

**A Five Day  
KARYASHALA  
(High-End International Workshop)**

**On**

**Vibration Condition Monitoring and  
Control for automobile and industrial  
applications**

**(through Virtual Mode)**

***December 20-24<sup>th</sup> 2021***

***Organized by***

***Department of Mechanical Engineering  
National Institute of Technology Rourkela***



**Sponsored By**



# NIT ROURKELA



National Institute of Technology Rourkela is an institute of national importance created under the act of parliament. NIT Rourkela has been ranked at 215 and 27th position in QS Asia University Ranking, and QS Indian University Ranking 2019 respectively. It has also been ranked in 121 positions in QS BRICS category, 2019. Times Higher Education has figured NIT Rourkela in the group of 601-800 in World University Ranking 2019. The Institute provides quality education in a diverse and multi-cultural environment. The mission of the institute is to become an internationally acclaimed institution of higher learning that will serve as a source of knowledge and expertise for the society and be a preferred destination for undergraduate and graduate studies. The institute is offering Ph.D. and M.Tech by Research programme in 21 branches of Engineering. The institute research centers are engaged in consultancy and research activities of several bodies such as DST, DAE, CSIR, DRDO, BARC, ISRO and private industries.

## NITR RANKINGS

**THE** THE World University Ranking by Subject (Engineering) 2021  
RANK : 601-800

**THE** THE World University Ranking by Subject (Physical Sciences) 2021  
RANK : 601-800

**nirf** NIRF Overall 2020  
RANK : 32

**nirf** NIRF Engineering 2020  
RANK : 16

**THE** THE World University 2020  
RANK : 801-1000

**THE** THE World Engg. & Technology 2020  
RANK : 601-800

**QS** QS Asian University 2021  
RANK : 250

**QS** QS India University 2020  
RANK : 29

**ARIIA** Atal Ranking of Institutions on Innovation Achievements (ARIIA) 2020  
RANK : Band A (11th - 25th)

**THE ASIA** THE Asia University 2020  
RANK : 190

**THE** THE Emerging Economies 2021  
RANK : 201-250

## DEPARTMENT OF MECHANICAL ENGINEERING



The Mechanical Engineering Department of NIT, Rourkela is known for research in most of these fields. The main foci of research are on mechanical vibration, robotics, CAD/CAM, precision engineering, Metal forming, manufacturing, CFD, Industrial refrigeration and Cryogenics. The academic programme of the department reflects not only the core areas of Mechanical Engineer but also the research specialization of the faculty. The department at present has over one hundred research scholars pursuing projects on diverse fields. The faculty is organized under three divisions and six groups. All the groups are working in close co-operation while retaining individual identities. Many Research and Development projects being pursued by the faculty are sponsored by Government agencies and private industries. Some of the major sponsors are BRNS, DST, DAE, CSIR, DRDO, BARC, ISRO and private industries.

## ***ABOUT THE COURSE***

The faults and failures in the mechanical systems before any catastrophic accidents can be predicted by analysing the vibration signals obtained during their operations. Industries also understand the importance of vibration condition monitoring and have included these procedures as a part of their normal operations. Further, there is also a requirement of establishing vibration control techniques to the vibrations from the operation of heavy machineries, to prevent these disturbance affecting the functionality of surrounding equipment. Hence the

Vibration based condition monitoring and control becomes two pillars of industrial operations. Condition monitoring predicts the faults in the machinery before catastrophic failure and control is used to mitigate the harmful effects of the vibration. The underlying concept in both the concept are similar. This workshop is aimed to provide a fundamental understanding of the vibration condition monitoring and vibration control and to impart the essential knowledge in health prediction and control techniques.

## ***COURSE CONTENT***

The course will cover the following topics

Condition monitoring :

1. Fundamentals of vibration based condition monitoring
2. Basics of Fault diagnostics
3. Signal processing techniques in time and frequency domain
4. Case studies on fault diagnosis of mechanical components
5. Training session in MATLAB

Vibration control :

1. Fundamentals of vibration control
2. Design of passive linear vibration control devices
3. Design of passive nonlinear vibration control devices
4. Training session in MATLAB

## ***ELIGIBILITY***

The course is open to faculty members, research scholars and students from universities and educational institutions. and scientists and engineers from research organizations and industries. There is no registration fee for the course.

## ***IMPORTANT DATES***

The dates of this workshop is from December 20-24<sup>th</sup> 2021

Last date to Register : 10-12-2021

Announcement of Selected Participants : 15-12-2021

Registration Link : <https://forms.gle/tW9MshZVayPmrHas7>

There is NO Registration Fees.

E-Certificate will be Issued to the Participants

***NOTE: Certificates will be issued to only those participants who will have a minimum of 90% attendance.***

## ***TARGET AUDIENCE***

*Maximum number of applicants is limited to 100. The selected applicants will be provided a secured meeting code of the web platform one day before the commencement of course.*

## ***ADDRESS FOR CORRESPONDENCE***

Dr. Balaji PS

Assistant Professor

Department of Mechanical Engineering, NIT Rourkela

Phone : +91 7395979565 /0661-246-2528

Mail ID: [psbalaji@nitrkl.ac.in](mailto:psbalaji@nitrkl.ac.in)

## ***List of International Speaker***

- Prof. Tim Waters, University of Southampton, UK
- Prof. Minvydas Ragulskis, Kaunas University of Technology, US
- Prof. Moussa Leblouba, University of Sharjah, UAE
- Prof. M.E. Rahman Northumbria University UK
- Dr Balakrishnan, Researcher at SUSTech China
- Dr Vivek. Ravisankar, Research Manager, University of Western Australia

The International and national speakers from eminent institutes and from industry will deliver the lecture.

### ***Student Coordinators***

*Ms. Payal Banerjee*

*Research Scholar*

*Department of Mechanical Engineering,  
National Institute of Technology Rourkela*

*Mobile : 7869736240*

*Mr. KVJ Bhargav*

*Research Scholar*

*Department of Mechanical Engineering  
National Institute of Technology Rourkela*

*Mobile : 9505857616*

### ***For Queries***

***Mail us at : [karyashala.vcmc@gmail.com](mailto:karyashala.vcmc@gmail.com)***

**PATRON**

**Prof. Simanchalo Panigrahi**

**Director**

**NIT Rourkela**



**CHAIRMAN**

**Prof. S.K.SAHOO**

**HEAD**

**MECHANICAL Engineering**

**NIT Rourkela**



**CONVENER**

**Dr. Balaji PS**

**Assistant Professor**

**Department of Mechanical Engineering**

**NIT Rourkela**



**Co-CONVENER**

**Prof. S.Murugan**

**Professor**

**Department of Mechanical Engineering**

**NIT Rourkela**

