

January - June 2020

NEWSLETTER



Centre for Continuing Education

Indian Institute of Technology Kanpur



Message from Head



Prof. Rajesh M. Hegde

Dept. of Electrical Engineering
<http://home.iitk.ac.in/~rhegde/>

I am happy to present the third newsletter of the Centre for Continuing Education (CCE) to the IIT Kanpur community. It has been a difficult time for all of us due to the situation arising out of COVID-19. However I am sure that we will be able to overcome the difficult situation sooner with all our joint efforts.

I am glad to report again that several AICTE sponsored QIP programs, Short Term Workshops, MooCs, and Conferences were successfully conducted in the period between January to June 2020, under the aegis of the CCE. The Foreign Language Program (FLP) has also been completed for the first time under the CCE. The SURGE program for the current year will be run completely online. I wish to thank Prof Kamle and his SURGE team for taking this initiative. This will be a first online SURGE program to be conducted at IIT Kanpur since its inception. Prof Harish Verma who is an Adjunct Faculty with CCE is continuing his efforts to popularize science education through MooCs. One of his recent MooC on Physics had a large number of participants and reached the remotest corners of India. It was a pleasant surprise for us to note that his MooC is reaching areas where electricity has not reached yet. The Centre for Continuing Education (CCE) is also participating very actively in the Institute efforts to launch an eMasters Program at IIT Kanpur.

Due to the COVID-19 situation all outreach activities physically conducted by the CCE on IIT Kanpur campus have been put on hold till the end of the year 2020. Many of these are being converted to online activities wherever possible. The CCE is striving to make as many online offerings as possible till the end of 2020. We hope and look forward to the start of 2021, when we can resume our activity in full steam mode. The next newsletter of CCE will be released by the end of 2020 and I sincerely hope that the unprecedented situation we are in resolves by then.

CCE ACTIVITIES

- ❖ Symposia, Seminars, and Conferences
- ❖ Short Term Courses and Workshops
- ❖ Foreign Language Program
<http://www.iitk.ac.in/cce/FLP>
- ❖ Online Certification Programs and MooCs
- ❖ Institutional collaboration Programs
- ❖ GIAN
<http://www.giangp.ac.in/>
- ❖ TEQIP
<http://www.teqipiitk.in/>
- ❖ E & ICT Academy
<https://ict.iitk.ac.in/>
- ❖ SBERTC
<http://www.iitk.ac.in/sbertc/>
- ❖ PMMMNTT/ AgriMOOC
<https://tlc.iitk.ac.in/>
- ❖ NPTEL
<http://www.iitk.ac.in/mtc/>
- ❖ Swayam Prabha
https://swayamprabha.gov.in/index.php/channel_profile/profile/16
- ❖ Vigyan Jyoti
<https://www.iitk.ac.in/dord/>

The following outreach programs have been conducted successfully under the umbrella of the Centre for Continuing Education in the period between January - June 2020. These include AICTE sponsored QIP Programs (06), Short Term Programs (20), Faculty Training programs (02), symposium(01) and Conference (01).

06

AICTE Sponsored QIP Programs

20

Short Term Courses

01

Conference

01

Symposium

02

**Faculty Training Programs
under Institutional
collaboration with**

AKTU

01

20-24 January 2020

An Introduction to Computational Tomographic Imaging

Prof. Naren Naik

Dept. of Electrical Engineering IITK



Tomography (coming from the Greek (tomos = slice) is the science of quantitatively obtaining ("reconstructing") the internal structure of a medium of interest from the data obtained by interaction of an interrogating signal with the medium. The reconstruction of the object's parameters of interest is carried out computationally upon modeling the data as a linear or nonlinear function of the unknown parameters.

Course website- <http://iitk.ac.in/cce/courses/2019/TomographicImaging/>

02

20-24 January 2020

Molecular Gas Dynamics

Dr. Rakesh Kumar

Dept. of Aerospace Engineering IITK



The subject of molecular gas dynamics involves study of gas flows from a microscopic (molecular) perspective. The approach is based on the kinetic theory, which is usually applied to non-equilibrium gas flows, such as rarefied flows through micro/nano-channels and around high speed vehicles operating at high altitudes. Considering the ongoing focus of research/industries on micro/nano scale technologies and human space/planetary missions, it was important to have a short-term course such as "Molecular Gas Dynamics". Such a course did not only prepare graduate students for working on state-of-the-art research problems, but also trained them to suit to the changing job requirements in the market. The proposed course at IIT Kanpur was one such initiative in this direction, with the objective of disseminating the knowledge in this interesting subject.

Course website-<http://iitk.ac.in/cce/courses/2019/molecular-gas-dynamics/>

03

10-14 February 2020

Design for Manufacture and Assembly

Dr. Niraj Sinha

Dept. of Mechanical Engineering IITK



An intensive course on Design for Manufacture and Assembly (DFMA) offered from February 10 to February 14, 2020 under the Continuing Education Programme of IIT Kanpur. It was sponsored by Quality Improvement Programme, All India Council of Technical Education, New Delhi. The course was designed to cater the needs of teachers, scientists from R & D houses and Labs, and practicing engineers from industries. This programme was be specifically useful for persons who were concerned with training / teaching, research, and industrial applications of DFMA.

Course Website- <http://iitk.ac.in/cce/courses/2019/design-for-manufacture-and-assembly/>

04

10-14 February 2020

Thermal Energy Storage for Effective Energy Management

Dr. Arvind Kumar

Dept. of Mechanical Engineering IITK



To effectively deal with the issue of energy poverty, there is a need to establish low-cost energy management systems. Thermal energy storage based energy management system is one of the technologies that can help to mitigate the energy scarcity. It facilitates clean and efficient storage, and reuse of thermal energy and acts as a thermal battery.

The primary objective of this course was to acquaint the participants with thermal energy storage; different storage techniques and selection criteria, PCM based thermal energy storage and waste heat recovery systems, thermal performance measures and performance enhancement techniques, salt hydrate based thermochemical energy storage, cold thermal storage and energy transport using ice slurry. The state-of-the-art computational modelling and simulation techniques was discussed to develop a sound understandings of mechanisms governing the energy storage and recovery. At the end various thermal storage applications was discussed along with guidelines for designing and developing a thermal battery system.

Course Website- <http://iitk.ac.in/cce/courses/2019/TES/>

10-14 February 2020

**Workshop on Statistical Techniques and R Software
(STARS-2020)**

Course Website-

<http://iitk.ac.in/cce/courses/2019/stars-2020/>

Statistical techniques play an important role in all of the engineering, medical, physical and social sciences. Consequently, a proper understanding of the statistical methods and implementation is necessary to appropriately model outcomes/questions of interest in any applied/experimental settings and make proper inferences. This workshop aimed to introduce the participants to statistical modeling (at an intermediate level), data mining and fitting statistical models to data in real life applications. The choice of software was R (since it's free) and we hoped that post the workshop participants will be utilizing R in their research and teaching activities.

The program will be useful for individuals from academics (early career professors, research scientists, etc.), industry or anyone interested in implementing statistical models to better understand any given data.

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Prof. Shalabh
Dept. of Mathematics & Statistics IITK



Prof. M. A. Rahman
Dept. of Economic Sciences IITK



Computational Chemistry and its Applications

Dr. D. L. V. K. Prasad
Dept. of Chemistry IITK



Course Website- <http://iitk.ac.in/cce/courses/2019/CompChem/>

Theories about chemical structure and reactivity existed long before the knowledge of atoms or electrons. After the advent of quantum mechanics, it was widely believed that chemical theory would eventually be reduced to quantum mechanics of electrons and nuclei. Interestingly, even after a century, we do not see that happening. With the current technological advances allow probing on larger systems with reasonable accuracy, the chemists not only are interested in direct observables like total energies, geometry, and other properties but demand explanations behind the computed trends in terms of abstract chemical concepts that lack mathematically rigorous definitions.

The equations of quantum mechanics typically have the perspective of dealing with molecules as the interactions between a collection of fundamental particles, and thus do not directly translate into the chemical narrative of atoms bound through bonds and weak interactions. Particularly, the electronic structure arrived from quantum theory does not directly translate into chemical bonding and associated electronic effects of chemistry. Indeed, the main focus of this course was to provide an essential background required understanding the electronic structure by approximate computational models and also offering practical knowledge on how to compute and analyze physicochemical processes such as elucidation of course of a chemical reaction by studying the structure and stability using standard software tools. Further to this, the objective of this course was also to show how chemical modeling using computers can be efficiently used to render concrete quantum mechanical data into abstract chemical knowledge. We attempt to show

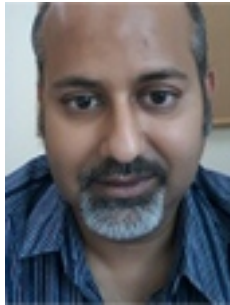
how to mine the computed data to retrieve chemical information that transcends into the world of chemical bonding constructs which contains various conceptual elements, typically considered to be subjective and not based on direct observables.



01

January - July 2020

Advanced Certification Programme in Cybersecurity and Cyber Defense



Prof. Sandeep Shukla
Dept. of CSE IIT Kanpur

<https://www.cse.iitk.ac.in/users/sandeeps>

02

6-10 January 2020

MATLAB Project Course on Massive MIMO, Cooperative Communication and Cognitive Radio for 5G



Prof. Aditya K. Jagannatham
Dept. of EE IIT Kanpur

<http://home.iitk.ac.in/~adityaj/>

03

7-9 January 2020

13th Capacity Building /Training Programme for officers of Regulatory Commissions on Emerging Regulatory issues in the Power Sector- Tariff Technology and Consumer Choice



Prof. Anoop Singh
Dept. of IME IIT Kanpur

<https://www.iitk.ac.in/ime/anoops/>

04

20-28 January 2020

Winter School on Geospatial Technologies for Smart Cities and Urban Mobility



Prof. Salil Goel
Dept. of Civil IIT Kanpur

<https://sites.google.com/view/sgoel/s/>

05

20 January - 3 April 2020

Data Analysis in Criminal Justice



Dr. Arvind Verma
Center for Cyber Security and Cyber Defence
IIT Kanpur

06

23-24 January 2020

Lecture Series on Advanced Corrosion Tests and Techniques



Prof. Kallol Mondal
Dept. of MSE IIT Kanpur

<https://www.iitk.ac.in/new/kallol-mondal>

07

26 January - 30 April 2020
Special Theory of Relativity



Prof. T.V. Prabhakar
Dept. of CSE IIT Kanpur

<https://www.cse.iitk.ac.in/users/tvp/>



Prof. H.C. Verma
Dept. of Physics IIT Kanpur

<https://www.hcverma.in>

08

12 February - 30 March 2020
agmoocs - Moocs for Agriculture



Prof. T.V. Prabhakar
Dept. of CSE IIT Kanpur

<https://www.cse.iitk.ac.in/users/tvp/>

09

14-15 February 2020
National Conference on Wind Tunnel Testing NCWT-06

Conference



Prof. S. Kamle
Dept. of Aerospace Engineering IIT Kanpur

<https://www.iitk.ac.in/new/dr-s-kamle>

10

17-21 February 2020

FunMolSim 2020



Prof. Jayant K Singh
Dept. of Chemical Engg. IIT Kanpur

<https://www.iitk.ac.in/che/jks.htm>

11

21-22 February 2020

Tundish Metallurgy & Cleansteel Making



Prof. Dipak Mazumdar
Dept. of MSE IIT Kanpur

<http://home.iitk.ac.in/~dipak/>

12

21-23 February 2020

Molecular Simulation of Complex Fluids and Interfaces 2020



Prof. Jayant K Singh
Dept. of Chemical Engg. IIT Kanpur

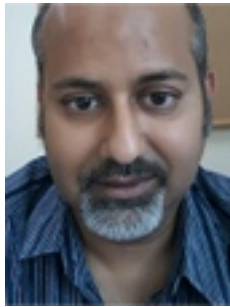
<https://www.iitk.ac.in/che/jks.htm>

Symposium

13

24 February 2020

Executive Training in Cyber Security for L&T Technology Services



Prof. Sandeep Shukla
Dept. of CSE IIT Kanpur

<https://www.cse.iitk.ac.in/users/sandeeps>

14

24-26 February 2020

International Workshop on Energy, Environment and Multiphase Flows



Dr. Abhijit Kushari
Dept. of AE IITK

<https://www.iitk.ac.in/aero/faculty/akushari/>



Dr. Ashoke De
Dept. of AE IIT Kanpur

<http://home.iitk.ac.in/~ashoke/>

15

24-26 February 2020

Training Program on Smart Grid Components and Technologies



Prof. Saikat Chakrabarti
Dept. of EE IIT Kanpur

<http://home.iitk.ac.in/~saikatc/>



Prof. Ankush Sharma
Dept. of EE IIT Kanpur

<https://www.iitk.ac.in/new/ankush-sharma>

16

24-26 February 2020

Joint student workshop involving students of University of Tokyo & IIT Kanpur and Seminar on Opportunities for higher education and working in Japan



Prof. Sayan Chattopadhyay
Dept. of Humanities &
Social Sciences IITK

<http://iitk.ac.in/new/sayan-chattopadhyay>



Vatsala Mishra
Japanese Instructor
IIT Kanpur

17

02-04 March 2020

Advanced Seismic Analysis of Buildings and Bridges



Prof. Durgesh C. Rai
Dept. of Civil Engg. IIT Kanpur

<http://home.iitk.ac.in/~dcrai/>

18

07-08 March 2020

High Entropy Materials(IWHEM 2020)



Prof. Krishanu Biswas
Dept. of MSE IIT Kanpur

<http://iitk.ac.in/new/krishanu-biswas>



Dr. Kaustubh Kulkarni
Dept. of MSE IIT Kanpur

<http://home.iitk.ac.in/~kkaustub/>

19

April- June 2020

agmooc - Agriculture Courses (Three Courses)



Prof. T.V. Prabhakar
Dept. of CSE IIT Kanpur

<https://www.cse.iitk.ac.in/users/tvp/>

20

April - July 2020

Learning Physics Through Simple Experiments



Prof. T.V. Prabhakar
Dept. of CSE IIT Kanpur

<https://www.cse.iitk.ac.in/users/tvp/>



Prof. H.C. Verma
Dept. of Physics IIT Kanpur

<https://www.hcverma.in>



Faculty Training Programs under Institutional collaboration with AKTU

Coordinator

Prof. Jayant K. Singh
Dept. of Chemical Engg.
IIT Kanpur

01

15-19 January 2020

FTP on Product Development



Prof. Niraj Sinha
Dept. of Mechanical Engg. IIT Kanpur

<http://iitk.ac.in/new/niraj-sinha>

02

21-25 January 2020

FTP on Robotics



Prof. Ashish Dutta
Dept. of Mechanical Engg. IIT Kanpur

<http://home.iitk.ac.in/~adutta/>



Dr. Anjali Vishwas Kulkarni
Principal Research Engineer
Centre for Mechatronics IIT Kanpur

<http://home.iitk.ac.in/~anjalik/>

CCE STAFF



Mr. Anil Mehrotra
(Retired)



Ms. Sanno Devi Kushwaha



Mr. Vinay Kumar



Mr. Sudesh Gupta



Ms. Kranti Singh



Ms. Prachi Mishra



Mr. Yogendra Singh



Mr. Rajesh Kumar

CCE Office

Room No. 207 Outreach Building
Indian Institute of Technology,
Kanpur

Phone: 0512-289-7795

Email: cce@iitk.ac.in