE (International Society for Technical Education)
2. IEEE (Institute of Electrical and Electronics Engineers)

8). Syllabus Deployment: -

a). Total weeks available for academics (excluding exams/ holidays) as per PGC calendar-

Semester	I	III	V	VII
No. of Working days available(Approx.)	-	76	76	-
No. of Weeks (Approx.)	-	12.5	12.5	-

- Total weeks available for covering RTU syllabus- 10-11 weeks (Approx.)
- Total weeks available for special activities (as mentioned below)- 02 weeks (Approx.)

Note: Individual faculty must calculate the exact no. of lectures available according to time table etc. after consultation with HOD.

b). Special Activities (To be approved by HOD, Dean & Campus Director & must be mentioned in deployment):

- Open Book Test- Once in a semester
- Quiz (50% Technical & 50% Aptitude)- Once in a semester
- Special Lectures (SPL)- 10% of total no. of lectures including following
    i. One PPT by the faculty, who is teaching the subject
    ii. SPL by expert faculty at PGC level
    iii. SPL by expert from industry/academia (other institution)
- Revision classes:- 1 to 3 turn at the end of semester (Before II Mid Term Exam)
- Solving Important Question Bank- 1 Turn before I & II Mid Term Exam (each) - Total Two turn.

c). Lecture schedule per week

i). University scheme (L+T+P) = 3+1/0+0

ii). PGC scheme (L+T+P) = 3/4+1/0+0

Sr. No.	Name of Unit	No. of lectures	Broad Area	Degree of difficulty (High/Medium/Low)	No. of Question in RTU Exam.	Text/ Reference books
1.	INTRODUCTION TO SIGNALS & SYSTEM	09	LTI system	Low	2	Farooq Husain / Oppenheim-Willsky
2.	FOURIER SERIES REPRESENTATION OF SIGNALS	05	CTFS,DTFS	Medium	2	Farooq Husain
3.	FOURIER TRANSFORM	10	DTFT	High	2	Farooq Husain
4.	Z-TRANSFORM & LAPLACE TRANSFORM	14	ROC -Z T RASFORM	Medium	2	Farooq Husain
5.	SAMPLING	10	SAMPLING THEOREM	Medium	2	Farooq Husain

d). Introduction & Conclusion: Each subject, unit and topic shall start with introduction & close with conclusion. In case of the subject, it is Zero lecture.

e). Time Distribution in lecture class: - Time allotted: 60 min.

i. First 5 min. should be utilized for paying attention towards students who were absent for last lecture or continuously absent for many days + taking attendance by calling the names of the students and also sharing any new/relevant information.
ii. Actual lecture delivery should be of 50 min.
iii. Last 5 min. should be utilized by recapping/ conclusion of the topic. Providing brief introduction of the coming up lecture and suggesting portion to read.
iv. After completion of any Unit/Chapter a short quiz should be organized.
v. During lecture student should be encouraged to ask the question**.**

Note: Pl. ensure that each student is having Lecture Note Book. Pl. Write on the black board day and date, name of the teacher, name of sub. with code, unit and lecture no. and topics to be covered at the beginning of each lecture and ensure that students write in lecture note book. Ask students to leave 4/5 pages blank for copying the note from fellow students in case of their absenteeism.

9). Tutorial: - An essential component of Teaching- Learning process in Professional Education.

Objective: - To enhance the recall mechanism.
To promote logical reasoning and thinking of the students.
To interact personally to the students for improve numerical solving ability.

a). Tutorial processing: - Tutorial sheet shall be provided to each students

Ist Phase: - It is consisting of questions to be solved in the class assignment session in test mode on perforated sheet given in tutorial notebook and to be collected & kept by respective faculty for review & analysis (20 minutes).

IInd Phase: - Indicating/Initializing the weak issues/ drawback and Evaluating and providing the grade. Making a group with good student for assisting the weak students to explain/solve questions by every student on plain papers given in tutorial note book (20 minutes).

IIIrd Phase: - Solving/ explaining difficulties of lecture class and providing the new home assignment (20 minutes). To be done in tutorial note book.

b). Home assignment shall comprise of two parts:

Part (i) Minimum essential questions, which are to be solved and submitted by all with in specified due date.

Part (ii) Other important questions, which may also be solved and submitted for examining and guidance by teacher.

10). Examination Systems:

Sr. No.	Name of the Exam	Max. Marks	% of passing marks	Nature of paper Theory + Numerical	Syllabus coverage (in %)	Conducted by
1.	Ist Mid Term Exam	40	16	50+50	60%	PCE
2.	IInd Mid Term Exam	40	16	50+50	40%	PCE
3.	University (End) Term Exam	80	24	50+50	100%	RTU

11). Any other important point:

Place & Date:

Name of Faculty with Designation
Krishan Kumar Garg
Lecturer (ECE);PCE