# IUCCEE

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Dear Friends,
12 years ago, IUCEE came into existence with the sole purpose of bringing in positive change in the status quo of engineering education system in India. The idea has now become a philosophy, and is responsible for creating a self-sustainable ecosystem, which has thrived in these years. IUCEE has created an opportunity and platform for engineering students, professionals, educators, and entrepreneurs from all around the globe to come together to share, learn, and collaborate with each other. IUCEE has designed multiple initiatives like the annual ICTIEE conference, IIEECP teachers training certification, leadership summit, JEET Journal, student leadership program, engineering education research certificate, and weekly webinars to reach out and bring about change in all stakeholders’ lives. These efforts have played an important role in fostering employability, entrepreneurship and leadership skills in engineering graduates in most of the member institutions.

This journey would not have been possible without support of corporate sponsors, consortium member institutions, global advisory board, institutional leaders, global industry advisory forum members, and countless volunteers. I would like to extend my thanks to all of them for their commitment and dedication! I hope that we all will continue our journey and efforts to bring in change in the way engineering education is perceived and practiced in India.

Jai Ho,
Krishna

IUCEE
Message from The Executive Director

Dr. Krishna Vedula

35 faculty certified under IIEECP will receive additional recognition with the title of “International Engineering Educator ING.PAED.IGIP” by the President of IGIP along with Certificates at ICTIEE 2020 Conference. IUCEE will also be launching two new initiatives: “Clean and Green Campus” and “STEAM Education” during the ICTIEE 2020 conference, and consortium member institutions are encouraged to get involved and participate in these.
Indo Universal Collaboration for Engineering Education (IUCEE) was conceptualized by over 150 leaders of engineering education and businesses from US and India in 2007. The name was modified in 2016 from Indo US Collaboration for Engineering Education to reflect the more global nature of the collaborations.

The major focus of IUCEE is faculty development, student development, curriculum development, as well as improved teaching methodologies & engineering education research.

IUCEE has become established as a prime mover for improving quality of engineering education in more than 50 engineering colleges in India. An ecosystem has been built with the help of experts from around the world. This ecosystem includes face-to-face workshops, webinars and courses in a blended format for faculty development, international conferences, a peer-reviewed journal on engineering education, a certification program as well as networking opportunities between engineering educators and students from India and the global community.

**IUCEE Vision:** The vision of IUCEE is to improve the quality and global relevance of engineering education and research in India with related benefits to engineering educators around the world.

IUCEE believes in assisting any engineering institution, which is interested in improving the quality of engineering education it offers. The primary objective of inviting institutions to become members of the IUCEE Consortium is to assist them in improving the quality of their engineering graduates. IUCEE works with the institutional leadership and faculty to understand the strategic plan of the institution and facilitate the transformation of the process of engineering education at the institution.

Annual fees for institutional membership in the IUCEE Consortium is $1,000 payable to IUCEE headquartered at University of Massachusetts Lowell, USA. As of November 2019, there are 91 consortium member institutions.

**IUCEE Mission:** The Mission is to build an ecosystem for transforming engineering education in India with the assistance of engineering education experts and industry from around the world.
IUCEE co-organizes the International Conference on Transformations in Engineering Education (ICTIEE) annually in India. The conference connects engineering educators from all over India with educational and industry leaders/mentors from across the world. Participants are able to share best practices and thereby learn to transform their own institutional efforts to prepare engineering graduates who can address global challenges as well as targeted initiatives of the Indian government.

This is a great networking opportunity. The educators not only get to meet their peers from across the India, but also get a chance to interact with globally renowned educators, researchers, and industrial leaders/mentors. The conference provides a well-rounded perspective about education in the 21st century to the participants. This is achieved through, paper presentation, poster presentation, keynote speeches, panel discussion, and workshops.

The event is one of the flagship events of IUCEE. In 2019, ICTIEE was hosted at two different locations, Malla Reddy College of Engineering hosted the event on their campus in Hyderabad, Telangana, and Chitkara University, Chandigarh, India. The idea of hosting the event at two different locations sequentially is to maximize impact of the mission and vision of IUCEE. The 2020 ICTIEE is hosted by Anurag Group of Engineering in Hyderabad, TS.

**Number of People Registered:**
Malla Reddy College of Engineering: 687
Scale Students: 13
Spot registration and VIP Delegates: 95
Chitkara University: 281

**Number of Papers Presented:**
Malla Reddy College of Engineering: 140
Chitkara University: 89

**Number of Academic Workshops:**
Malla Reddy College of Engineering: 24
Chitkara University: 15

**Number of Keynotes Addresses:**
Malla Reddy College of Engineering: 11
Chitkara University: 6

SCALE Annual Student Forum held in parallel with ICTIEE 2020 at CMR College of Engineering and Technology and attended by 180 students

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IUCEE believes that upskilling and continuous professional developments are important aspects for faculty and students in today’s world. IUCEE started webinars based virtual academy in 2011. Academy uses technology as a platform for engaging, teaching and learning for engineering faculty and students across India. The topics of these webinars vary from teaching, research, use of technology in conveying ideas, and case studies. These online webinars are synchronous in nature, and thus provide a chance for networking, connecting, collaborating (to identify peers with similar interests), and learning from each other. Keeping in mind the busy schedules of faculty members and students, IUCEE also provides recording of the webinars. These webinars are available to all consortium member institutions. IUCEE has developed an ecosystem that promotes quality education and learning from peers.

In 2019 calendar year, Virtual Academy hosted 91 webinars, and a total of 6311 participants attended.

Some of the topics covered in the webinars are:
- Engineering curriculum for the millenials: a formal and non-formal perspective
- Role of engineers without borders in community service projects
- Enabling IoT applications using MATLAB and ThingSpeak
- Crowd funding: research and practices
- OBE deployment and sustainment to develop epistemic curiosity among the students: application of Deming’s model
- Building innovative and entrepreneurial faculty
- Significance of course outcomes (COs) in realizing OBE

- Teaching technological entrepreneurship trend
- Leveraging OBE for quality assurance in an affiliated college
- Designing effective course outcomes
- Success story of KJSCE autonomy
- Center for teaching learning-initiatives at RIT
- Introduction to deep learning using MATLAB
- The simulation-driven design process
- OBE in higher education
- How to carry forward the vision of organisation from a global perspective
- Design of online course using Gnomio
- Affective education and new technologies starting from music therapy to engineering education
The IIEECP was launched in 2015 with the sponsorship of Microsoft India. Based on the learning of two pilots run in Spring and Fall of 2015, the final version of the program was developed. Since then, the IIEECP has been working independently, growing steadily and serving substantial number of engineering educators and their institutions. In the summer 2018, a full review of curriculum was undertaken and many changes were made. It was heartening to note that some of the strategies taught during 2016 –2017 were adopted by institutions as their mainstream practices. These were replaced by new, more advanced strategies.

The Year 2019 was a very productive one. By the end of the year, 442 engineering faculty from 13 different institutions would have completed Phase I. More than 280 faculty completed Phase II, and 238 out of them successfully completed Phase III and were certified, taking the total number of IIEECP certified faculty to 636. So far, 30 IIEECP certified faculty have received IGIP certification. This year a record number of 55 applications were received for the award of IGIP certification; Approximately, 35 certified faculty would be selected for the honor this year.

In the year 2019:
Phase I completed: 442 faculty
Phase II completed: 280 faculty
Phase III completed & certified: 238 faculty
Total no. of engineering educators certified so far: 636

Numbers apart, the qualitative contribution of IIEECP in developing engineering educators’ professional competence has been very impressive. IIEECP achieves this through its very rich, well-structured curriculum, that is fully customized for India, and includes not only practical strategies for effective teaching but also subtle components of educational theory, psychology and philosophy. The specially designed discussion cues and assignments focus on developing the reflective mindset and professional confidence. Even though this growth is hard to quantify, it is evident in certified faculty's feedback. Most faculty experiences heightened motivation in preparing for their classes, conducting and publishing research as well as taking up leadership roles in delivering webinars, conducting in-house faculty development workshops and contributing actively in the accreditation process of their respective institutions.

In 2019, an impact study was conducted. Two separate instruments were developed one for participating faculty and the other for institute heads. While most certified faculty provided feedback, the response from the Institute heads was not as forthcoming. Attempt will be made to get feedback from Institutes during the upcoming ICITEE 2020 to complete and publish the study by June 2020.
The complete program is offered in three phases:

- Phase I: Pre-Certification Workshop
- Phase II: Online Modules
- Phase III: Valedictory Workshop

Faculty Members:
- Dr. Veena Kumar, University of Maryland
- Dr. Krishna Vedula, UMass Lowell
- Dr. S.D. Rajan, Arizona State University
- Dr. Claire Komives, San Jose State University
- Dr. Archana Mantri, Chitkara University
- Dr. Stephanie Farrell, Rowan University
- Dr. Neeraj Buch, Michigan State University
- Dr. Sohum Sohoni, Milwaukee School of Engineering
- Dr. Prathiba Nagabhushan, Australian Catholic University
- Dr. Anil Kulkarni, Penn State University
- Dr. Rio D’Souza, St. Joseph Engineering College
- Mr. Tom Iwinski, Penn State University

Photos left page. From left to right, top to bottom:

Dr. Veena Kumar, Executive Director IIEECP

IIEECP Phase I participant at Hyderabad Institute of Technology and Management, Hyderabad

IIEECP Phase I participant at Galgotia University, Noida

IIEECP Phase I participants working on their assignments at Marwadi University, Rajkot

IIEECP Phase I participants at St Joseph Engineering College, Mangalore

IIEECP Phase I participants at Marwadi University, Rajkot
IUCCE and EPICS (Engineering Projects in Community Service) partnership started in 2016. Since then, EPICS has been an important initiative for IUCCE. EPICS was founded at Purdue University with the goal of providing engineering education with emphasis on design thinking and development of professional skills while assisting communities on real projects. The member institutions involved in this initiative pay an additional amount along with their IUCCE memberships.

EPICS projects are intended to solve real problems and are defined in consultation with project partners from not-for-profit community organizations. The IUCCE-EPICS partnerships include training and mentoring of faculty to support student practice in service-learning. Students learn valuable professional skills like effective communication, working on multidisciplinary teams, presentation skills, time management and organization, while delivering a workable solution to the community. These important skills are critical for employability. Professor Bill Oakes from Purdue University visits the IUCCE-EPICS partner institutions several times during each year. He works extensively with students and faculty from different colleges and universities in India. He also offered a Design Thinking Course for more than 100 faculty from the EPICS Partner Institutions. Several of these faculty along with their teams will participate in Expo and Poster Sessions conducted at ICTIEE 2020.

Prof. Oakes believes that Indian students have potential in finding appropriate solutions for global challenges. Prof. Bill Oakes has the following advice for students:
- Don't get disheartened by failure. Use it as an opportunity to move forward.
- Select a field that you are totally committed to. Give your best, do your research before proposing solutions.
- Don't be impatient for reaching somewhere.

As of December 2019, there are 14 EPICS institutions.
- Anurag Group of Institutions, Hyderabad, TS
- C.M.R. College of Engineering and Technology, Hyderabad, TS
- Chitkara University, Chandigarh, Chandigarh
- Hyderabad Institute of Technology and Management, Hyderabad, TS
- KLE Technological University, Hubli, KN
- M.L.R. Institute of Technology, Hyderabad, TS
- Malla Reddy Engineering College, Hyderabad, TS
- Marwadi University, Rajkot, Gujarat
- Nalla Malla Reddy Engineering College Hyderabad, AP
- S.R. Engineering College, Warangal, TS
- Saintgits College of Engineering, Kottayam Kerala
- Sree Vidyanikethan Engineering College Tirupati, AP
- Thiagarajar College of Engineering, Madurai, TN
- Vardhaman College of Engineering, Hyderabad, TS
Examples of Projects developed:
Adjustable tri-cycle for handicap students
Automated Rainwater Pathway
Low Cost Paddy Planter
Unsegregated Mixed Solid Waste Disposal
Education Kits for School Ap to help local govt bodies
A New Beginning for Homeless
Vacuum Chamber for Storage of Food
Efficient way of drawing well water
Water Purifier using Zeolite
Mobile App for Managing Volunteers
Women Health Kit
Balaswecha for school students
Veggie Composter
Tricopter for Detection of Crop Disease
Seed Dryer

Self care Toilet System
Pocket Healthcare Ap
Hybrid Street Lighting
Automatic Drainage Cleaning System
The Journal of Engineering Education Transformations (JEET) continues to build upon a very successful 2018, with more than 300 new submissions and 437 new registered users on its website. JEET is SCOPUS and Elsevier indexed, and is back on the UGC-CARE list. It continues to be ranked in the top 20 in Google Scholar Metrics for engineering education research outlets worldwide (including conferences). To handle the large volume of submissions, a dedicated team of editors and peer reviewers works tirelessly to keep the review times to a minimum while still providing high-quality and useful reviews to the authors. In fact, the average time to review went from 151 days in 2018 to 104 in 2019 despite the large number of submissions. IUCEE thanks our partners at Rajarambapu Institute of Technology for their diligent work on JEET. We also thank our authors for submitting good quality papers. Exciting changes proposed for 2020 include invited articles from internationally recognized leaders, and several other ideas aimed at making JEET more useful to a wider audience beyond engineering education researchers, including teachers looking to implement better teaching methods, and administrators looking to transform their institutions.

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Final Draft – Dr. Sachin Patil: Proof Reading and getting ready for print ready

Dr. Sushma S. Kulkarni: Final Print approval
Mrs. Swati Kekhalekar: Packing and Dispatch of Journals
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IUCEE has designed many initiatives that would help and support progress, growth, and development of all involved stakeholders, starting with a bottom-up approach, training faculty at the grassroots level. As IUCEE's initiatives matured, a clear need emerged for supplementing the bottom-up approach with a top-down strategy.

Thus, the IUCEE Leadership Summit came into existence in 2017. The goal of the annual summit is to involve the senior members of institutions and universities in a serious dialogue about the future of engineering education in India. The event is hosted by IUCEE at Goa, India in July every year. Through this event, IUCEE is trying to achieve following objectives:
To understand importance of good governance and institutional leadership as fundamental to the survival and progress of Indian engineering institutions in the challenging times and to identify specific areas for improvement.
To share and learn from the case studies of ‘successful Institutional transformations’, through good governance and effective leadership, To understand the roles and responsibilities of the leaders in the institutional transformational process and the competencies they need to develop, and establish a plan for development of these competencies.
To understand the systemic tools and frameworks that can be used to lead the engineering colleges and Universities to achieve excellence and to identify which two or three tools are to be selected for deployment in the next year for each of the participating institutions. In the final session, participants prepared plans for the upcoming year and shared in brief presentations. Plans were made to launch 2 new initiatives: “Clean and Green Campus” and “STEAM Education”.

So far, IUCEE has hosted three leadership summits. The third event was held at International Center, Goa from 11th July 2019 to 13th July 2019. The Summit was attended by 111 academic and management leaders from 34 IUCEE institutions participated.

Keynote Speakers:
- Deepak Gadhia: Solar Cooker
- Dr. Shridhar Iyer: IIT Bombay
- Rajeev Lal: Engineers without Borders
- Prashant Dhawan: Biomimcry
- Sampada Pachaury: Electronics Sector Skills Corporation of India
- Anand B Rao: Rutag IIT
- Aaditya Bhatnagar: Mindcrafters
- Dr. Winston Erevelles: ABET

Participating Institutions
- Anurag Group of Institutions, Hyderabad TS: 2
- CMR College of Engineering and Technology, Hyderabad, TS: 3
- Kalasalingam Academy of Research and Education, TN: 1
- KLE Technological University, Hubballi, KN: 1
- Marwadi University, Rajkot, GJ: 3
- Rajarambapu Institute of Technology, Islampur, MH: 2
- S R Engineering College, Warrangal, TS: 2
- SRK Institute of Technology, Vijayawada, TS: 1
- St Joseph Engineering College, Mangalore, KN: 2
- StuMagz, Hyderabad, TS: 1
Outcome Based Education Cluster (OBE)  
-Dilip Chemburkar
Former General Electric USA  
and GIAF Member, IUCEE

IUCEE formed ‘clusters’ of various topics in 2018. The idea was to invite consortium institutions interested in each of those topics to form discussion groups and use them for exchange of ideas including best practice sharing. The expectation was that this would help institutions in the implementation of various important pedagogical programs.

One of the clusters was Outcomes-Based Education (OBE) which gained prominence after India became a signatory in 2014 to the Washington Accord for undergraduate engineering education. IUCEE’s OBE cluster began holding monthly meetings via webinars in January 2019. The current cluster membership is 15 institutions. Webinars are organized and facilitated by a member of the Global Industrial Advisory Forum (GIAF).

An important feature of the OBE cluster is that during each session Prof. Umakant Kulkarni of SDM College of Engineering and Technology, Dharwad, Karnataka, presents a step from the OBE implementation process followed by a group discussion. This gives us a chance to benefit from his experience because he is coordinator for National Board of Accreditation (NBA) at college level.

IUCEE has planned a workshop on OBE Implementation on 5th January 2020 in Hyderabad - one day prior to the ICTIEE 2020. The workshop is free to interested attendees and is designed to help institutions that are involved in OBE implementation.

Community Project Based Learning Cluster (CPBL)  
-Dr. Raviprakash R Salagame
Head of Engineering Operations at APTIV (Formerly Delphi)  
India and GIAF Member, IUCEE

CPBL cluster was formed in 2018 about a year ago with the goal of fostering knowledge sharing and collaboration among IUCEE institutions and enable each institution to recognize their goals and current gaps. The cluster is used as a platform to enable exchange of information, ideas and best practices from other institutions in the cluster. The group had its first meeting in March 2019 and continues to meet once a month. With a membership of close to 50 individuals from 20 different institutions, the cluster is quite active in bringing topics relevant to PBL and sharing information among the institutions. In 2019, the team had 9 monthly meetings and an extensive workshop during GOA Leadership summit. Institutions with established EPICS program shared their current structure and the Design Thinking course content among the members of the cluster. A similar structure would be pursued by other members who are in the process of setting up a PBL curriculum. Thiagarajar College of Engineering (TCE) took a lead in this effort and shared their MOU format and the pedagogy of Design Thinking course. Rajarambapu Institute of Technology also shared their PBL activity which is implemented with NETRA initiative. A strong connect with industry practices and methods was observed to be one of the key gaps of PBL implementation in these institutions. In order to address this gap, a pilot 1-day workshop was conducted at TCE focusing on industry practices and New Product Development process. About 35+ core faculty from TCE attended this workshop.

A major step was taken by IUCEE in bringing EWB (Engineers Without Borders) India as a partner. EWB would complement PBL cluster activities by providing a platform for Community Based Project as well as eco-system to work with other similar initiatives.
addition to EWB, a Green Campus initiative also has been launched to strengthen sustainability of PBL activities among IUCEE institutions. A few IUCEE members have already stepped forward to embrace these initiatives and grow their PBL activity. These activities would continue well into 2020 and focus further on mentoring institutions to develop a strong enduring PBL activity.

Engineering Education Research Cluster (EER)
-Dr. Prathiba Nagabhushan
Professor, Australian Catholic University, Australia

The Engineering Education Research Cluster came into being at the Leadership Summit held in Goa in July 2018, with the main objective of increasing the rigour of research in the area of engineering education and improving upon the quality of reporting research addressing the international publication requirements. This cluster took off with more than 35 faculty members from 20 different institutions across India who expressed their interest in working towards the objectives of the cluster and embarking on different research projects related to Engineering Education. A 3-hour face-to-face workshop at ICTIEE, 2019 was conducted to feel the pulse of participants' interest and commitment towards engineering education research. Observing an overwhelming keenness and motivation among the participating faculty members and realizing their needs, the cluster leaders developed a pilot program for training the faculty in how to conduct and report engineering education research. An exclusive year-long course was then developed with specific course outcomes, unit and assessment program, focusing on case studies and group activities for participants to introduce them to key aspects of conducting research in engineering education, identifying gaps in the literature, designing good research questions and reviewing theoretical frameworks that can serve as the foundation for their research. It is envisaged that at the end this course the participants will have their draft research paper in preparation for submitting it to an internationally recognized journal/conference. Currently, 41 faculty members have enrolled into the Engineering Education Research Course, which was introduced in March 2019 and they are now in the process of collecting data for their research, after being familiarised with the different stages of and requirements for a research design. IUCEE is immensely pleased with the interest shown in this cluster area and is keen to run a similar workshop at the ICTIEE 2020.

Modern Technology Cluster (MT)
-Dr. Anil K Kulkarni
Professor of Mechanical Engineering
The Pennsylvania State University

In the module on Harnessing Modern Technology in Engineering Education, there are two parts
• Incorporating modern technology in classroom for enhancing everyday learning-teaching process.
• Using advanced technology of Virtual and Remote Laboratories to enhance laboratory experience of students.

We offer a module in the IIEECP certification program on incorporating modern learning-teaching techniques in courses taught by engineering educators. Some of these techniques are inexpensive, and some are even free, that can be readily employed by engineering teachers, such as the learning management systems (LMS's), flipped classrooms, online virtual labs, etc. This module has been very popular and successful. Many instructors have not only used these techniques in their own classrooms they are currently teaching, but also studied them for their effectiveness, as evidenced by several papers published by engineering instructors in recent ICTIEE conferences. The module is evolving to address current use of technology by students.
and teachers, for example, we no longer teach LMS’s because these are now well accepted by most instructors. In response to the needs of instructors, we have modified the module accordingly.

The other part of the module on Modern Technology includes introducing the remote laboratory concept in colleges, which entails conducting laboratory exercises remotely, not virtually, by students in colleges that cannot afford to offer hands-on experience in labs. While there are initial setup expenses involved, we feel that this will become a powerful educational technique which is currently not available even in most of the prominent universities in India and abroad. Three institutes have so far shown strong interest and commitment for adopting this technique by setting up remote laboratory experiments, the Siddaganga Institute of Technology, Tumakuru, Karnataka, the Vellore Institute of Technology, Vellore, Tamil Nadu, and the B.M.S. College of Engineering, Bangalore, Karnataka. The implementation is in various stages at these three institutes and we are hopeful that several more institutes will be on board.

First Year Engineering Experience Cluster (FYEE)

-Nishtha Chouhan
CEO and Co-founder, Paledify, USA
and GIAF Member, IUCEE

The first-year engineering cluster started its monthly meeting from March 2019 onwards. First-year is very crucial for students since they transitioning from high school to college and most first time being away from home. It is a time when they not only need academic support but holistic social-emotional support as well. This is one of the reasons, AICTEE has mandated that institutions should provide an induction program for which specific guidelines have been provided to institutions. Many institutions offer these programs and have customized it to suit their student’s needs.

There is lot of opportunities here for institutions to learn from each other’s experiences and challenges. This has been one of the important themes of our discussion as part of the cluster meetings. In one of the recent cluster meetings, Faculty members from Rajarambapu Institute of Technology (RIT) shared their innovative induction program that helped their students adjust and get comfortable in the environment. One of the other important topics actively discussed during these meetings is giving students exposure to the application of engineering in real-world and design thinking. Prof Gopal Joshi from KLE tech spoke about the Engineering exploration course and his team’s learning since the inception of the course. Faculty members from other institutions who have adopted this course collaborated and shared their experiences. This sort of cross institutions collaborations has helped in problem-solving and introducing new ideas to faculty members. For the holistic development of students, Prof Arti Phadke from KJ Somaiya has shared initiatives they have introduced in the first year for the engaging industry in the first-year experiences.

We have about 10 institutions actively participating in the cluster and collaborating to improve the first-year engineering experiences.

Teaching and Learning Cluster (TLC)
-Jayant Sathe
Former Procter and Gamble, USA
and GIAF Member, IUCEE

The TLC Cluster Team was formed after the Leadership Summit in 2018. The Cluster Team has been meeting on a monthly basis since Feb 2019. These meetings have seen dynamic participation by about 10 institutions across the year, with another 5 institutions being involved on and off in response to invitations as guest speakers. Three major ways in which the impact of these meetings is apparent:

1. Network Among Faculty Leaders: Faculty
leaders from these institutions have come to know each other very well and there are specific examples of learning taken from one institution and implemented in the other. Also, there have been instances of new TLCs being initiated in institutions which joined the cluster after the Leadership Summit.

2. Access to TLC Leaders: Guest Speakers who were brought in at almost every meeting and the faculty from member institutions got opportunities to interact with them. Best practices were shared and solutions to several typical problems that visit TLC setups were discussed. The residual effect on the member institutions is that they have had access to several leaders in engineering education from the leisure of their homes.

3. Work Culture and Empowerment: The focus during the meetings has been to adopt a Plan-Do-Check-Act (PDCA) approach which IUCEE has recommended. It has brought in a more accountable and responsible work culture among faculty who participated from member institutions. Moreover, the ready availability of a support system, through monthly meetings, has empowered them to plan relevant activities on their own campuses.

The TLC Cluster thus is a shining example of how the IUCEE Cluster Model can successfully transformed engineering education in participating institutions.

Some of the Institutions that have been active in the Cluster Team meetings are: Swarna Andhra, SREC Warangal, PSGIM, St Joseph Engineering College, NMREC, CMRCE, MLR, KLE Tech, Anurag, RIT, Gardi, Kalaslingam.

International Engineering Educators Certification Program Cluster (IIEECP)

Dr. Veena Kumar
Executive Director of the IUCEE International Educators’ Certification Program.

The IIEECP Cluster was formed in January 2019 as a result of the GIAF meeting. The leadership team of this cluster included Anil Pandit as the Mentor; Dr. Veena Kumar as the coordinator; and Dr. Stephanie Farrell as the advisor.

The goal of IIEECP cluster will be to prove a platform for continuing education to IIEECP certified and other interested faculty. The IIEECP Cluster aspires to achieve this through monthly meetings where open dialogue will be initiated on areas of high interest to faculty. Members will be encouraged to share their experiences of implementation of different practices learnt in IIEECP as well as any innovative practices experimented by faculty.

First meeting of the IIEECP Cluster was held during ICITEE 2019. About 15 faculty members showed interest in joining the cluster. Since April 2019, the cluster has been conducting monthly meetings. The participation in monthly meetings is growing steadily particularly, since open discussions on chosen key aspect of teaching have been introduced. So far, topics such as student motivation; the flipped class, Proving Constructive student feedback etc. have been discussed. We hope that in the upcoming cluster meeting during ICITEE 2020, we will be able to review and draw up a more concrete and meaningful mandate for 2020.

Entrepreneurship Cluster
Dr. Ranji Vaidyanathan
Oklahoma State University
Madhu Atre
Formerly LSI, AMAT, AMD

IUCEE is establishing entrepreneurship cluster. IUCEE consortium institutions interested in this cluster can contact Dr. Ranji Vaidyanathan, Madhu Atre or Vivek Sabnis. For more information please contact: Madhu Atre: madhu_atre@yahoo.com Ranji Vaidyanathan: vaidyan@okstate.edu Vivek Sabnis: vivsabnis@gmail.com
IUCCE: Pilot Programs

From Year 2019

Engineering Education Research Course
- Dr. Prathiba Nagabhushan
  Professor, Australian Catholic University, Australia
- Dr. Sohum Sohoni
  Professor, Milwaukee School of Engineering, USA

In March 2019, IUCCE launched a pilot program for training engineering faculty who are keen to engage in outstanding engineering education research. An exclusive 12-month course was developed with specific course outcomes, distinctive pedagogy and robust unit and assessment program. This is a practical-oriented course where the participants learn about the scientific approach to research involving people who teach, learn and manage the course or institutions in an engineering education context. The participants examine the significant components of a research framework, which includes problem definition, research design, methods of data collection and analyses, ethical issues in research and report writing. Once equipped with this knowledge, it will enable participants to undertake research in their chosen area and contribute their research findings to peer-reviewed journals.

This course has the following objectives:

- To develop an understanding of the basic framework of research process
- To develop an understanding of different research designs and techniques
- To develop an understanding of how to conduct and write a literature review
- To develop an understanding of the ethical considerations of engineering education research involving people
- To develop an appreciation of the different aspects of scholarly writing and evaluate its quality
- To enable the participants to draft a scientific paper, written systematically addressing the publication requirements.

This course is delivered entirely online through CANVAS and GoToMeeting webinars and the teaching methods include readings, lectures, power-point presentations, discussions, exercises and ongoing assignments that will eventuate in the production of a research paper. The evaluation procedures are assignments, participation in discussion forums and the submission of a draft paper at the end of the course based on original research conducted during the course. Currently, 41 faculty members have enrolled into the Engineering Education Research Course this year and they are now in the process of collecting data for their research, after being introduced to research methods and report writing guidelines.

ABET Symposium
- Dr. Krishna Vedula
  Executive Director, IUCCE

IUCCE became official quality partner of ABET, USA. The third IUCCE Annual Leadership Summit was held in Goa from July 12 and 13. The Leadership Summit was preceded by an ABET Symposium on July 11 in order to explore the synergy between the two events. The ABET Symposium was attended by 92 participants from 30 institutions. Dr. Winston Erevelles, Adjunct Accreditation Director, ABET and Dean, School of Science Engineering and Technology, St. Mary's University, San Antonio, TX, USA conducted the one-day symposium which covered Accreditation Criteria, Program Criteria, Program Educational Objectives, Student Outcomes, Continuous Improvement, Assessment, Evaluation and Self Study Report. Information was also provided on the ABET Process including Request for Accreditation, Visiting Teams and deadlines.
Student Leadership Certificate Course
-Dr. Krishna Vedula
Executive Director, IUCEE

From June to November 2019, IUCEE Executive Director, Krishna Vedula, personally conducted a Leadership Course for selected students from 30 IUCEE Institutions. The objective was to develop student leaders who will create sustainable IUCEE SCALE Chapters and EWB India Student Chapters at their institutions. The course was conducted through a series of biweekly webinars with assignments. Five students from institution participated and were guided by one faculty coordinator at each institution. Topics covered were:
• Create awareness of leadership qualities
• Understand and explain concepts behind key inventions from a variety of engineering fields
• Discuss the Basic Concepts of Design Thinking develop solutions to engineering problems
• Create an IUCEE SCALE Student Chapter
• Identify local Challenges relevant to Grand Challenges
• Engage with one local grand challenge
• Obtaining contact info for selected EWB chapters and learn from Case Studies
• Identify their own strengths and weakness relevant to Professional Skills and explore ways to improve
• Plan for GSF 2019 and ASC 2020
• Formation of Engineers Without Borders (EWB) India Student Chapters

100 students completed the course and received certificates and formed IUCEE Student Chapter in following institutions. Several of these are in process of finalizing formation of EWB India Student Chapters.
• Anantha Lakshmi Institute of Technology & Sciences, Ananthpur
• Anurag Group of Institutions, Hyderabad, TS
• CMR College of Engineering & Technology, Hyderabad, TS
• D.K.T.E.Society's Textile & Engineering Institute, Ichalakaranji, MH
• Hyderabad Institute of Technology And Management, Hyderabad, TS
• Malnad College of Engineering, Hassan, KN
• MLR Institute of Technology, Hyderabad, TS
• QIS College of Engineering and Technology, Ongole, AP
• Rajarambapu Institute of Technology, Islampur, MH
• Sree Vidyanikethan Engineering College, Tirupati, AP
• Thiagarajar College of Engineering, Madurai, TN
• Vasireddy Venkatadri Institute of Technology, Guntur, AP
• Vidya Jyothi Institute Of Technology, Hyderabad, TS

These will form the core of the IUCEE Student programs during 2020. Eight students from this course participated in the Global Student Forum as part of WEEF 2019 in Chennai on Nov 13 to 16, 2019 with partial scholarships from IUCEE.

IUCEE student leaders with Dr. Hans J. Hoyer, Dr. Sushma Kulkarni, Dr. Archana Mantri and Dr. Krishna Vedula at IESS/WEEF 2019 in Chennai
Global Advisory Board
Dr. Michael Milligan
Executive Director and Chief Executive Officer of ABET

Dr. Stephanie Farrell
Rowan University (President-Elect of ASEE)

Dr. Lueny Morrell, MS, PE, Ing. Paed.
Founder & Director of InnovaHiEd

Dr. Michael Auer
University of Klagenfurt, Austria

Dr. Anil K. Kulkarni
Pennsylvania State University

Dr. Neeraj Buch
Michigan State University

Dr. Hans Jurgen Hoyer
Secretary General of IFEES, Executive Secretary of the Global Engineering Deans Council.

Dr. Subramanian Dharma Rajan
Arizona State University

Dr. Veena Kumar
Executive Director of the IUCEE International Educators’ Certification Program.

Dr. Prathiba Nagabhushan
Australian Catholic University

Dr. Vijay Kanabar
Boston University

Dr. Ashok Saxena
University of Arkansas

Dr. Guru Subramanyam
University of Dayton

Dr. Ranji Vaidyanathan
Oklahoma State University

Dr. William Oakes
EPICS, Purdue University

Dr. Mohan Rao
Tennessee Technological University

Dr. John Tharakan
Howard University

Dr Gajanan Sabnis
formerly Howard University

Leadership Team: Consortium Institutions
Dr. Archana Mantri
Chitkara University

Dr. Sushma Kulkarni
Rajarambapu Institute of Technology

Dr. Gopalkrishna Joshi
KLE Technological University

Dr. Rio D’Souza
St Joseph Engineering College

Siddharth Jadeja
BH Gardi College of Engineering and Technology

Leadership Team: Global Industry Advisory Forum
Jayant Sathe
formerly Procter and Gamble

Anil Pandit
formerly General Electric

Ravi Salagame
Head of Engineering Operations at APTIV

Madhu Atre
formerly LSI, AMAT, AMD

Dilip Chemburkar
formerly General Electric

B. KalyanRam
Electronosolutions

Nishtha Chouhan
CEO and Co-founder, Paledify

Sujatha Wadhwa
First Step Overseas Consultant

Vasant Marathe
formerly Swifts Pvt Ltd.

Ms. Sampada Pachaury
Founder – Sharpness Simplified

Deepak Waikar
Tacstra Solutions Pvt Ltd

IUCEE: Staff
Dr. Krishna Vedula
Executive Director, IUCEE

Dr. Sohum Sohoni
Associate Director

Kantha Reddy
Director, IUCEE India Operations

Sridhar Nori
Manager, IUCEE Virtual Academy

Sheetal Sohoni
Marketing Consultant

Dr. Claire Komives
Program Consultant

Surendra Reddy
Staff Assistant, IIEECP program

Amit Lathigara
Manager Website

Silicon Valley Chapter: Board
AG Karunakaran
CEO, Multicoreware Inc.

Shanti Subramanyam
Founder and CEO, Orzota Inc

Sandeep Shroff
CEO and Co-Founder, myStartUpCFO
IUCEE Income 2019

IUCEE operates as a non-profit organization. The Table below shows the income of IUCEE in 2019.

<table>
<thead>
<tr>
<th>Membership Fees</th>
<th>$52,000</th>
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<tbody>
<tr>
<td>Consortium Member Fees</td>
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Program Income

<table>
<thead>
<tr>
<th>EPICS Partnership Fees</th>
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<tr>
<td>IIEECP Certification Fees</td>
<td>$53,500</td>
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<tr>
<td>Leadership Summit Fees</td>
<td>$9,000</td>
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<td>ABET Symposium Fees</td>
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<tr>
<td>Total Program Income</td>
<td>$116,500</td>
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<tr>
<td>Corporate Sponsorships (ICTIEE)</td>
<td>$57,000</td>
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Total Income $225,500

IUCEE: Expenses 2019

The stable source of income for IUCEE has been colleges in India that pay $1000 per year to be Consortium Members. Table in the next section reflects the 2019 expenses of IUCEE. The cost of operations includes two full time employee salaries in India for management of program logistics and for IT requirements for webinars, IIEECP courses and other computer needs. Consultants were hired in 2017 to assist the Executive Director with organization and implementation of expanding initiatives. The program expenses include venue rental, catering, travel of international experts and domestic travel, printing and distribution of JEET, and online tools like GoToMeeting and Dropbox. IUCEE also spends money in marketing efforts to educate and inform organizations and institutions regarding IUCEE initiatives. Marketing efforts include domestic and international travel of the Executive Director and Indian IUCEE employee, website designing and maintainace, and printing of brochures and other marketing materials.

<table>
<thead>
<tr>
<th>IUCEE Operations</th>
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<tbody>
<tr>
<td>Salaries</td>
<td>$39,600</td>
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<tr>
<td>Consultants</td>
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<td>Administration, acct. svcs.</td>
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<td>Total Operation Expenses</td>
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<table>
<thead>
<tr>
<th>Program Expenses</th>
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<tbody>
<tr>
<td>IIEECP Certification Costs</td>
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<tr>
<td>Leadership Summit</td>
<td>$15,000</td>
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<tr>
<td>EPICS Related Expenses</td>
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<tr>
<td>Student Conference Costs</td>
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<td>ICTIEE Travel Expenses</td>
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<tr>
<td>JEET Publication Expenses</td>
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<tr>
<td>GoToMeeting; Dropbox</td>
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<td>Total Program Expenses</td>
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<table>
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<tr>
<th>Marketing Development</th>
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<tbody>
<tr>
<td>Travel to ASEE, GEDC, NI week</td>
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<tr>
<td>Staff travel in India</td>
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<td>Membership fees IFEES</td>
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<td>Website fees</td>
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<td>Total Marketing/Development expenses</td>
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<tr>
<td>Total Expenses</td>
<td>$266,000</td>
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<tr>
<td>Deficit Covered by Past Fund Balance</td>
<td>$40,500</td>
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</tbody>
</table>
IUCEE Office:
Plot No. 153, Sitha Nilayam
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For more information, please contact:
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