

# ANNUAL REPORT

## (2019-2020)

### Academic Staff College



**VIT, Vellore**



**VIT<sup>®</sup>**  
**Vellore Institute of Technology**  
(Deemed to be University under section 3 of UGC Act, 1956)

## 1. Introduction

Academic Staff College (ASC) is witnessing a Spring time since its establishment in 2003. A right combination of global vision with local implementation and training the passionate professors to meet the 21<sup>st</sup> century expectations created the need for a leader of higher order. ASC leadership was strengthened by the appointment of a Director to implement a shared strategic vision to redesign the activities at ASC. The team was further enriched by the addition of an experienced Professor-Emeritus. The director's ability to accelerate change and keep it focused resulted in communicating the vision and taste quick success: 161 programs with a footfall of 6613 participants, creating a calendar of events, digital access and training, makeover to the department and access to Hi-tech set up are few examples

1.1 The first Milestone: The Director energized the centre and also created accountability for results. The first of its kind, "Dialogue with deans and directors- A reflective session," brought to light the various challenges faced by the stakeholders at different levels. This program was unique as it brought the leaders together on a single platform, network and brainstorm ideas. Discussion on three reflective statements identified blind spots. This urged the immediate creation of a planned schedule of ASC activities in advance.

1.2 A transparent Faculty Development Program requisition format for the faculty was designed and the softcopy of the FDP requisition format was mailed to the professors. The mail also carried information on cues like the number of faculty co-ordinator for a half-day session, one day session and multiple sessions. The knowledge on logistics of the programs was detailed. The clear and lucid message enthused the faculty. The FDP requisition template was a ready reckoner and the professors had to fill in the details. The filled FDP requisition format was mailed to the Director- ASC before the 15<sup>th</sup> of every month. On the 20<sup>th</sup> of every month, the ASC-Director, looked into the forms and sent an e-mail accepting the program or requesting changes to be made, or rejection of the program.

All this saved the time of the faculty who could now do everything from their desk. They welcomed this idea. A forthcoming monthly calendar was then generated and this was shared to all the faculty as a softcopy. A hard copy was sent to the Heads of various schools and centres to be put up on their school notice boards. This enhanced the visibility of the FDPs and also gave ample time for the professors to plan ahead to attend FDPs of their choice.

1.3. Creation of an auto generated FDP requisition form was the next breakthrough that happened. A new interface that allowed VIT Vellore faculty to submit FDP requisition through their individual VTOP account was generated with the support from the software development cell. The seeds of this initiative bore fruit during the pandemic and enabled

online access for auto FDP requisition and Approval process. FDP request from all faculty for the period July 1 to Dec 31, 2020 was invited.

A self- help manual to raise FDP request by faculty members gave a step-wise procedure and was self- explanatory with an illustration. The communication of the vision and seeing quick success was a stroke of sheer grit and determination.

## 2. Network and Collaboration:

ASC, with the new face uplift reached out to international and national collaborators. This is an important parameter especially for Academic Staff College as this is a people oriented

Centre. ASC weaves threads of inspiration to motivate the heart and the head. To keep this fountain of energy thriving, collaboration is essential at all levels.

2.1.1 International Collaboration: Director-ASC visited University of Twente, Netherlands to study on behavioral studies and social sciences.



2.1.2. Director-ASC represented VIT at INDAM 2020 and she built knowledge partnership with the contemporaries at the meet.



## 2.2 National Networking:

ASC Director attended the Industry-Institute Interaction Meet conducted by ICT Academy christened Bridge 2020 to be a part of the Leadership summit on the 25<sup>th</sup> of February at Chennai. Our Honorable Chancellor gave a key note address on Institutional Leadership at the summit. The interaction with the keynote speakers and participants from various institutions was fruitful.



## 2.3 Networking within the University:

Dialogue with Deans and Directors -a face to face interactive session was organized by ASC on the 9<sup>th</sup> of January, 2020. The first of its kind, a platform to share ideas, experience and suggest alternates to pin down the challenges was chaired by Professor Dr. Indu Rao.

The conducive environment created a good networking ambience. The deans, directors of all schools shared valuable points. They brainstormed the challenges faced by the participants in attending the faculty development programs in good numbers.

The discussion revolved around the three below points:

- i. Assessing and evaluating Training Journey in each schools and centres.
- ii. Sharing Specific instances and experiences
- iii. Ideas and suggestions.

This reflective session brought to light the salient points for enhancing the metrics of the faculty development programs.



#### 2.4. Networking with the resource persons at ASC:

Resource persons of the FDPs were invited along with the co-ordinator of the program to the office of the Director ASC. Exchange of ideas via collaborative networking paved way for building better partnerships.



### 3. Success under any circumstance: The pandemic Highlights

#### 3.1 ASC in the media:

COVID 19 did not dampen the spirit of the relentless leader to reach out. She penned down her views in Digital Learning online platform. 4 articles that suited the time were published. The links are provided for further reading.

She shared that this is the time to re-invent ourselves and emphasized that COVID 19 is a blessing in disguise to capitalize on online learning.

She shared the Institutes-of- Eminence in benchmarking greater standards of quality in Higher Education.

▪ <https://digitallearning.eletsonline.com/2020/03/dr-indu-rao-professor-and-director-asc-vit-university-vellore-a-lesson-to-re-invent-ourselves/>

• <https://digitallearning.eletsonline.com/2020/04/dr-indu-rao-professor-and-director-asc-vit-university-vellore-lockdown-a-blessing-in-disguise-for-students/>

• <https://digitallearning.eletsonline.com/2020/04/dr-indu-rao-professor-and-director-academic-staff-college-vellore-institute-of-technology-vellore-ioe-provides-world-class-standards-in-higher-education/>

• <https://digitallearning.eletsonline.com/2020/05/online-education-a-way-forward-towards-atma-nirbhar-bharat/>

Prof Dr. Indu Rao represented VIT in an interview in **Soham TV** channel on the topic Corona se Darona. She divided Education as pre and post corona and reassured that opportunities in the Education sector are galore now. It's high time we take measures to seize the opportunity at the right time and work towards building a perception that enthruses students to get attracted by institutions in India.



## **3.2 Online Faculty Development Programme:**

### **3.2.1. FDP on Precision Agriculture: Technologies and Challenges**

Dr. Mohammed Mehdi from the Department of Mechanics of Biosystems Engineering, Sahid Bahonar University of Kerman, Iran addressed the participants through Cisco webex on Precision Agriculture: Technologies and Challenges. ASC in collaboration with VAIAL conducted the program on 8<sup>th</sup> August, 2019. Virtual FDP was initiated by ASC in Aug 2019. Precision Agriculture, yield monitoring systems, variable rate technologies, in-field crops, usage of soil compaction and EC meter followed by economic challenges made the day long program a pioneer for online FDPs. 25 participants benefitted from the program.

Adversities drives creation and brings out the best. Truly a blessing-in disguise, as the Director put it, Corona paved way for digital transformation. ASC conducted FDP online. The faculty were first trained on MS teams. The next was on the know-hows of remote learning and online teaching. This was followed by how to be safe and protect from cyberattacks transpiring to becoming an effective teacher.

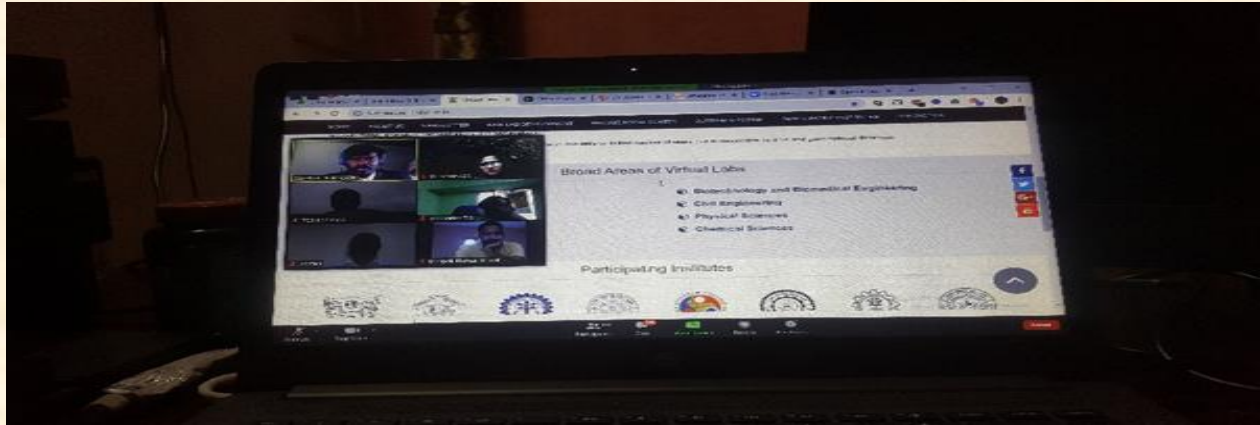
### **3.2.2. FDP on How to Conduct Online Classes using MS Teams:**

With the pandemic at the outset, the focus had to be on conducting online classes. The session on,” How to Conduct Online Classes using MS Teams” helped 250 faculty gain confidence to use the MS Teams software. The FDP was repeated on the next day, 24th April, 2020 for another batch of 250 faculty. In total, 500 faculty were trained on joining the MS Team. The Centre for technical support helped the participants with their individual MS teams ID.

The faculty were trained on the various features of MS teams : to join the session, or to invite someone, say the students for the meeting, raise their hand to speak, to use the chat option, mute and unmute and also to share their files for presenting.

### **3.2.3. FDP on Remote Learning and Online teaching.**

The next in the online FDP series was remote learning and online teaching was phased out in three sessions- on the 4th and 5th of May, 2020. 908 faculty attended the program .Techniques to record video-lectures of professors, tools essential for the same and strategies to create assignments and quiz were some of the broad areas that formed the essence of the program. A timely intervention that eased the flow of conduct of online classes.

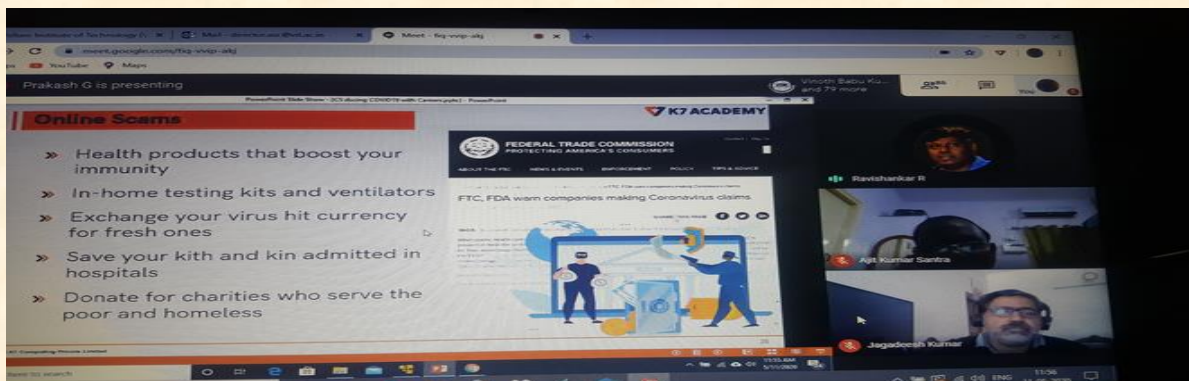


### 3.2.4. FDP on How to Safe guard ourselves from Cyber Attacks during Corona Times?

The next online FDP series was on “How to Safe guard ourselves from Cyber Attacks during Corona Times?” was on the 11<sup>th</sup> of May, 2020.

The resource person shared case studies on how to stay safe from cyberattacks during this difficult times. He urged the participants to make use of this time for productive work and be stress free.

The awareness on the pandemic, the means of it spreading from one to another and why it is to be combatted with grit and determination was the need of the hour. Safety measures, how to improve our immune systems and strategies to stay healthy physically and mentally during this crisis was discussed as an additional input by the resource person. Simple mudras, breathing exercises that will enhance the lung capacity were also demonstrated for the benefit of the participants.190 faculty benefitted from the program.





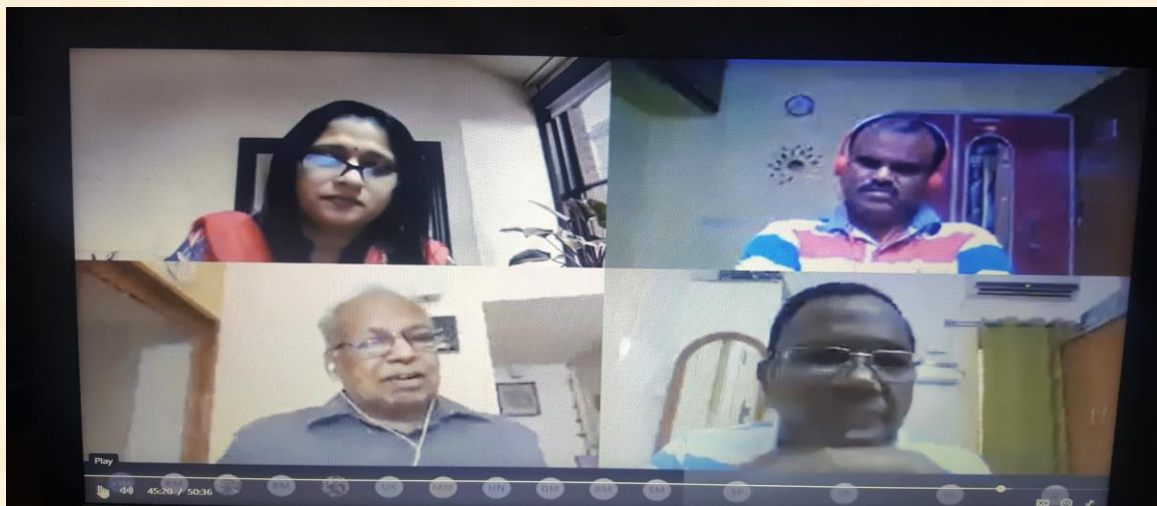
### 3.2.5. FDP on Writing a Research Project proposal

The online FDP series on “Writing a Research Project proposal” was on the 25<sup>th</sup> of May, 2020. This faculty development program was organized to develop hands on experience in writing a research project proposal and to study the various opportunities and options available for starters. Various domain specific topics were identified. Later the format to go about writing on the topic was presented. Nuances and key research areas were highlighted. The resource person shared his expertise and dealt with publishing quality papers for journals. 300 faculty members attended the program. The guidelines on how to look out for agencies for funding, steps involved in writing effective research project proposals and getting the proposal grant.

### 3.2.6. FDP on To be an Effective Teacher

The next in the online FDP series was on “To be an Effective Teacher” on conducted by ASC on the 2<sup>nd</sup> of June, 2020. The sphere of influence of a teacher on desirable learning outcomes and students achievements is highly influential. They promote positive vibes, create interest for learning and understand what experts and stakeholders expect of their teaching. Research on teacher effectiveness drives the notion that in this VUCA world, even teachers need to adapt to change and be accountable.

Prof. T.V.Rao, Professor, Retired IIM Ahmedabad spoke of four categories of teachers. Teachers who complete their course, teachers who explain and make the students understand, teachers who motivate and teachers who role model and inspire their students. He left the teachers with the question, to which category does each one want to be associated with? The session was attended by 250 aspiring teaching fraternity.



### **3.3 Online Faculty Orientation Program**

Faculty Orientation Program, a stalwart program of the Academic Staff College aims at helping the new inductees understand the culture, the vision and the expectations of the university.

Adversities are always a blessing in disguise. This year due to the pandemic outbreak, digital platforms provided the channels of learning, and connectivity. The Faculty Orientation Program was conducted online and was scheduled from 8<sup>th</sup> June, 2020 to 7<sup>th</sup> July, 2020.

Director ASC co-ordinated with the Centre for technical Support and created MS teams ID account for all the new inductees. The schedule was prepared meticulously: looking into finer details and sequential flow of topics for FOP 2020.60 topics were deliberated upon for the benefit of the 77 participants by 70 speakers. The participants joined from 100 places - all over India on the virtual space via MS Teams. This year two panel discussions by the deans and directors was a new feather added to FOP by the Director ASC.

Director-ASC welcomed the dignitaries and the new members of the VIT family warmly to the Online Faculty Orientation Program 2020. Though online, the FOP started with the traditional Thamizh Thai Vazhthu. Our Honorable Chancellor, Vice President and Pro-Vice Chancellor graced the inaugural ceremony. The Chancellor shared the vision of Vellore Institute of Technology, and inspired the 77 new faculty members to aspire for higher standards, collaborative learning and establish a good networking system with international and national peers. The vision of taking VIT to the Top 200 Global Universities List was seeded in the minds of the new faculty. Training programs in FOP 2020 were structured to envision this dream.

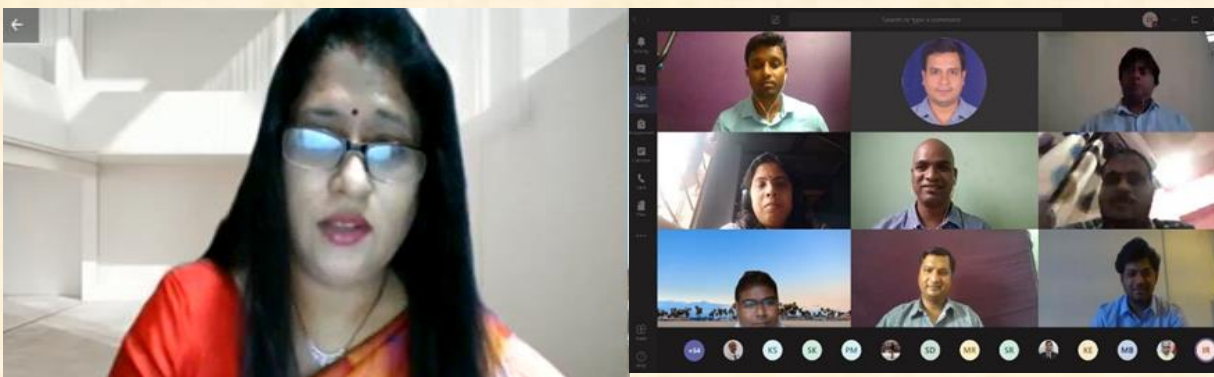
Our Chancellor addressed the new faculty during the inaugural session: FOP 2020



The Pro-Vice Chancellor shared the overview about VIT and made transparent the expectations of VIT. VIT nurtures talents and motivated each one to climb up in their career at VIT.



Director ASC during her ice breaking session got the faculty to know each other and set the ambience for a virtual FOP.



The Faculty were introduced to the HR policies of the institution by the Asst. Director HR.

The Registrar shared his thoughts on the Journey at VIT. He invited the faculty to take on responsibilities and groom themselves as academic leaders. He also reiterated the idea that at VIT, it just takes committed work and talent with the right attitude to have a great career and also progress personally.



The faculty were then trained on MS Teams by the executive from MS teams. This session was to enable all the faculty know MS teams and be confident to use it. The faculty were then introduced to VTOP a software that gives access to information like course details, student information, assignment records, class attendance to access to study materials. The new achievement by ASC Director is that, with VTOP, the faculty will be able to submit their FDP requisition online.

Some titles that were deliberated during FOP 2020 were: Cyberspace Security, International relations, catalyzing innovation and entrepreneurship, trans-disciplinary research, online teaching, and the know-hows of academic regulations.

Disruptive research leading to innovation, creating time and focus on research, research regulations, writing proposals for funded projects, challenging experiments, executing projects, IPR and innovations at VIT stand proof to the fact that research is an important parameter at VIT. An **international resource person** from the University of Twente, Netherlands, Prof. Dr. Jos Van Hillegersberg inspired the faculty on writing review papers. The faculty were awestruck

at the kind of support that is equally provided for faculty to continue their research passion, write and secure grants, execute projects and also do consultancy projects with the industry. Curriculum design, PBLs, Coding procedures and practices, ppt with animations, flipped classrooms, virtual labs, AR and VR technologies, simulations and gaming for teaching, Blooms taxonomy, setting HOTS question paper, question paper setting and mapping COs, rubrics in academics, story-telling in the classroom, University 4.0 stand testimony to the importance of teaching learning at VIT. The invitation to be a MOOC course owner kindled the interests of the new faculty and gained a lot of insights from the several sessions pertaining to academic interests at VIT.

Titles like exams and evaluations at VIT, experiencing digital evaluation, workplace etiquette, time management, and performance evaluation detailed all that a new faculty should know to function with ease and enthusiasm.

VIT houses students from across the globe. Effective classroom management, proctoring, and expectations from students made the FOP unique in itself.

The panel discussion by the deans and the directors was greatly appreciated by the faculty. This novelty was added to the online FOP by Director-ASC. The sessions as per the scheduled calendar were conducted smoothly. This was followed by reinforcement sessions till the 7<sup>th</sup> of July, 2020.

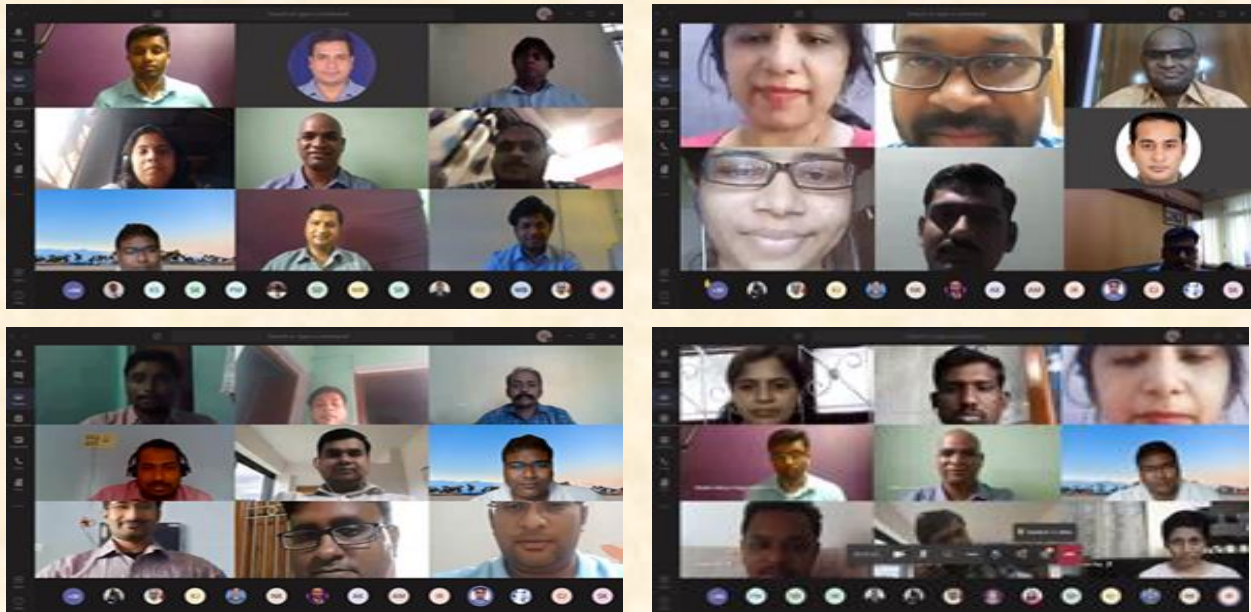
The faculty members were then grouped according to the schools. ASC coordinated with the heads of the various schools and facilitated a meeting of the faculty with their respective deans. The feel of belongingness blossomed.

A virtual tour of the campus, the various schools, research labs, the library, the main building and the administrative block enthused the faculty.

Hands on sessions for the faculty on VTOP was conducted again for the benefit of the participants. The faculty got to learn to use VTOP and its various features. Repeat sessions on MS teams was also conducted for the benefit of the new faculty.

The month long FOP 2020 ended on a happy note with the faculty filled with rigor to participate and contribute to the University with zeal. A formal valedictory session on the 7<sup>th</sup> of July, 2020 was graced by the Director-ASC. A 5m video on FOP 2020 showcased the grandeur of the program and the feedback of the participants stood testimony to the huge success of the program.

## Glimpses of ONLINE Faculty Orientation Program 2020



### **4. Regular Faculty Development Program**

#### **4.1 Five – Day Faculty Development Program**

##### 4.1.1 Faculty Development Program on Java Programming

A five Day Faculty Development Program on Java Programming was conducted for SCOPE and SITE school faculty members between May 2019 and July 2019 in five slots. The fifth slot was from July 1<sup>st</sup> to July 5<sup>th</sup> 2019. 60 faculty benefitted from the program.

The resources persons were from Ethnus Consultancy Services, Bengaluru. The session plan followed for the five day training is given below:

Day 01	Object and Class
	Data types
	Basic I / O
	Decision Making
	Loop Control
Day 02	String, Array
	Inheritance, Aggregation & Associations
	Modifiers
	Interface & Abstract classes
	Exceptions
Day 03	Packages (Java specific)
	Collections (Java specific)
	Threads
	File Handling
	Database Connectivity
Day 04	Web programming
Day 05	Applications of java



#### 4.1.2 Faculty Development Program on Effective Teaching and Classroom Management

A five day Faculty Development Program titled, “Effective Teaching and Classroom Management,” was conducted for the faculty members between 2<sup>nd</sup> March, 2020 and 6<sup>th</sup> March 2020 in five slots from morning 10:00 a.m. to 01:00 p.m. The resource persons were Prof. Dr. Brahadeeswaran, Emeritus Professor, ASC and Dr. N.Asokan, a Free-lance trainer from Chennai.

Effective classroom management is essential to build strong teacher-student bonds for conducive learning. Models for effective teaching of low achievers, diagnosis, and motivating them were role modelled. The resource persons used questioning techniques for engaging the students and enriching the classroom climate. The workshop reached out to the participants in a complementing way. Guided Practice sessions for lesson plan preparation and feedback to individual participants made the session unique. **103** participants attended the sessions and benefitted from it.



#### 4.1.3 Faculty Development Program on Constructing Questions for Assessing Higher Order Thinking (HOT)

The second five day FDP on “Constructing Questions for Assessing Higher Order Thinking (HOT),” was conducted by ASC, Vellore Institute of Technology, Vellore between 2<sup>nd</sup> March, 2020 and 6<sup>th</sup> March 2020 in five slots from 02:00 p.m. to 05:00 p.m. Prof. Dr. Brahadeeswaran, Emeritus Professor, ASC and Dr.S.Dhanapal, Former Professor NITTTR, Chennai lead the sessions. 101 participants attended the five day FDP.

The resource persons specified the following objectives to assess HOTs.

- \*The teacher should specify clearly and exactly what is that he/she wants to assess.
- \*Design tasks that will require students to demonstrate the requisite knowledge or skill.
- \*Explain the rubrics that the teacher will use to assess this knowledge or skill.

Guided practice in setting valid and reliable question paper and steps to evaluate the question paper for its quality were the special features of the workshop. Individual feedback to a question



paper prepared by the faculty in an earlier occasion, helped the faculty understand the concept better. The faculty created a new question paper as a sample exercise and this enhanced the confidence of the participants.

## **4.2 Two – Day Faculty Development Program**

### **4.2.1. FDP on Machine Learning Algorithms**

The two day FDP on "Machine Learning Algorithms," was conducted by ASC in association with the School of Electronics Engineering (SENSE) on the 10<sup>th</sup> and the 11<sup>th</sup> of January, 2020

The objective of this workshop is to familiarize participants with the basics of machine learning algorithms, both from a theoretical perspective, and with hands-on exercises with MATLAB.

The pre-requisites: Participants needed to have a basic understanding of probability and statistics as well as familiarity with programming in MATLAB or python to attend this FDP.

20 participants enjoyed the session and found the opportunity to work with real data really productive.

### **4.2.2. Workshop on Next-Generation Sequencing: An Overview of Metagenomics and Analysis.**

The workshop on " Next-Generation Sequencing: An Overview of Metagenomics and Analysis," was organized by the School of Biosciences and Technology in collaboration with Illumina India LLP. 16 participants attended the workshop on the 20<sup>th</sup> and 21<sup>st</sup> of January 2020.

The two day workshop was inaugurated by the Dean of SBST. Mr.Ventakesh, the Managing Director of Illumina India gave an overview of the Illumina group.

Dr. Ananthapadmanabhan gave an introduction to metagenomics, metagenomics application, basics of NGS technologies followed by a question and answer session.

In the following session he spoke on NGS metagenomics Approaches and wetlab flows. The concept of Amplicon metagenomics was very interesting and enthralled the audience.

The afternoon session was about Shotgun metagenomics, long-read sequencing, metatranscriptomics and metaviromics.

This was followed by Ms Shobha D.G's introduction to NGS analysis, understanding sequence data and data preprocessing. The discussion opened up many research questions and the resource team answered the questions. They were very happy with the highly interactive audience.

Day 2 opened up with Linux tutorial session. The next session was a Metagenomics hands-on training with tools and results visualization.

The next session was on introduction to other bioinformatics tools and data bases.

The workshop inspired research discussion and paved way for productive collaborative learning amongst the participants.

#### **4.2.3.** FDP on Introduction to Spoken Hindi Via Thamizh.

The FDP on Introduction to Spoken Hindi Via Thamizh was conducted by ASC in association with School of Computer Science and Engineering, Vellore Institute of Technology, Vellore. 93 participants attended the sessions conducted on 31<sup>st</sup> January, 2020 and 1<sup>st</sup> February, 2020.

Communication is an essential skill for a teacher, especially at the higher educational institute. Vellore Institute of Technology attracts students from across the globe. A large number of students are from North India also. So it becomes imperative for the faculty to speak in Hindi with ease so that the communication channel is open and smooth.

The resource person, Mr. Viswanathan A, Director, Language Learning Centre, Coimbatore introduced Hindi via Thamizh. Basic Hindi sentence structures and learning to ask simple questions and answers were part of the session.

The next day, the resource used a simple model to learn spoken Hindi. He introduced nine patterns of questions with 500 vocabularies. He got the participants into a spree to practice the language and it was fun to see the faculty learn and practice with enthusiasm

#### **4.2.4.** FDP on A complete understanding on machine learning with hands-on learning using SCI-KIT learning.

The FDP on “A complete understanding on machine learning with hands-on learning using SCI-KIT learning,” was conducted by ASC in association with School of Information Technology, Vellore. Institute of Technology, Vellore. 44 participants attended the sessions on the 2<sup>nd</sup> and 3<sup>rd</sup> of March, 2020.

The resource person sequenced his session in the following manner: Introduction to Numpy,, steps to load Machine Learning data in python, understand machine learning data with descriptive statistics in python, visualize machine learning data in python with pandas and to prepare data for Machine Learning in python with Scikit-learn. The hands on session on metrics to evaluate and compare Machine Learning algorithms in python with Scikit-learn, linear regression, boosting classifier results and creating machine learning pipeline enthused the participants and engaged them through the two day faculty development program.



#### **4.2.5. FDP on Ethical Hacking and its Cyber Security**

The FDP on “Ethical Hacking and its Cyber Security,” was conducted by ASC in association with School of Information Technology, Vellore Institute of Technology, Vellore. 18 participants attended the two day session on the 4<sup>th</sup> and 5<sup>th</sup> of March, 2020.

The resource person has wide expertise in the field of ethical hacker. He spoke on cyber security and ethical hacking. As an evaluation member in the 2020 smart India Hackathon member in national anti-hacking group, he shared real-time Cyber Crime case study. His talk on cyber security tools and techniques, bug bounty, pen testing and CTF challenge proved his expertise in the field. The participants were excited with the knowledge received during the two day session.



#### **4.2.5. FDP on Designing Cloud Architecture**

The FDP on “Designing Cloud Architecture,” was conducted by ASC in association with School of Information Technology, Vellore Institute of Technology, Vellore. 22 participants attended the sessions on the 6<sup>th</sup> and 7<sup>th</sup> of March, 2020

Dr. Suresh Madhesan initiated his talk on the overview of Amazon Web Services (AWS) and other cloud service providers. He went on to designing server and serverless architecture, and gave an overview of Dev Ops on AWS on day one.

Data analytics, fundamentals with Amazon Kinesis, Insights about No SQL and data analytics, Alexa Skill Development were deliberated on the second day. The participants were enthused by the knowledge gained on the topic.

## **4.3 One-Day/Half-a-day Faculty Development Program**

### **4.3.1. FDP on Economic Analysis Basics and their applications**

The FDP on "Economic Analysis Basics and their applications," was conducted by ASC in association with the School of Chemical Engineering (SCHEME). 23 participants attended the FDP on the 6th of January, 2020.

Economic analysis is a systematic approach to determine the optimum use of scarce resources, compare available alternatives, and select the best alternative to achieve a particular goal.

The objectives of the FDP are enlisted as below:

\*To provide the faculty rich hands-on experience on the use of MS Excel for economic calculations.

\*To develop, evaluate and compare the engineering project cash flows.

\*To formulate and apply interest factors to real life engineering problems.

The participants understood the econometrics and how to apply to any projects that they would venture upon in the future. 23 participants benefitted from the FDP.

### **4.3.2. FDP on Profitability Criteria and their applications**

The FDP on "Profitability Criteria and their applications," was conducted by ASC in association with the School of Chemical Engineering (SCHEME) on the 7<sup>th</sup> of January, 2020.

Profitability Criteria is the ability of a project or a business to earn a profit. Time, cash and interest rate are the basics for evaluation of profitability. It is further divided into discounted and non-discounted method.

Non-discounted methods do not consider the time value of money and are not recommended for evaluating new, large projects.

The objectives of the FDP are enlisted as below:

- i. To provide the faculty rich hands-on experience on the use of MS Excel for profitability analysis.
- ii. To evaluate engineering alternatives by economic analysis techniques and models.
- iii. To take decisions in project implementation with consideration of taxation and inflation.

The resource person demonstrated the profitability criteria for the construction of a new chemical plant. He brainstormed the various cost involved participants understood the econometrics and how to apply to any projects that they would venture upon in the future.

21 participants attended the program and actively took part in the session.

#### 4.3.3. FDP on Mastering the Mind

The FDP on "Mastering the Mind," is the need of the hour. A healthy mind makes a healthy body. So it is imperative to balance the heart and the mind. The mind is everything. What you think, you become, says Buddha. 32 participants took part in the session on the 20<sup>th</sup> of January, 2020.

Trainers from Heart fullness conducted this one day FDP. They helped the participants in reprogramming the subconscious mind. Through this technique, the effect of one's emotions are stabilized. This hands-on session was a practical session. The participants enjoyed the benefit of relaxation and rejuvenation from the session.

The participants also shared this experience with their fraternity.

#### 4.3.4. FDP on Developing Writing and Presentation Skills

The FDP on "Developing Writing and Presentation Skills" is an eagerly looked forward to FDP.

The objectives of this FDP were to discuss the methods of formal scientific writings, to provide resources for academic presentations and poster compositions for various audiences.

One of the most important 21st Century Skills, is communication. As facilitators and professors at the Higher Education Institutions, oral and written forms of communication play a pivotal role in establishing good relationships. This is essential for the teach and the taught alike.

The resource persons reached out to the participants and created scope for discussions, deliberations and finally creating an urge to pen down some thoughts as a prelude to their writing needs. 32 participants attended the session on the 20<sup>th</sup> of January, 2020.

#### 4.3.5. FDP on Good night sleep & Stress Detox II

The FDP on "Good night sleep & Stress Detox II" gave the needed relaxation for the participants. The discourse was on the science of sleep, breathing, handling stress and anger with practical sessions on stress handling sessions rejuvenated the participants. Techniques for deep sleep, relaxation followed by practical session on meditation helped the participants experience a serene calm mind.

The feedback was overwhelming and attracted more participants for the session. Through this workshop, the resource persons ensured that the participants vitalized themselves for a good tomorrow. 82 participants attended the session on the 21<sup>st</sup> of January, 2020.

#### 4.3.6. FDP on Using Impartus Learning Management System – A Refresher Training

A refresher training was conducted to use Impartus LMS effectively. 53 participants benefitted from this refresher training on the 22<sup>nd</sup> of January, 2020.

Impartus has been with Vellore Institute of Technology for three years. Through this LMS, the lectures of the professors were video recorded and made available to their students. This enabled students to listen to their professors classes at their own pace, revise the lessons and also submit their assignments. An option of flipped classroom facility present in the LMS enabled this new pedagogy to be used for 21<sup>st</sup> century learners.

The resource person trained the faculty handling classes in Impartus installed classrooms on the various features of the LMS.

#### 4.3.7. FDP on The Applications of Convolutional and Recurrent Neural Networks (CRNNs): Hands-on with digit recognition and word prediction

The FDP on "The Applications of Convolutional and Recurrent Neural Networks (CRNNs): Hands-on with digit recognition and word prediction," was conducted by ASC in association with School of Computer Science and Engineering. 25 faculty benefitted from the session on the 23<sup>rd</sup> of January, 2020.

The session started with details on convolutional neural networks and recurrent neural networks. The resource person trained the participants on selection of hyper-parameters based on the problem.

The afternoon session was a hands-on session for digit recognition using CNN and word prediction using RNN.

The participants were excited about the hands on session and were eager to take their learning to their classrooms.

#### 4.3.8. FDP on Statistical Data Analytics

The FDP on "Statistical Data Analytics," was conducted by ASC in association with VIT Business School, Vellore Institute of Technology, Vellore. 8 faculty attended the session on the 23<sup>rd</sup> of January, 2020.

The resource person wanted the participants to be aware of a range of more common analytical techniques and representation methods for numerical data. They should be able to recognise the

types of analysis and choose the best suited technique for particular types of problems. Practical sessions along with shared learning pedagogy enabled the participants to have a better learning.

She provided the participants with sufficient background and theoretical knowledge to judge and identify techniques that lead to incorrect conclusions.

#### 4.3.9. FDP on Trans disciplinary Research in IoT and its Impact on Society

The FDP on "Trans disciplinary Research in IoT and its Impact on Society" was conducted by ASC in association with School of Computer Science, Vellore Institute of Technology, Vellore. 25 faculty attended the session on the 24<sup>th</sup> of January, 2020.

The resource person detailed the session as follows: Exploring language and conceptual barriers between disciplines, institutional barriers, scope and risk in trans-disciplinary research. Conceptual thinking and knowledge acquisition for addressing complex human environmental problems was an essential criteria. He also brought to light complex systems and its implications for the ethics in interdisciplinary practice.

#### 4.3.10. FDP on Deep Learning with Hands-on using Google Colab

The FDP on Deep Learning with Hands-on using Google Colab was conducted by ASC in association with School of Information Technology and Engineering, Vellore Institute of Technology, Vellore. 32 participants attended the session on the 24<sup>th</sup> January 2020

The participants were introduced to artificial intelligence and how deep learning comes into play. The resource person spoke on environmental setup, the primer for MLP for data classification and ability to visualize data to improve any model. The session revolved on MLP for an image classification problem, CNN usage and using a transfer learning model for image classification.

The participants were deeply involved and thanked the resource person for the learning.

#### 4.3.11. FDP on Artificial Neural Networks using MATLAB/SIMULINK

The hands on training for the implementation methods of Artificial Neural Networks using MATLAB/SIMULINK was conducted by ASC in association with School of Electrical Engineering. 40 participants attended the session on the 24th January 2020

The participants were introduced to artificial intelligence, artificial intelligence neural network, ANN architectures, training and testing of ANN. The resource person introduced ANN learning algorithms and the steps involved in the design of ANN.

In the afternoon session two approaches were introduced: Generating data in m-file, training in m-file and testing in m-file. The same process was followed for Simulink.

The hands on training enthused the participants.

#### 4.3.12. FDP on Introduction to LATEX : Writing technical papers / thesis

The FDP on “Introduction to LATEX : Writing technical papers / thesis” was conducted by ASC, Vellore Institute of Technology, Vellore. 35 participants attended the session on the 24<sup>th</sup> of January, 2020.

The resource persons introduced LaTeX and its basic commands to create a simple document to an absolute beginner. The other features of LaTeX with advanced topics was explored to write academic materials and research papers suitable for publication in reputed journals.

The hands on session on the aspects of documentation work on open source tools was very useful for the participants. The overwhelming participants’ number was evidence of the usefulness of the program.

#### 4.3.13. FDP on Patenting your Inventions

The FDP on “Patenting your Inventions” was conducted by ASC in association with IPR Cell of Vellore Institute of Technology, Vellore. 34 faculty attended the session on the 24<sup>th</sup> January, 2020.

The resource persons shared a complete overview of patents by introducing finer details and drafting specifications. The patenting system in India and how to do a patent search enthused the participants.

The session was well received by the participants. VIT is already motivating the faculty to work towards owning a patent each, the days are not far off when each one at VIT will proudly own their patent.

#### 4.3.14. FDP on Application of Computational Fluid Dynamics for the Analysis of Vertical Axis Wind Turbines

The FDP on “Application of Computational Fluid Dynamics for the Analysis of Vertical Axis Wind Turbines” was conducted by ASC in association with School of Mechanical Engineering, Vellore Institute of Technology, Vellore. 21 participants attended the session on the 28<sup>th</sup> January 2020.

Computational fluid dynamics (CFD) is a branch of fluid mechanics that uses numerical analysis and data structures to analyze and solve problems that involve fluid flows. The resource person introduced the concept of Vertical Axis Wind Turbines VAWT-, important aspects of CFD for vertical axis wind turbines, the importance and limitations of CFD on VAWT research.

The afternoon session of CFD on Darrieus type turbines and Savonious type turbines and their applications triggered the interest of the participants.



The participants interacted with the resource person and also extended to some collaborative learning.

#### 4.3.15. FDP on Medical Devices Technology

The FDP on “Medical Devices Technology” was conducted by ASC in association with School of Bio Sciences and Technology, Vellore Institute of Technology, Vellore. 23 participants attended the session on the 29<sup>th</sup> January 2020.

The resource person inspired the participants to nurture innovation and entrepreneurship in medical devices and healthcare technologies. He urged the research scholars to be aware of the industry practices in medical devices on how to bring ideas to working products and commercialize.

The domain of medical devices technology reveals the advancements made by researchers and insisted that the interesting research area is of utmost importance. His lecture and his approach to the topic was well appreciated by the participants.

#### 4.3.16. FDP on Startup lessons for entrepreneurship, business model, grant writing and Design thinking workshop

The FDP on Startup lessons for entrepreneurship, business model, grant writing and Design thinking workshop was conducted by ASC in association with School of Bio Sciences and Technology, Vellore Institute of Technology, Vellore. 22 participants attended the session on the 29<sup>th</sup> January 2020.

Entrepreneurship, innovations form an important part of the graduate attributes according to NBA accreditation. The resource person deliberated on the problems in healthcare and how to use technology to tackle them. He inspired them to build indigenous technologies that will create social impact and growth for the country.

He spoke of various government support systems to promote startups for entrepreneurs with fresh ideas that address the societal needs.

#### 4.3.17. FDP on New Trends on Research and Development

The FDP on New Trends on Research and Development was conducted by ASC in association with School of Chemical Engineering, Vellore Institute of Technology, Vellore. 22 participants attended the FDP on the 7<sup>th</sup> February 2020.

The resource person shared his insights on the outstanding features of polymers. He delved on strategies to develop electro-chemical devices using polymer electrolytes. Patenting for electro-chemical devices, applying for international or private industries and to transfer the prototype for societal impact were some of his other discussion points.

In addition, the resource person shared the key research areas of polymers in bio-medical applications, bio-remediation, scaffolds and tissue regeneration. The talk was well received by the participants.



#### 4.3.18. FDP on Who invented this? On the Origin of Disruptive Technologies

The FDP on “Who invented this? On the Origin of Disruptive Technologies,” was conducted by ASC in association with School of Information Technology, Vellore Institute of Technology, Vellore. 33 participants attended the session on the 11<sup>th</sup> February 2020.

The resource person started the session first on the birth and evolution of ICT. He spoke of project of a CERN employee. This fascinated the audience. Later he deliberated on web and service-orientated architectures.

The participants thanked the resource person for sharing recent examples and the case study that threw a new perspective on the topic.



#### 4.3.19. FDP on Smart Energy Buildings: An Overview of Research Performed at the University of Stuttgart, Germany

The FDP “Smart Energy Buildings: An Overview of Research Performed at the University of Stuttgart, Germany” was conducted by ASC in association with School of Information Technology, Vellore Institute of Technology, Vellore. 35 participants attended the session on the 11<sup>th</sup> of February, 2020.

Smart energy buildings is not a new concept to mankind. He ahs experienced natural smart energy building concepts and has escalated this to the benefit of mankind. Bio-inspired designs has become the norm of the day. The resource person showcased the overview of research performed at the University of Stuttgart, Germany.

He spoke on building systems, connecting people and technology, relating to global environment and connecting to an intelligent future using special reasoning. The session was well received.

#### 4.3.20. FDP on Unified Analytics Engine for Big Data

The FDP on “Unified Analytics Engine for Big Data,” was conducted by ASC in association with School of Information Technology, Vellore Institute of Technology, Vellore. 24 participants attended the session on the 18th February 2020.

The resource person discussed on the comprehensive overview of Big Data technology Stack. He took the faculty through a hands on session installation and configuration of Apache Spark Environment.

Hands on sessions are always a welcome go with the participants.



#### 4.3.21. FDP on Machine Learning & Artificial Intelligence using Spark

The FDP on “Machine Learning & Artificial Intelligence using Spark,” was conducted by ASC in association with School of Information Technology. 32 participants benefitted from the program on the 18<sup>th</sup> of February, 2020.

Artificial Intelligence is gaining ground and the faculty at Vellore Institute of Technology, Vellore has been periodically attending several FDPs on the same topic.

The resource person gave an overview of Machine Learning and AI. He built the discussion on using Spark to construct ML and AI applications. The interactive personalized session created an ambience of productive engagement.



#### 4.3.22. FDP on Significance of Hydrological intervention(S) in Groundwater Studies

The FDP on “Significance of Hydrological intervention(S) in Groundwater Studies,” was conducted by ASC in association with VAIAL, Vellore Institute of Technology, Vellore. 24 participants attended the session on the 19<sup>th</sup> February 2020.

The resource person stressed on individual responsibility of water and its sustainability in India. He shared examples of the groundwater tables diminishing beyond imagination. He brought to light the urgent need for hydrological and geophysical field investigation. He used case studies to help understand field measurement and survey strategies.

The session was very informative and raised awareness on the topic.



#### 4.3.23. FDP on 2D Resistivity Imaging A Plausible solution for Engineering and geological problems

The FDP on 2D Resistivity Imaging A Plausible solution for Engineering and geological problems, was conducted by ASC in association with VAIAL, Vellore Institute of Technology, Vellore. 20 participants attended the session on the 20<sup>th</sup> February 2020

The resource person expatiated on “2 D resistivity imaging: A plausible solution for engineering and geological problems”. The application of 2-D resistivity imaging concept and instrument uses during survey was a new experience. He brought out the advantages of 2 D resistivity imaging survey over conventional methods. The audience interacted with the resource person on various other geological problems and their solutions.



#### 4.3.24. FDP on Mastering the Mind II

The FDP on Mastering the Mind II, was conducted by ASC in association with School of Advanced Science, Vellore Institute of Technology, Vellore. 21 professors benefitted from the FDP on the 2<sup>nd</sup> March 2020.

The trainers emphasized that the objective of yoga is to add vitality to one's life, not to consume it. The science of the heart and the mind, reprogramming on the sub-conscious mind and practical sessions on relaxation and meditation made the program impactful. The participants experienced the outcome of the program physically and emotionally.



#### 4.3.25. FDP on Good Night Sleep & Stress Detox II

The FDP on Good Night Sleep & Stress Detox II, was conducted by ASC in association with School of Advanced Science, Vellore Institute of Technology, Vellore. 33 faculties benefitted from this program held on 3<sup>rd</sup> March 2020.

The session gave the much needed relaxation for the participants. The discourse was on the science of sleep, breathing, handling stress and anger. The practical sessions on handling stress rejuvenated the participants. The feedback was overwhelming. Through this workshop, the resource persons ensured that the participants vitalized themselves for a good tomorrow.



#### 4.3.26. FDP on Awareness of Suicide Prevention and Intervention

The FDP on “Awareness of Suicide Prevention and Intervention,” was conducted by ASC in association with Office of Student Welfare, Vellore Institute of Technology, Vellore. 26 participants attended the session on 5<sup>th</sup> March 2020.

The resource person was from the department of psychiatric and social work. He shared that the world needs to focus on emotional intelligence and strong bonding during this critical time. Uncertainty, inability to cope to challenging situations, failure and depression has resulted in increase of suicidal deaths. He reiterated that each human being is unique and has a purpose to fulfil as one’s mission on the earth.

He spoke on the myths and facts of suicide and helped the participants to observe and identify warning signs of suicide. Using this learning, individuals and mentors can do a suicide risk assessment and intervene at the right time and prevent suicides. This FDP created a lot of awareness on the topic and each one realized their powerful role in eradicating suicide and the stigma associated with it.

#### 4.3.27. FDP on Inter-disciplinary challenges and opportunities for bio-based engineers and professionals; educational and policy intervention

The FDP on “Inter-disciplinary challenges and opportunities for bio-based engineers and professionals; educational and policy intervention,” was conducted by ASC in association with School of Chemical Engineering, Vellore Institute of Technology, Vellore. 16 participants attended the session on the 5<sup>th</sup> of March 2020.

Dr. Venkatesh Meda spoke on the role of different inter-connected disciplines to the address challenges on food, energy and water security. He shared his expertise on integrated approaches to collaborative work. His work on adaptation of sustainability measures, transformative ideas and innovation were highly appreciated.

#### 4.3.28. FDP on Research Proposal Writing and Approaches for National and International Grants

The FDP on “Research Proposal Writing and Approaches for National and International Grants.,” was conducted by ASC in association with School of Advanced Sciences, Vellore Institute of Technology Vellore. 38 participants attended the session on the 6<sup>th</sup> March 2020

Dr. G. Arthanareeswaran spoke on an important topic on how to write research proposal writing. He created an awareness on the recent research grants at the national and international level.

The afternoon session was on how to write good scientific manuscripts, ways to avoid plagiarism and the right approach for bilateral and multilateral research collaborations.



#### 4.3.29. FDP on Carbon-dioxide Capture and sequestration

The FDP on “Carbon-dioxide Capture and sequestration,” was conducted by ASC in association with School of Mechanical Engineering, Vellore Institute of Technology, Vellore. 20 participants attended the session on the 11<sup>th</sup> March 2020

Carbon-dioxide Capture and sequestration (CCS) is the topic of day in alternate fuel research. Many prototypes are researched on CCS. The resource person introduced the basic concepts of CCS with emphasis on emissions from combustion devices. He shared various approaches in carbon sequestration and the use of phase change solvents. He built his talk on choline based deep eutectic solvents for CCS. He drew examples on using organo- silica materials for CCS. 20 participants attended the FDP and benefitted from the FDP

### 5. New Initiatives

#### 5.1 ASC website on the main page:

ASC has evolved a long way from Dr. Murugavelh to Dr. Adithyan, Dr. Edison, Dr. Prabu to the current leader Prof. Dr.Indu Rao. ASC’s image and perception has transformed greatly. It is now occupying a status on the main page of the VIT university web page.

#### 5.2 ASC New Training Hall MB 210:

Expansion of one’s space is evident of the acceleration and growth. ASC has initiated and taken over a new training Hall MB 210. ASC Newsletter will launched shortly. It showcases the achievements of the centre.

#### 5.3 ASC working space: TT 720,721, 722 was given a make-over. The area was brightened up in addition to warm smiles that attracts people to ASC. A Hi-tech set up for online execution of FOP and FDPs has also put ASC on a higher level. A new digital camera, a high end TV will further add vitality to the centre.



#### 5.4 Monthly FDP Calendars:

Monthly FDP Calendars were made and pasted on the notice boards of all schools and centres. This enhanced the visibility of ASC and transformed the perception of ASC into a value added centre. Professors were able to understand the various programs conducted at ASC in advance, choose the programs of their choice and make time to attend the FDP.

5.5 A new **Interview Series** is another novel initiative of ASC. Resource persons are invited to the office of the Director, ASC along with the program co-ordinator. Director-ASC interviews the resource person and establishes good knowledge partnerships. This has again enhanced the branding of ASC inside the university, amongst the peers and beyond the university.

#### 5.6 ASC Budget:

ASC budget was made by the Director-ASC to bring in reformations in the coming years. ASC is now bifurcated into ASC and VITOL, Vellore Institute of Technology's Online centre.

5.7 ASC has completed documentation work for NAAC for the past five years.

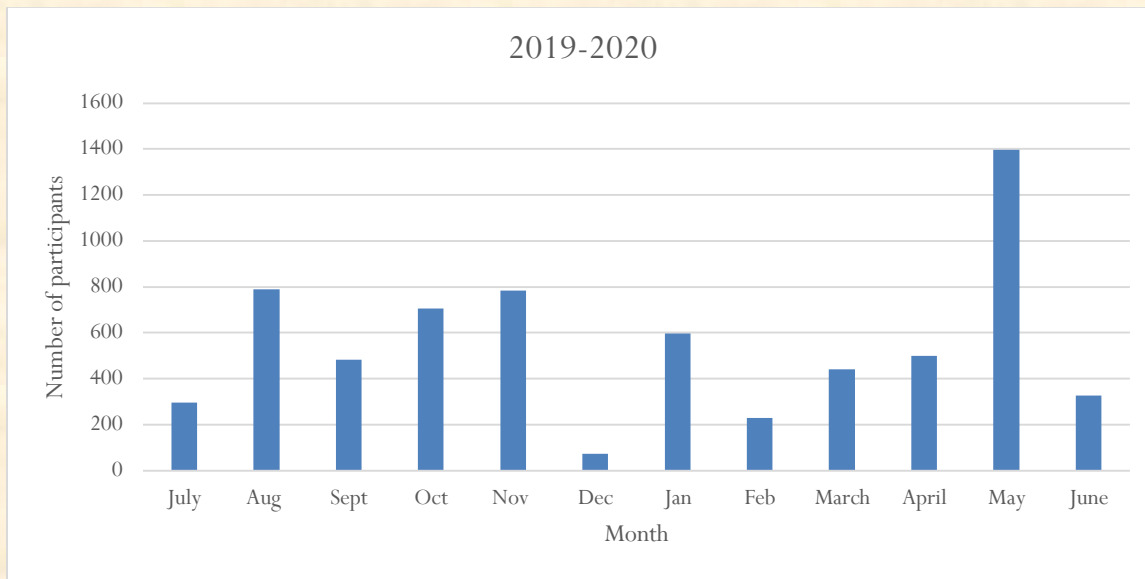
ASC is now on the verge of greater vision and charts SMART milestones to broaden its horizon. The facilitation of dialogue, structured training, team building, high-tech tools for training and creating leaders will transform ASC into a powerful and valuable centre. Documentation of the centre's activities spread over a span of 5 years was completed for NAAC. Creating an opportunity in the worst situation and implementing innovative ideas will raise the excellence bars for ASC and benchmark its uniqueness under new leadership.

**Year -2019-2020**

**Number of Programs conducted : 161**

**Number of Participants : 6613**

**Budget : 316.09**



**Prof. Dr. Indu Rao**

**Director - ASC**