

ATAL Faculty Development Program on Innovations in Computer Aided Design Simulations

Objectives

Today with Industry 4.0 and IoT technologies, several development took place in the area of computer aided design and engineering. Being one of the important part of modern engineering, computer aided design techniques are applicable in several applied sciences including material modeling, biomedical engineering, civil and aerospace and many other fields. The tools extends from simple graphics and geometric models to intelligent learning schemes. The main motive of this course is to provide various developments in the simulation engineering including computer aided engineering techniques, finite element modeling, review and evaluation tools like virtual prototyping technology and integration.

Topics to be covered

- Computer Aided Engineering Simulations including Motion studies, Finite element analysis
- Theoretical concepts of 3-D analytical solid modeling
- Developments in Optimization techniques
- Meshfree & spectral finite element modeling.
- Virtual prototyping
- 3-D printing technology for modern materials
- Applications and integration of simulation tools with machine intelligence.

About the Institute

National Institute of Technology Rourkela is an Institute of national importance created under the act of parliament. NIT Rourkela has been ranked as 225 and 31th position in QS Asia University and QS Indian University Ranking 2021, respectively. It has also been ranked in 121st position in QS BRICS category, 2020. Times Higher Education has figured NIT Rourkela in the group of 801-1000 in World University Ranking 2022. The institute provides quality education in a diverse and multicultural 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 post graduate studies. The institute is offering undergraduate, post graduate and PhD programs in 21 branches of Engineering. The departments are engaged in consultancy and research activities of several government bodies such as DST, DAE, CSIR, DRDO, BARC, ISRO and private industries. The campus has green and beautiful gardens and is around 10 km from Railway station.

About the Department

The Mechanical Engineering Department is well known for teaching and research activities. The main research works are on the Industrial vibrations and condition monitoring, robotics, CAD/CAM, precision engineering, Metal forming, manufacturing, CFD, Industrial refrigeration and Cryogenics. Both core and interdisciplinary topics are included in curriculum. The department at present has over two hundred research scholars pursuing projects on diverse fields. The faculty specializations are organized under three divisions: Machine design and analysis, Production Engineering and Thermal Engineering. There are four PG specializations including industrial cryogenics. The department has well equipped laboratories for both PG classes and research works. Department has at present 31 faculty members and around 100 PG students in all four specializations. The department organizes several short term courses, conferences as well as student level programs through-out the year. It has dedicated computer center with licensed software and a workshop for fabrication works.



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(12th-23rd Dec 2022)



Organized by:
Machine Design Division
Department of Mechanical Engineering,
NIT, Rourkela
Website: www.nitrkl.ac.in

Target Participants

The course is open to faculty members, research scholars and students from universities and educational institutions approved by AICTE. TA/DA of participants will not be borne by AICTE. The lectures will be delivered by the experts from IITs and NITs. The course will be conducted in online mode for the first 5 days in the evenings and offline mode in daytime in remaining 5 days. The details of online medium will be intimated shortly.

Important Dates

The last date for the receipt of applications by email: scanned copy is 15/11/2022. Intimation of selection: 30/11/2022

ADDRESS FOR CORRESPONDENCE

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Registration Form

ATAL Faculty Development Program
on

**Innovations in Computer
Aided Design Simulations**

(12th -23rd December 2022)

Name:
Designation:
Gender:
Qualification:
Area of interest:
Organization:
Address:
E-mail:
Mobile No:
Need accommodation at NIT R: Yes/No

Applicant Signature

Tentative Schedule
Week-1- Online (7.00 pm-9.30 pm)

Day1	Day2	Day3	Day 4	Day5	Day6
7.00-7.50 pm Session-1 (I)	7.00-7.50 pm Session-2 (I)	7.00-7.50 pm Session-3 (I)	7.00-7.50 pm Session-4 (I)	7.00-7.50 pm Session-5 (I)	7.00-7.50 pm Session-6 (I)
8.00-8.50 pm Session-1(II)	8.00-8.50 pm Session-2 (II)	8.00-8.50 pm Session-3 (II)	8.00-8.50 pm Session-4 (II)	8.00-8.50 pm Session-5 (II)	8.00-8.50 pm Session-6 (II)
9.00-9.30 pm Session1 Interactions	9.00-9.30 pm Session2 Interactions	9.00-9.30 pm Session3 Interactions	9.00-9.30 pm Session4 Interactions	9.00-9.30 pm Session5 Interactions	9.00-9.30 pm Week-1 MCQs

Week-2 –Offline (9.30-4.30 pm)
(Ensure 33 hours actual coverage)

Day1	Day 2	Day3	Day 4	Day5
9.00-9.30 Inauguration	9.30-12.00 Session 8	9.30-12.00 Session 10	9.30-12.00 Session 12	9.30-12.00 Session 14
9.30-12.00 Session-7	12.00-1.00 Article 1 Discussion	12.00-1.00 Article 2 Discussion	12.00-1.00 MCQs	12.00-1.00 Visit Report (Team)
12.00-1.00 Lunch	1.00-2.00 Lunch	1.00-2.00 Lunch	1.00-2.00 Lunch	1.00-2.00 Lunch
1.00-2.00 Travel for visit	2.00-4.00 Session-9	2.00-4.00 Session-11	2.00-4.00 Session-13	2.00-3.00 Reflection Journal
2.00-4.00 Visit	4.00-5.15 Teaching Practice	4.00-5.15 Teaching Practice	4.00-5.15 Teaching Practice	3.00-4.00 Feedback
4.00-5.00 Travel back				4.00-5.00 Valedictory

Session-1: Introduction to CAD simulations
Session-2: Computer graphics and modeling
Session-3: Solid Modeling concepts
Session-4: Motion simulations
Session-5: Finite element modeling
Session-6: Optimization methodology
Session-7: Virtual and Rapid prototyping

Session-8: Programming and GUI creation
Session-9: Use of modern modeling tools
Session-10: Assembling and interference check
Session-11: Motion analysis using Adams
Session-12: Static and Dynamic FE modeling
Session-13: non conventional optimization tools
Session-14: 3-D printing exercises