|  |
| --- |
| C:\Users\hp\Desktop\patna.png  **A Faculty Development Programme (NKN Winter Course)**  **on**  **DSP and Sensors**  10th – 14th December, 2018 |

**Name of Programme:** DSP and Sensors

**Duration and Dates:** 10th – 14th December, 2018

**Name of GlobalCoordinator(s):**Prof. T. Kishore Kumar, NIT Warangal

**Name of Local Coordinator(s):** Dr.B.Harikrishna.

**Module 01**

**Topics**

1. Review of Signals and Systems (10-12-2018)

a. Z-Transform and Properties,

b. Discrete Fourier Representation of periodic sequences (DTFT)

c. Properties

d. Frequency Response

2. Discrete Fourier Transform

a. The DFT & Its Properties

b. Inverse DFT

c. Linear Filtering Methods based on DFT

d. Efficient Computation of DFT algorithms – Radix 2 (D|T & D|F),

e. Radix 4, Split radix algorithms.

3. Linear Filtering approach to computation of DFT

4. Quantization effects in the computation of DFT – Direct & FFT Method.

Evaluation:

1) Quiz 1.

2) Lab Exam.

**Speakers:-**

|  |
| --- |
| **Prof. Shaik Rafi** |
| **Ahamed** |
| **IIT Guwahati** |

**Module 02**

**Topics**

5. Digital Filter Design (11-12-2018)

a. Linear Phase FIR filter

b. Design of FIR filter – Windowing, Frequency sampling

c. Design of IIR filters from Analog filters – Impulse Invariance, Bilinear Transformation

6. Digital Filter Structures

a. FIR filters – Direct Form, Cascade Form, Frequency Sampling, Lattice

b. IIR filter – Direct Form I, Direct Form II, Cascade Form, Parallel Lattice & Lattice loader, Quantization of

coefficients in FIR filters, Round off effects in digital filters

Evaluation:

1) Quiz 2.

2) Lab Exam.

**Speakers:-**

Sri. K. V. Sridhar

NIT Warangal

And

Prof. N.S.Murthy

Former Professor

NIT Warangal

**Module 03**

7. Multirate Digital Signal Processing (13-12-2018)

a. Decimation by a factor D

b. Interpolation by a factor I

c. Sampling rate conversion by a rational factor I/D

8. Adaptive Digital Signal Processing and Applications

Evaluation:

1. Quiz 3.
2. Lab Exam.

**Speakers:-**

|  |
| --- |
| **Sri. M.V.Raghunath**  **and** |
|
| **Prof. T. Kishore Kumar** |
| **NIT Warangal** |

**Module 04**

***9. Introduction and Measurement of Physical Parameters I (12-12-2018)***

a. Introduction to Sensors, Basic Requirements, Classification

b. Static and Dynamic characteristics

c. Loading Effects

Evaluation

1. Quiz 4.
2. Lab Exam.

**Speakers:-**

**Prof. M. Umapathy**

NIT Trichy

& Team

**Module 05**

***10. Measurement of Physical Parameters II (14-12-2018)***

a. Various Velocity, Flow, Level, Temperature, Motion and Light Sensors

Evaluation

1. Quiz 5.
2. Lab Exam.

**Speakers:-**

**Prof. Parthasarathi**

**Chakrabarti**

**Director IIEST**

**And**

**Prof. Kamaljit Rangra,**

Chief Scientist **AcSIR** &

Head Transducers and

Actuators Group

**CSIR CEERI-Pilani**

**Photos related to workshop:-**





























