



## Biomedical Signal Acquisition, Processing and Analysis

### Overview

Analysis of biomedical signals form the basis for many diagnostic and control applications. Electrocardiogram (ECG) is routinely used identifying cardiovascular disease while electroencephalogram (EEG) is used for diagnostics of neurological disorders. Biomedical images are indicative of the anatomical details and investigated to determine disorders. There are number of modalities that are commonly used such as radiology based short-wavelengths; x-rays, to the sound waves such as ultrasound. Machine based analysis and labeling of biomedical signals and images are essential for affordable and accurate diagnostics. The proposed course focuses on contemporary techniques used for analysis of biomedical signals such as ECG, EMG, EEG, and EOG and time-frequency analysis and wavelet analysis. Further, the application of vital techniques such as fractal analysis and Chaos theory are included in the proposed course. The modalities, outcome and challenges in biomedical image analysis and opportunities and challenges in multi-disciplinary research would also be focused in the course for researchers. The case studies and tutorial sessions would provide more insight to the data processing specialists, medical physicists, and information technologists.

### Objectives

- (i) Exposing the participants to the nature and characteristics of biomedical signals.
- (ii) Providing exposure to analyze the biomedical electrical signals through time-frequency and wavelet analyses.
- (iii) Learn the Chaos theory and fractal analysis for biomedical signals and systems
- (iv) Familiarize the participants with biomedical image modalities.
- (v) Provide an idea about the opportunities and challenges in the multi-disciplinary research

Course	Biomedical Signal Acquisition, Processing and Analysis: 19-23, Dec. 2017. Number of participants for the course will be limited to thirty.
You should attend if ...	<ul style="list-style-type: none"><li>• Engineering students at post graduate level.</li><li>• The researchers and faculties from reputed academic institutions and R&amp;D laboratories.</li></ul>

## Fees

The participation fees for taking the course are as follows:

Participants from abroad: US\$500

Industry/ Research Organizations: Rs. 20,000

Academic Institutions: Rs. 10,000 (for faculty), Rs. 6,000 (for research scholars, Rs. 3,000 (for post graduates)

For registration: Registration form is attached below

The above fees include all instructional materials, laboratory equipment usage charges, and internet facility. The participants will be provided with twin sharing accommodation and food on a payment basis.

## The Faculty



Prof. Dinesh Kant Kumar is a Professor of bio-signals, Department of Electrical and Computer Engineering, RMIT university, Melbourne, Australia. He is a leader for biomedical engineering research (Engineering solutions for health). His research work includes affordable healthcare technologies, biomedical engineering and signal processing, bio inspired systems, muscle control and fatigue, prosthetic control, biomedical image analysis.



Prof. Vinod Kumar is a Vice Chancellor, Jaypee University of Information Technology, Solan, India. He was a former Professor and Dy. Director, IIT Roorkee. His research work focuses on medical signal and image processing especially analysis of liver ultrasound images, MR brain image analysis of Alzheimer disease classification.



Dr. P. Sumathi is Associate Professor in Department of Electrical Engineering, IIT Roorkee. Her research work focuses on Fourier analysis based signal processing techniques and parameter estimation.

### Course co-ordinators

Dr. P. Sumathi

Phone: 91-1332-285259, 7579018983

E-mail: psumiffee@iitr.ac.in

Alternate E-mail: sumichan04@gmail.com

Prof. Vinod Kumar

Phone: 91-1792-245361, 9412074172

E-mail: vinodefee@gmail.com

-----  
<http://www.gian.iitkgp.ac.in/GREGN/index>

**REGISTRATION AND ACCOMODATION REQUEST FORM**  
**Biomedical Signal Acquisition, Processing and Analysis**  
**19 Dec 2017 – 23 Dec 2017**  
**Department of Electrical Engineering, Indian Institute of Technology Roorkee,**  
**Roorkee, Uttarakhand**

1. Name of applicant (in block letters): Ms./Mr./Dr. ....

2. Designation .....

3. Full Address for Communication: .....

.....

.....

4. E-mail id: .....

5. Phone numbers: Mobile....., Landline.....

6. Highest Academic Qualification: .....

7. Do you need accommodation for your stay during course: Yes/No (on payment basis)

8. Payment details: Online transaction number....., Date.....

Amount:..... Name of the Bank.....



**Date:**

**Signature of Applicant**

For online payment of registration fee : Make a transaction to the below mentioned account number and mail this form along with the transaction details to [psumiffee@iitr.ac.in](mailto:psumiffee@iitr.ac.in).

Details of payment:

Name of Bank: State bank of India  
Account number: 33136732957  
IFSC code: SBIN0001069  
Branch office: IIT Roorkee 247667  
Account name: Conference, Seminar and symposium IIT Roorkee

Note:

Application should reach EED Office at the below address latest by 30 Nov, 2017. Scanned copy may be sent by e-mail.

Complete filled in application form along with payment details, send to

**Dr. P. Sumathi,**  
**Department of Electrical Engineering,**  
**IIT Roorkee,**  
**Roorkee – 247 667 (Uttarakhand)**  
**Phone: (01332) 285259**