Prof. Rajesh M. Hegde

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

It gives me great pleasure in bringing out the first news letter of the Centre for Continuing Education. IIT Kanpur offers a variety of outreach programs (short-term courses, workshops, online certificate programs, and internship programs) to students, academic, technical staff, and working professionals both from within and outside the Institute. The Centre for Continuing Education has been mandated to handle all such academic outreach educational activities of IIT Kanpur from this year.

I am happy to report that several AICTE sponsored QIP programs, Short Term Workshops under various categories, MooCs, NPTEL programs, and Conferences were successfully conducted in the period between April to September 2019, under the aegis of the CCE. The Foreign Language Program (FLP) which was running under the Dean Student Affairs (DOSA) has also moved to the CCE from this year. Several courses in areas like Data Sciences, and AI, among others have also been conducted under the Institutional collaboration mode with Dr. A.P.J. Abdul Kalam Technical University (AKTU) Uttar Pradesh. Prof Harish Verma who is a pioneer in science education in India has joined as an Adjunct Faculty with the CCE and is making significant efforts in popularizing science education in rural areas of Uttar Pradesh through MooCs. The Center for Continuing Education (CCE) is making efforts to develop and integrate several e-platform services available at IIT Kanpur into a single full fledged online service called “IITK Online” for all online course offerings from IIT Kanpur. This service will act as a single window facilitator in the future for all online course offerings at IIT Kanpur.

The team at CCE is excited with the new developments in the area of continuing education and is working hard to introduce, formalize, organize, conduct, and facilitate various new outreach programs. We look forward to the support and encouragement of all Faculty and Academic staff in our efforts to make the outreach program offerings at IIT Kanpur successful and self-sustaining, while ensuring the quality of these programs. We welcome your valuable feedback as always on any matter related to the CCE. I also hope to communicate with you again in the next newsletter in a couple of months.
CCE ACTIVITIES

- Symposia, Seminars, and Conferences
- Short Term Courses and Workshops
- AICTE sponsored QIP Programs
- 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/
- PMMMNMTT/ 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/
- SURGE
  http://surge.iitk.ac.in/
The following outreach programs have been conducted successfully under the umbrella of the Centre for Continuing Education in the period between April - September 2019. These include AICTE sponsored QIP Programs (10), Short Term Programs (26), Faculty Training programs (09), and Conferences (03).

- **10** AICTE Sponsored QIP Programs
- **26** Short Term Programs
- **09** Faculty Training Programs under Institutional collaboration with AKTU
- **03** Conferences
10 AICTE Sponsored QIP Programs
Completed during April - September 2019
The next decade will be shaped by the five digital forces of: Robotics and AI, cloud computing, big data analytics, mobile and pervasive computing and social media. Robotics and autonomous systems is an interdisciplinary engineering field which connects the classical branches of mechanical, electrical engineering and computer science/information technology. Its applications range from machine tools, autonomous cars, drones, biomedical engineering, industrial automation, medical robotics and exoskeletons, Machine learning and AI, etc. The main objectives of this course is to first give the participants an introduction to the basic kinematics and dynamics of Robotic systems and then focus on a few advanced topics related to autonomous robotic systems applications. A practical session of Matlab based integration of hardware and software is also included for real world applications. Each day will have a focussed theme on a particular area.

Composites, the major frontier area of science and technology to replace conventional materials has reached greater heights of scientific and technological developments. In the last two decades, a great deal of fundamental and developmental research has been made to bring composite materials in various applications such as automobile, space, ocean, medical, agriculture, automotive, building construction, railways, etc. The advent of composite materials has introduced a new dimension in application of energetic, smart and reactive materials. The objective of this course is to bring together scientists, engineers, technologists and industrialists from different disciplines to a common platform, to discuss the recent advances in the processing and application of composite materials. This course is designed to bring greater awareness of these developments among the academic personnel and industries. To fulfil this objective the course combines presentation of the basic properties and manufacturing routes along with their application in various industries for different types of composites. As part of the course practical sessions are conducted where the participant will build his own product.
Current automobile technology has matured significantly over the past few years. Engine technologies have come across a significant change to improve the efficiency and cost. However, the world is also confronted with the twin crises of fossil fuel depletion and environmental degradation. Indiscriminate extraction and lavish consumption of fossil fuels have led to reduction in underground-based carbon resources. This calls for advanced designs of the engines and deployment of relevant engine technologies, which promise a harmonious correlation with sustainable development, energy conservation, management, efficiency and environmental preservation. With increasing environmental awareness worldwide, stringent regulations for fuel consumption, and exhaust emissions, including those for PM (Particulate Matter) and NOx are further evolving. Under these circumstances, diesel engines would continue to be attractive because of their relatively lower fuel consumption and higher power output compared to their gasoline counterparts however both have to emerge as clean primary power sources. This course focuses on designing of various engine components and technologies, diagnostics and modeling tools. The emphasis is on providing the participant an up-to-date knowledge of the advances in design of engine components and sub-systems for emission compliance.

The economic strength of a country is correlated by the growth of its manufacturing industries. Therefore, Manufacturing has become part of the fabric of our country with highlighting on "Make in India" by the government. It is important that technical brain from all disciplines have basic idea about processes involved in making a product. This course aims to teach the basic knowledge about the fundamental manufacturing techniques employed to transfer a raw material into final useful product.
An important goal of Smart Grid Technology (SGT) is to leverage modern Information and Communication Technology (ICT) infrastructure to help monitor and control of the power systems more effectively. With the increase in penetration of SGT in power systems, there has been a growing demand of real-time visualization, monitoring, and control of the power system. Further, the present day electricity sector is witnessing increased share of renewables, storage, EV charging stations, microgrids, intelligent sensors and controllers, automation, and smart metering at different levels in the network. This leads to transmission & distribution networks requiring cyber-secure Advanced Energy Management System (AEMS) and Advanced Distribution Management System (ADMS) tools. The large penetration of renewables, being intermittent in nature, will pose system stability and power quality concerns, which will require proper compensation and controls. The main objective of this course is to familiarize the participants from academic institutions, utilities, industries, and R&D organizations about different concepts and developments in the Smart Grid Technology.

The statistical tools play an important role in the engineering, management, humanities and all allied sciences. Recent advancement in application oriented sciences are compelling the researchers and users for learning and understanding the statistical tools for modelling and analysis of the data arising from their experiments. Realizing the need of the time, the present workshop is aiming to give lectures and training on the Statistical topics and Linear Regression Modelling. The participants will be exposed to the statistical basics, background and fundamentals behind the tools.
07 Fundamental and Practical Aspects of Corrosion 22-26 June 2019

Coordinators

Prof. Kallol Mondal
Dept. of MSE

Prof. Sudhanshu Shekhar Singh
Dept. of MSE

The objective of the course is to impart knowledge to the participants on the fundamental and practical aspects of corrosion. The course will begin with emphasis on the importance of studying Corrosion of materials. Fundamentals of corrosion will be addressed from the angle of thermodynamics and kinetics of electrochemical phenomena. Different forms of corrosion related to materials and mixed potential theory will be discussed. Finally, electrochemical ways of protection of metals and alloys will be explained. Moreover, it will also address the practical aspects of corrosion and how to analyze the corrosion test data and subsequent choice of protection method. The course comprising of lectures and lab session shall give the participants of learning, teaching, doing research and development of the IIT Kanpur way and hopefully aid them in establishing similar procedure at their home institutes.

08 Energy: Sources, Utilization and World Perspective July 29 - August 3, 2019

Coordinators

Prof. P K Panigrahi
Dept. of ME

Prof. Arun K Saha
Dept. of ME

Prof. K. Muralidhar
Dept. of ME

The course aims at exposing the participants to the present day perspective of energy from technical as well as social perspectives. It begins with a review of various forms of energy sources in use and their future prospects. Special attention is paid towards unconventional hydrocarbons that may sustain societies for the next century. The second part of the course is designed to provide the participants with the knowledge of consequences of energy usage on the environment, such as climate change. The third section covers historical and political implications of energy usage on peace, stability, and war.
Coordinators

Prof. K V Srivastava  
Dept. of EE

Prof. S Anantha Ramakrishna  
Dept. of PHY

An intensive course on Fundamentals and Applications of Metamaterials, from microwave to optical frequency range, will be conducted between 19 and 23 August 2019, sponsored by the Continuing Education Program of IIT Kanpur. The program will be specifically useful for persons who are concerned with Microwave, Infrared and Optical properties of Metamaterials in Research and Industry as well as training/teaching of students/personnel. Through this program, IIT Kanpur's internationally recognized expertise in this area is being used to create a pool of appropriately trained technical personnel in India. The course is designed to cater to the needs of teachers from Science & Engineering Institutions, scientists from R&D labs and practicing engineers from industry. It aims to equip the participants with an essential knowledge of the area so as to enable them start working with metamaterials in their research & applications.

TEM and HRTEM Analysis of Materials
2-6 September, 2019

Prof. Gouthama  
Dept. of MSE

Dr. Bhagyarat Jayabalani  
Dept. of MSE

Imaging at atomic resolution and elemental analysis at nanoscale has become essential characterization in advanced materials processing, development, and design. The range of experimental techniques available have been increasing and the researchers need to develop a high degree of expertise, both in the conduct of the analysis using these tools and interpretation of the acquired data/results. The lack of exposure and expertise in these techniques is becoming more and more a limitation in carrying out the high quality of research using these advanced research tools/techniques. This course aims to address this shortcoming.
26

Short Term Programs
Completed during April - September 2019
01. Hepatic and Bone Tissue Development for Drug Metabolism and Tissue Engineering

01-12 April 2019

Coordinator
Prof. Ashok Kumar
https://www.iitk.ac.in/new/dr-ashok-kumar

02. Blockchain for Managers: Introduction and Applications

May 05 to June 10, 2019

Coordinator
Prof. T V Prabhakar
https://www.cse.iitk.ac.in/users/tvp/

03. Kendriya Vidyalaya Sangathan Workshop

15-24 May 2019

Coordinators
Prof. H. C. Verma
https://hcverma.in/

Prof. Saurabh Mani Tripathi
http://home.iitk.ac.in/~smt/
04 Design Thinking and New Product Development
20 May to 23 June, 2019
Coordinator
Prof. J. Ramkumar
http://www.iitk.ac.in/new/dr-j-ramkumar

05 Literature Review Workshop for PG Students of CE
June 27 to July 06, 2019
Coordinators
Prof. Chinmoy Kolay
https://iitk.ac.in/new/chinmoy-kolay
Prof. Durgesh C Rai
http://iitk.ac.in/new/durgesh-c-rai

06 ACA Summer School
May 27- June 7, 2019
Coordinator
Dr. Rajat Mittal
https://www.cse.iitk.ac.in/users/rmittal/
07
27-31 May, 2019

Coordinators
Prof. Adrish Banerjee
http://home.iitk.ac.in/~adrish/

Prof. Abhishek Gupta
http://home.iitk.ac.in/~gkrabhi/

08
Introduction AI, IoT & Robotics
June 03 - July 01, 2019

Coordinator
Prof. Laxmidhar Behera
http://home.iitk.ac.in/~lbehera/

09
Earthquake Resistant Practices @IITK for UG Students of Architecture
14-22 July 2019

Coordinators
Prof. Durgesh C. Rai
http://home.iitk.ac.in/~dcral/

Prof. Chinmoy Kolay
https://www.iitk.ac.in/new/chinmoy-kolay
Flexible Electronics
04-06 July 2019

Coordinator
Prof. Monica Katiyar
http://iitk.ac.in/new/monica-katiyar

Entrepreneurship (SBERTC)
04 July 2019 to 03 July 2024

Coordinator
Prof. B.V. Phani
http://home.iitk.ac.in/~bvphani/

3D Simplified Mathematics with Excel
05-07 July 2019

Coordinator
Prof. K S Venkatesh
http://home.iitk.ac.in/~venkats/
13 5G Wireless Technology: Massive, mm Wave MIMO, NOMA, Full Duplex and OFDM/FBMC
08-13 July 2019
Coordinator
Prof. Aditya K. Jagannatham
http://home.iitk.ac.in/~adityaj/

14 Advanced Coal Utilization: Current Status and Future Prospects
08-20 July 2019
Coordinator
Dr. Santanu De
http://home.iitk.ac.in/~sde/

15 Design, Construction, Evaluation & Maintainence of Flexible Pavements and Future Technologies
21-25 July 2019
Coordinator
Prof. Animesh Das
http://home.iitk.ac.in/~adas/
Conduct of Road Safety Travelling Workshop for UPPWD Officers in collaboration with IITD & IIT BHU (Coordinator: IIT Delhi)
21-22 July 2019

Coordinator
Prof. Sudhir Mishra
http://iitk.ac.in/new/sudhir-mishra

Emerging Trends in the Indian Power Sector: Market Design and Digitalisation
25-27 July 2019

Coordinator
Dr. Anoop Singh
http://www.iitk.ac.in/ime/anoops/

Steelmaking, Refractories and Plant Practices
01-03 August 2019

Coordinator
Prof. Dipak Mazumdar
http://home.iitk.ac.in/~dipak/
Quantum Mechanics in MOOC mode
August 15 to December 01, 2019

Coordinators
Prof. H. C. Verma
https://www.hcverma.in

Prof. T. V. Prabhakar
https://www.cse.iitk.ac.in/users/tvp/

Handeling Large Scale Data & Data Analysis using R
26-30 August 2019

Coordinator
Prof. Shalabh
http://home.iitk.ac.in/~shalab/

E-Summit Workshops 2019
August 30 to September 01, 2019

Coordinator
Prof. Amitabha Bandyopadhyay
http://iitk.ac.in/new/amitabha-bandyopadhyay
Concrete Engineering for BGR Energy Limited and NUPPL Engineers
21 August 2019

Coordinator
Prof. Sudhir Mishra
http://iitk.ac.in/new/sudhir-mishra

Inclusion of Indian Traditional Knowledge in Technical Education Systems
7 September 2019

Coordinator
Prof. D.P. Mishra
http://www.iitk.ac.in/aero/dpm/

Two Week Intensive Course on Exterior Ballistics
16-29 September 2019

Coordinator
Prof. Nachiketa Tiwari
http://www.iitk.ac.in/new/nachiketa-tiwari
Nanomechanics and Biotribology (NMB-2019)
15-16 September 2019

Coordinators
Prof. Kantesh Balani
http://home.iitk.ac.in/~kbalani/

Prof. Gouthama
http://home.iitk.ac.in/~gouthama/

RF, Microwaves and Antennas: Theory and Applications
16-20 September 2019

Coordinators
Prof. Rajesh M Hegde
http://home.iitk.ac.in/~rhegde/

Prof. K V Srivastava
http://home.iitk.ac.in/~kvs/
09

Faculty Training Programs under Institutional Collaboration with AKTU

Completed during April - September 2019
Coordinator: Prof. Jayant K Singh

Introduction to Programming: A Pedagogical Approach
17-22 June 2019

Instructors

Prof. Amey Karkare  
Dept. of CSE  
IIT Kanpur

Prof. Rajat Mittal  
Dept. of CSE  
IIT Kanpur

Introduction to Basic Electrical Engineering: A Pedagogical Approach
2-6 July 2019

Instructors

Prof. Ankush Sharma  
Dept. of EE  
IIT Kanpur

Prof. Saikat Chakrabarti  
Dept. of EE  
IIT Kanpur

Prof. Sandeep Anand  
Dept. of EE  
IIT Kanpur
Introduction to the Technical/Engineering Drawing: A Pedagogical Approach
9-13 July 2019

Instructors

Prof. P.M. Mohite  
Dept. of AE  
IIT Kanpur

Prof. J. Ramkumar  
Dept. of ME  
IIT Kanpur

Prof. Sathesh Mariappan  
Dept. of AE  
IIT Kanpur

Introduction to Programming: A Pedagogical Approach
13-18 Aug 2019

Instructors

Prof. Amey Karkare  
Dept. of CSE  
IIT Kanpur

Prof. Rajat Mittal  
Dept. of CSE  
IIT Kanpur
05 FTP on Manufacturing Process
21-25 August 2019

Instructors
Dr. Amandeep
Dept. of IME
IIT Kanpur

Prof. J. Ramkumar
Dept. of ME
IIT Kanpur

06 Short Term Course on Data Analytics with Python
7-11 September 2019

Instructor
Mr. Avneesh Jain
Codekraft

07 Short Term Course on Artificial Intelligence
14-18 September 2019

Instructors
Nisheeth Srivastava
Dept. of CSE
IIT Kanpur

Prof. Piysh Rai
Dept. of CSE
IIT Kanpur
Product Realization using 3D Printing
28 Sept - 2 Oct, 2019

Instructors

Prof. Vinay P. Namboodiri
Dept. of CSE
IIT Kanpur

Prof. Sunil Easaw Simon
Dept. of CSE
IIT Kanpur

Prof. Arnab Bhattacharya
Dept. of CSE
IIT Kanpur

Prof. Niraj Sinha
Dept of ME
IIT Kanpur

Prof. S Kamle
Dept. of AE
IIT Kanpur

Prof. Pankaj Wahi
Dept. of ME
IIT Kanpur
An Introductory Course on High-Performance Computing in Engineering
28 Sept - 2 Oct, 2019

Instructors

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

Prof. Amey Karkare
Dept. of CSE
IIT Kanpur

Prof. Preeti Malakar
Dept. of CSE
IIT Kanpur

Prof. Swarnendu Biswas
Dept. of CSE
IIT Kanpur

Prof. Vinay P. Namboodiri
Dept. of CSE
IIT Kanpur

Prof. Mahendra K. Verma
Dept. of Physics
IIT Kanpur

Mr. Ashok Chaudhary
Fujitsu

Mr. Ashish P. Kuvelkar
C-DAC Pune
03

Conferences
Completed during April - September 2019

01

Fourth International Conference on Nanotechnology for Better Living Theme: Technological Advancements of Fly Polymer Composites
06-07 April , 2019

Prof. Kamal K. Kar

http://home.iitk.ac.in/~kamalkk/
02 Computing Communications and Networking Technologies (ICCCNT 2019)
6-8 July, 2019

Prof. Sandeep Shukla
https://www.cse.iitk.ac.in/users/sandeeps/

03 Society for Economic Research in India 2019
13-14 July, 2019

Prof. M. A. Rahman
https://www.iitk.ac.in/new/mohammad-arshad-rahman
The Foreign Language Programme (FLP) was started more than 30 years ago under the DOSA and run by the Dept. of HSS. Since then it has grown and attracts students and faculty not just from within the campus, but also from the city. Eager and motivated students learn a language either purely out of interest or for professional reasons. Many students, who wish to pursue a higher degree or a job outside India, find the knowledge of a foreign language an additional benefit. French, German, Japanese, and Chinese Languages are taught under the FLP. The FLP co-ordinator from HSS department co-ordinates this activity under the CCE. The FLP will be conducted under the aegis of the CCE from this year.

Instructors

Shubha Karnick
French

Deepaa Anandh
German

Lekha Rajesh
French

Vatsala Mishra
Japanese

Gauri Sharma
German

Ya-Hsin Yu
Chinese

Neelam Saxena
German
Prof. Harish Chandra Verma has retired from Department of Physics at Indian Institute of Technology, Kanpur as a Professor. Prior to joining IIT Kanpur, he served Science College Patna University (1979-1994) as Lecturer and Reader. His research interests is in Nano fabrication using focused ion beam, Magnetism in Graphite on irradiation by ion beam, Nanosize (4 nm-20 nm) magnetic materials, Fe-based alloys, Earth Science etc. He has published 139 research papers in reputed journals. He has also written several books in Physics for School and College level students. He has developed more than 600 physics experiments which can be used by teachers as DEMOs in their classrooms. He has also produced a set of 45 video lectures in Hindi at school level. Prof. Verma is Executive Committee member of Indian Association of Physics Teachers (IAPT) which works for physics education in schools and colleges.

During his stay at IIT Kanpur, Prof. Verma has taught a number of professional and core courses. Almost every year, he was adjudged outstanding instructor/tutor as announced in the senate of IIT Kanpur and was given appreciation letter from the Director. The UG/professional courses include Nuclear Physics, Classical Mechanics, Quantum Mechanics, Electrodynamics, Review courses for PhD Students etc.

Prof. Verma is Currently an adjunct faculty with CCE and working towards popularizing science education in India using Hindi as a medium of instruction.
Prof. Prabhakar is interested in building systems and is still excited about science and technology. He had worked in multiple areas like Databases, Logic Programming, User Interface Design, Internet Technologies, Software Architecture, Knowledge Modelling, and Indian Language Technologies. He had worked with CMC R&D, Satyam Computer Services and had been a consultant to a large number of IT organizations and e-governance initiatives.

Prabhakar taught, probably the first MOOC from India in 2012. Realizing that there is no appropriate software for the delivery of MOOCs he designed and developed a MOOC management system mooKIT (https://www.mookit.in) mooKIT is built with some of the problems that is faced by developing countries in mind, like unstable, poor and sometimes expensive bandwidth. mooKIT has been since used in more than 70 courses with over 2,00,000 learners. It is fully built with open source components and is open source. He coordinates a portal on MOOCs for Agriculture, agMOOCs, (https://www.agmoocs.in) only one of its kind in the world. More than seventeen MOOCs in agriculture have been delivered in the last four years. Along with Commonwealth of Learning (https://www.col.org), he operates a MOOCs for Development portal at MOOC4DEV (https://www.mooc4dev.org) which is used by Universities from several countries to deliver courses related to developmental issues.
CCE Staff

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