

**National Institute of Technology
Raipur-492 010 (Chhattisgarh)**

About the Institute:

National Institute of Technology (NIT) Raipur, formerly known as Government Engineering College (GEC) Raipur, is established in 1956. The institute has established its unique identity for the development of high-quality human and knowledge resources. It was declared as 'National Institute of Technology' by the Government of India on 1st December 2005 and then an 'Institute of National Importance' in May 2007 vide the National Institute of Technology Act 2007. With over six decades of glorious history as a premier technical education institution in India, NIT Raipur now offers 12 UG and 11 PG programs. In addition to the UG and PG programs, NIT Raipur also offers Ph.D. in 18 disciplines of science and technology.

About Department:

The Biomedical department started in the year 2003 and it offers undergraduate course in Biomedical Engineering and Ph.D. program. The department has well-equipped laboratories including the Biomedical Instrumentation lab, Microbiology and Biochemistry lab, Tissue Engineering lab, Biomedical Equipment lab, Computational biology, and Bio-signal processing lab to enable the students and the scholars to pursue research in-house.

Venue:

**Department Biomedical Engineering
NIT Raipur (CG) – 492 010, INDIA**

Objectives:

The objective of this workshop is to provide students with hands-on exposure to the complete pipeline of biomedical signal analytics, from physiological signal acquisition to intelligent data interpretation. Participants will be introduced to the fundamentals and physiological relevance of key biomedical signals such as ECG, PPG, and EMG, along with their real-world healthcare applications. The program emphasizes practical training in real-time biosignal acquisition using appropriate sensors and data acquisition systems, followed by essential preprocessing techniques including filtering, noise reduction, and signal segmentation. Students will learn to extract meaningful features from ECG, PPG, and EMG signals across time, frequency, and time–frequency domains. The workshop also introduces the basics of machine learning, demonstrating how extracted features can be used for simple classification and prediction tasks. Overall, the program aims to familiarize participants with the end-to-end workflow of biosignal-based healthcare system development while enhancing practical skills, analytical thinking, and readiness for research, internships, and industry roles.

The workshop is targeted at UG and Ph.D. students in biomedical engineering, as well as young faculty members and researchers.

Theme/Scope of workshop:

This workshop focuses on bridging physiology, signal processing, and machine learning to enable intelligent healthcare solutions. By guiding participants through the complete lifecycle of biomedical signals—from acquisition and preprocessing to feature extraction and data-driven interpretation—the program aims to build strong foundational and practical skills for developing biosignal-based systems in modern biomedical engineering.

Topics to be covered:

- Fundamentals and physiological basis of biomedical signals (ECG, PPG, EMG)
- Sensors and real-time acquisition of physiological signals
- Biosignal preprocessing: filtering, noise removal, and segmentation
- Feature extraction in time, frequency, and time–frequency domains
- Introduction to machine learning for biosignal classification and prediction
- End-to-end development of biosignal-based healthcare applications

Targeted Participants:

Undergraduate, from various departments (especially biomedical students), interested Ph.D. scholars, young faculty members/researchers.

Registration Fee Details (in INR):

Seats are limited and selection will be done on first-come-first-serve basis. Participants must fill the registration form with payment details. Fee is non-refundable. Selected participants will be notified through email as per the schedule.

Registration Fees (INR)

NITRR students: 500

External students/NITRR faculty/staff: 750

Industry/Faculty: 1500

Additional 18% GST will be applicable in each category of registration fees

Important Dates

Last Date of Registration: 04-02-2026