Patron

Prof. K. Umamaheshwar Rao
Director, NIT Rourkela

Course Coordinator

Prof. Mohammed Rajik Khan
Professor, NIT Rourkela

Resource Person / Experts

Prof. Somnath Gangopadhyay,
University of Calcutta

Prof. Sougata Karmakar,
IIT Guwahati

Prof. Mohammed Rajik Khan,
NIT Rourkela

Prof. A. Thirugananam,
NIT Rourkela

Dr. Vineet Vashista,
IIT Gandhinagar

Dr. Natasha Marshall,
Innovative Sports Training Inc., Chicago

Mr. Mahesh Suradkar,
3D Engg. Automation , Pune

Dr. Bhrigu Kumar Lahkar,
IIT BHU

Dr. Ashutosh Tiwari,
IIT Kharagpur

Registration Process

Registration for the programme is to be completed online through the following link: https://forms.gle/QzcvrdMhvVg1T7W96

Participants are required to submit identity verification documents (such as Aadhaar card and studentship/affiliation certificate, if applicable) via email by 28.12.2025.

Register Now

About NIT ROURKELA

National Institute of Technology Rourkela (NITR) is an Institute of National Importance under the Ministry of Education, Government of India. Established in 1961 as Regional Engineering College Rourkela and elevated to NIT in 2002, the institute has grown into a premier national center for education, research, and innovation in science, engineering, and management. NIT Rourkela is ranked 13th among Engineering Institutions in India in the NIRF Rankings 2025. It is placed in the 601–800 band globally in Engineering and Technology by the Times Higher Education (THE) World University Rankings 2025, and it ranks 99th in the QS Southern Asia University Rankings 2026, reflecting its strong global academic reputation.
The institute has a lush 650-acre campus equipped with modern academic and research infrastructure, advanced laboratories, and a vibrant residential and cultural environment. With twenty academic departments, research centers, and strong national and international collaborations, NIT Rourkela fosters cutting-edge research and multidisciplinary learning. NITR is committed to producing highly skilled engineers, scientists, entrepreneurs, and leaders who contribute meaningfully to society, industry, innovation, and nation building.

Foundation for Technology & Business Incubation (FTBI)

The Foundation for Technology & Business Incubation (FTBI) at NIT Rourkela is a Section-8, not-for-profit incubation center established in 2016 to nurture innovation and entrepreneurial culture among students, researchers, and startups. Supported by DST, MeitY, Startup Odisha and other national agencies, FTBI has enabled the incubation of 85+ startups, including several achieving Series-A funding and recognition from leading industries, government bodies, and defence organizations. FTBI conducts capacity-building programs, startup bootcamps, mentorship sessions, and provides prototyping support, seed funding access, and networking opportunities. It actively promotes inclusivity and women entrepreneurship, contributing to socio-economic development and technology-driven enterprise creation.

Department of Industrial Design

The Department of Industrial Design at NIT Rourkela is committed to nurturing innovative designers and problem-solvers who can develop human-centered, sustainable, and technologically informed design solutions for industry and society. The Department offers B.Tech, M.Tech, and Ph.D. programmes in Industrial Design, integrating creativity with engineering, ergonomics, prototyping, and digital design tools. A team of experienced faculty members and state-of-the-art laboratories including facilities for Digital Human Modeling & Simulation, Motion Capture, Virtual Reality, Additive Manufacturing, Product Prototyping, and Human Factors Evaluation supports the Department. The Department is actively engaged in sponsored research, consultancy, and collaborative industrial projects with national agencies and organizations such as DRDO, BRNS, ICMR, DST, SERB, and leading industries. With a strong focus on innovation and applied research, the Department aims to contribute to the growth of design-driven product development, entrepreneurship, and societal well-being.

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05 Days Advance Entrepreneurship and Skill Development Programme (ESDP)

on

Interactive Teaching Tools for Digital Human Modeling, Motion Capture and Analysis, and the Use of Surface Electromyography in Biomechanics

12th – 16th JAN, 2026

NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA

Organized by

FTBI & Department of Industrial Design
National Institute of Technology Rourkela
Rourkela, Odisha – 769008

COURSE OVERVIEW

This Advanced ESDP programme combines expert knowledge exchange with intensive hands-on training in biomechanics, ergonomics, and human-centered design. The programme consists of two integrated components:

1. Talks by leading researchers and practitioners on digital human modeling, musculoskeletal and neuro-biomechanics, occupational ergonomics and workplace wellness, neurorehabilitation strategies, assistive and wearable robotics, and design innovation for human performance and well-being. These sessions will highlight current research trends, case studies, and pathways for technology translation and entrepreneurship.
2. Hands-on sessions using
   - Siemens Tecnomatix JACK for posture, reachability, and ergonomic risk evaluation.
   - 3D Motion Capture and 6-DOF Electromagnetic Tracking Systems for movement analysis.
   - Delsys sEMG for neuromuscular activity assessment and fatigue analysis
   - Motion Monitor software for synchronized data visualization and interpretation.
   - Participants will gain applied research skills and innovation competencies needed for academic, industrial, healthcare, and startup applications.

COURSE OBJECTIVES

The primary objective of this programme is to develop skilled and innovation-oriented professionals capable of applying human-centered design, biomechanics, and digital simulation tools to solve real-world challenges in wellness, rehabilitation, workplace ergonomics, and assistive technology development. The course aims to:

- Provide a strong conceptual foundation in human movement analysis, ergonomics, neuromuscular function, and occupational health applications.
- Train participants in Digital Human Modeling using Siemens Tecnomatix JACK for posture analysis, work-system evaluation, design optimization, and ergonomic risk assessment.
- Offer hands-on experience with 3D motion capture, 6DOF electromagnetic tracking, and surface EMG (sEMG) systems for quantifying movement and muscle activation in real-time.
- Demonstrate the integration of biomechanical and physiological data for research, clinical rehabilitation, sports performance, and product/assistive device design.
- Encourage participants to identify innovation and entrepreneurship opportunities in digital health, rehabilitation technology, ergonomics consulting, wearable and exoskeleton systems, and human–machine interaction design.

WHO CAN PARTICIPATE ?

1. Undergraduate (Pre-Final/Final Year), Postgraduate and Ph.D. Students in Industrial Design, Mechanical Engineering, Biomedical, Biotechnology, Human Physiology, Applied Mechanics, Sports Science, Rehabilitation Engineering, Ergonomics, Health Sciences and allied fields.
2. Faculty Members and Early-Career Researchers from engineering, design, ergonomics, health sciences, physiotherapy, biomechanics backgrounds, etc.
3. Clinicians and Professionals, Startups, Innovators, and Entrepreneurs working in allied fields.
4. Clinicians and Professionals, Startups, Innovators, and Entrepreneurs working in allied fields.

Seats for this programme are limited. A maximum of 25–30 participants will be admitted to ensure effective hands-on training and meaningful interaction. Selection will be made on a first-come, first-served basis.

REGISTRATION FEE

Fees: Rs.1000 for all participants.
However, the fee is waived for Women, OBC, SC/ST, and Persons with Disabilities (PwD) candidates.
Fees can be paid through any UPI mode in the below UPI-ID.

ACCOMMODATION

Hostel accommodation on a single/shared basis with meals will be provided free of cost for the first 20 registered student participants, and it is also free for Women, OBC, SC/ST, and Persons with Disabilities (PwD) students.

For professionals and industry participants, accommodation can be arranged in the Institute Guest House on prior request. The guesthouse charges are approximately Rs.1000–1500 per day for single occupancy (North and South Blocks respectively).

IMPORTANT DATES

20th Dec, 2025 --- Last date for receiving application and course fee

31st Dec, 2025 --- Last date for intimation to participants

12th to **16th Jan, 2026** --- Course Dates

FOR DETAILS

Coordinator
Prof. Mohammed Rajik Khan
Professor, Department of Industrial Design,
National Institute of Technology Rourkela
Rourkela, Odisha-769008
Phone: 0661-246 2853 (O); 08763655770 (M)
E-mail: khanmr@nitrkl.ac.in