ICTIEE 2019 Pre-Workshops
Registration link for all 4: https://www.surveymonkey.com/r/5S8HM2D

Four Workshops will be conducted prior to ICTIEE 2019 at Hyderabad location.
Enrollment will be limited to 50 for each.
Venue for all workshops: Malla Reddy Engineering College (venue of ICTIEE 2019)

Workshop 1

- ## "Grand Challenges Scholar Program" A one and half-day workshop

Jan 5: 9:30 am to 4:30 pm and Jan 6: 9:30 to 12:30 pm
Fee: Rs. 1,000 for those registered for ICTIEE 2019 Hyderabad; Rs. 1500 for those not registered.
Pre-Register at link:

Workshop Description and Objectives:

In 2008 the US National Academy of Engineering (US NAE) shared a report that summarized a major study on the engineering challenges for the 21st century. The report, edited in 2017 (www.grandchallenges.org), lists 14 grand challenges for engineering. Given their importance for the sustainability of mankind on Earth, many, if not all, are major research areas in universities around the world and are of interest to all engineering stakeholders, from students to governments and industry. To address these grand challenges (as well as other local, regional and national challenges), we need to develop the engineering talent with the appropriate knowledge, skills and attitudes needed, hence, the Engineering Grand Challenges Scholars Program (GCSP), a now global movement to develop curricular learning experiences focused on developing these competencies in engineering graduates. More than 60 institutions worldwide (with 120 around the world in the process of joining) have established GCSP programs leveraging existing Campus initiatives and creating new ones, in which students can complete the five GC competencies outlined. Upon completion of these, the US NAE recognizes the students with a GC Scholar Certificate, they can add to their credentials. This workshop is for engineering faculty, students, industry and government officials that would like to become aware of the GCSP and consider providing this important opportunity for the engineering students. Workshop goals include: 1) Understanding the Grand Challenges of Engineering (GC) and the Scholars Program (GCSP) elements and requirements 2) Comprehending the required elements to create a successful GCSP at their institutions, and, 3) Start writing a proposal to be submitted to the US NAE.

Workshop Agenda

Day 1	Topic	Leader
	Introduction & Expectations	Lueny Morell
	The NAE's Grand Challenges for Engineering: Why Are They Important?	Dr. B.L. Ramakrishna
	Brainstorming session: Making the GC list pertinent to my country/region reality	Lueny Morell
	What is the Grand Challenges Scholars Program and what are the requirements for its	Dr. B.L. Ramakrishna

	implementation (elements, student learning outcomes/competencies, expectations)?	
	Examples of how you can provide the GCSP competencies to your students	Lueny Morell
	Curriculum approaches and challenges o Roles for industry and aligned programs o Administrative issues	Lueny Morell & Dr. B.L. Ramakrishna
Day 2	What are the elements of a successful GCSP proposal?	Lueny Morell
	Work session in groups by institution: The GCSP Proposal	Lueny Morell & Dr. B.L. Ramakrishna
	Tailoring the proposal to one's Institution	Dr. B.L. Ramakrishna
	Groups' Presentations	Workshop Participants

Workshop Leaders

Dr. B.L. Ramakrishna
Emeritus Professor, Arizona State University
Former Senior Science Advisor, US State Department
Director, Grand Challenges Scholars Program Network, NAE

Professor Lueny Morell
Vice Dean, School of General Engineering, Beihang University, China
Founder & Director of InnovaHiEd
Former IFEES President, Member IUCEE Advisory Board

Workshop 2

- ## "Engineering Education Research"

  Jan 6: 9:30 am to 12:30 pm
  Fee: Rs. 500 for those registered for ICTIEE 2019 Hyderabad; Rs. 1000 for those not registered.
  Pre-Register at link:

Workshop Description and Objectives:

"This workshop is part of program for training faculty who are interested in conducting world-class engineering education research. The program begins with an orientation and information session on Dec 21st, followed by this 3-hour face-to-face workshop at ICTIEE facilitated by 6 IUCEE experts, followed by an 11-month course".

As awareness of pedagogical techniques has increased for engineering faculty in India, and as they engage in more activities like service learning, there is a great opportunity to study the impact of these activities and add to the existing body of knowledge in engineering education research. IUCEE is launching a pilot program in 2019 for training faculty who are interested in conducting world-class engineering education research. The program begins with an orientation and information session on Dec 21st, followed by a 3-hour face-to-face workshop at ICTIEE facilitated by 6 IUCEE experts, followed by an

11-month course with the expected outcome of a research paper worthy of submission to an international peer-reviewed journal for each participant. The workshop at ICTIEE will feature case studies and group assignment for participants to introduce them to all aspects of conducting research in engineering education (human subjects research), with a focus on identifying gaps in the literature, designing good research questions and reviewing theoretical frameworks that can serve as the foundation for their studies. At the end of the workshop, participants are expected to have formed groups that can work on a paper together, along with drafts of their research questions. The remainder of 2019 will focus on operationalizing the study for each group, conducting the research, while simultaneously writing the paper.

Workshop Leaders:

Dr. Sohum Sohoni
Arizona State University

Dr. Prathiba Nagabhushan
Australian Catholic University

Workshop 3

- ## Designing Assessments for Introductory Programming Courses

    Jan 6: 9:30 am to 3:30 pm (including lunch break)
    Fee: Rs. 1,000 for those registered for ICTIEE 2019 at Hyderabad; Rs. 1,500 for those not registered.
    Pre-Register at link:

Workshop Description and Outcomes:
Computer Science, Engineering and allied fields are emerging as single largest area of engineering profession in India. While the need to train the trainers (teachers) on latest advances in "What to teach" and "How to teach" is paramount, often times, the "How to assess" is left untouched.
"Assessments drive learning", "Exams should be more than a means to just grade the students" and hence no matter how much time and energy we spend on designing the content and pedagogy, unless we spend equal amount of time, energy and wit on designing the assessments, the learning loop is never closed.
This workshop focuses on designing assessments on testing competencies of the students in programming related courses.
At the end of the workshop, the participants will be to (with specific reference to programming courses):
- Identify and list what are the uses of test
- List various types of test items, which can be used to test programming skills (at higher levels of Bloom's taxonomy)
- Overcome common mistakes in writing test items
- Improve effectiveness of the test items
- Set a model test paper
- Analyze a test for its effectiveness

Outline:
- Motivation to write effective test items (Activity of 10 minutes)

- Revising some of the test items in old question papers (already done during pre-workshop assignment)
- Sharing examples of variety of test items (specifically to test higher levels of taxonomy)
- Writing 5 effective test items (activity of 1 hour)
- Evaluating (quality check) of the test items prepared above (Jig-saw activity of 30 minutes)
- Preparing a complete test (Activity of 1 hour)

Workshop Leaders:

Prof. Viraj Kumar, IISc, Bangalore

Prof. Venkatesh Kamat, Goa University

Mr. Dhiren Patel, CTO of CodeZinger

Workshop 4

"Changing Face of Machine Learning: Opportunities in the Future"
Jan 5: 9:30 am to 4:30 pm and Jan 6: 9:30 to 12:30 pm
Fee: Rs. 1,500 for those registered for ICTIEE 2019, Rs. 2,000 for those not registered
Pre-Register at link:

Workshop Description and Outcomes:
The face of Machine Learning has undergone a sea change over the past decade. Propelled by advances in hardware, software, and infrastructure technologies and the ready availability of large quantities of data at high speeds, the arena of machine learning has shifted from the classroom to the cloud. Indeed, many of the most powerful algorithms have been developed, fine-tuned, optimized, coded and packaged into labeled black boxes. What are a user has to do is to feed one of these black-boxes with a pre-processed data stream, "point and click," and out comes a solution ready for interpretation and evaluation. The focus has shifted from algorithm development to pre-processing, post-processing, and field deployment. The pre-processing stage involves the traditional stages of data munging to the emerging discipline of feature-engineering. The post-processing stage involves a trade-off between accuracy and interpretability from an applied perspective and puts forward social and commercial motivations for interpretability, fairness, accountability, and transparency in machine learning.
This 1.5-day course begins with an academic perspective on the process of machine learning and ends with a commentary on contemporary needs for field deployment as ML moves from the classroom to the cloud.

Workshop Leader

Dr. Rao Vemuri
University of California, Davis (USA)