

## VISION OF THE DEPARTMENT

To become a globally recognized department of higher learning that aims to produce quality engineers, technologists and innovators in the field of Biotechnology and Biochemical Engineering for solving technological challenges with socio-ethical implications for the benefit of humanity.

## MISSION OF THE DEPARTMENT

To advance knowledge and skills in the field of Biotechnology and Biomedical Engineering with a motivation to produce globally competitive professionals and researchers.

To create wealth and welfare for the fulfillment of societal needs by solving technological challenges with socio-ethical implications.

To create a multi-disciplinary educational curriculum, research opportunities, and collaboration that promote creativity, innovation, invention, and entrepreneurship for the growth of the nation.



## ABOUT THE INSTITUTION



The **National Institute of Technology Rourkela (NITR)** is one of India's premier institutes of national importance, recognized for excellence in engineering education, advanced research, and innovation.

### Institute's NIRF Ranking 2025

13 Engineering	30 Research	07 Architecture	09 SDG	34 Overall
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For further details visit <https://nitrkl.ac.in>

## ABOUT THE DEPARTMENT

The **Department of Biotechnology and Medical Engineering (BM)** at NIT Rourkela, established in **August 2007**, has grown into a leading interdisciplinary hub for biomedical research and innovation. The department houses advanced laboratories in Biomedical Signal & Image Processing, Medical Electronics and Instrumentation, Biomaterials and Tissue Engineering, Biomechanics and Rehabilitation Technologies, Computational Biology and Bioinformatics. With a vibrant academic community of 24 highly qualified faculty members trained in reputed institutions in India and abroad, the department actively contributes to healthcare-focused technological advancements. For further details visit: <https://www.nitrkl.ac.in/BM/>

Five day online short-term program on

# ***Recent Advances in Biomedical Signal and Image Processing***

**23<sup>rd</sup> - 27<sup>th</sup> Feb 2026**



### **Patron:**

**Prof. K. Umamaheshwar Rao**  
Director, NIT Rourkela

### **Chairperson:**

**Dr. Devendra Verma (HOD BM)**

### **Coordinators:**

**Dr. J. Sivaraman**

**Dr. Bala Chakravarthy Neelapu**

**Prof. Kunal Pal**

### **Organized by:**

**Department of Biotechnology & Medical Engineering  
National Institute of Technology Rourkela, Odisha  
769008**

**Technically co-sponsored by:**



## ABOUT THE PROGRAM

This five-day short-term program offers insights into recent advances in biomedical signal and image processing, with a special focus on AI-based diagnostic tools. It covers ECG/EEG analysis, medical image enhancement, deep learning in healthcare, and emerging trends in biomedical research and clinical applications. The program combines strong theoretical foundations with practical approaches for real-world use.

## SCOPE OF THE PROGRAM

### 1. Understanding Physiological Signals and Images

- Introduction to biomedical data sources: ECG, EEG, EMG, blood pressure.
- Overview of medical imaging modalities: X-ray, CT, MRI, PET, ultrasound, optical imaging.
- Characteristics and challenges of real-world biomedical data (noise, artifacts, variability).

### 2. Modern Signal Processing Techniques

- Filtering and artifact removal (adaptive filters, wavelets).
- Time-frequency analysis (STFT, wavelet transform).
- Feature extraction methods (statistical, morphological, spectral features).

### 3. Image Enhancement and Analysis

- Image preprocessing: denoising, contrast enhancement, segmentation.
- Edge detection, texture analysis, and shape descriptors.

### 4. Machine Learning and AI in Biomedical Applications

- Introduction to supervised and unsupervised learning.
- Application of deep learning models in signal classification (arrhythmia detection, seizure prediction).
- Convolutional Neural Networks (CNNs) for medical image analysis.
- Evaluation metrics and model validation in clinical contexts.

## REGISTRATION DETAILS

Registration is open to PG students, Ph.D. scholars, Post Doctoral Fellows & Faculty members of Engineering Institutions. E-certificates will be provided to the registered participants with more than 90% attendance in all sessions marked by feedback form submission compulsorily in the end of each session.

For registration click on the link:

<https://forms.gle/mCzFFZ55wgzTw5dh9>

Mode of Payment: Only through Online

Registration Type	Total Fees (Non- Refundable)
Faculty/ Post Doctoral Fellows	Rs. 236/- (inclusive of GST)
Full Time PhD scholars/PG Students	Rs. 118/- (inclusive of GST)
Industry/ R&D Personnel -	₹ 590/- (inclusive of GST)

### Important Dates!

Last day for registration : 20<sup>th</sup> Feb 2026

Course date: 23<sup>rd</sup> - 27<sup>th</sup> Feb 2026

Scan here to Pay!



### NEFT Account details:

Acct. No.: 10138951784

Name: CONTINUING EDUCATION,  
NIT ROURKELA

Bank: State Bank of India

Branch: NIT Rourkela Campus

IFS Code: SBIN0002109

UPI ID:01389517841@sbi

Attach the payment receipt in the google form for registration (link mentioned above).

## PROGRAM COORDINATORS

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