



VIT[®]

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SDG Overall Report 2019-20



VIT - A Place to learn; A Chance to grow



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**Vellore Institute of Technology
Vellore – 632 014
Tamil Nadu, INDIA**

www.vit.ac.in

VIT - A Place to learn; A Chance to grow

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About VIT

(Milestone, Vision, Mission and Core Values)

1. About VIT

VIT was established with the aim of providing quality higher education on par with international standards. It persistently seeks and adopts innovative methods to improve the quality of higher education on a consistent basis. The campus has a cosmopolitan atmosphere with students from all corners of the globe. Experienced and learned teachers are strongly encouraged to nurture the students. The global standards set at VIT in the field of teaching and research spurs us on in our relentless pursuit of excellence. In fact, it has become a way of life for us. The highly motivated youngsters on the campus are a constant source of pride. Our Memoranda of Understanding with various international universities are our major strength. They provide for an exchange of students and faculty and encourage joint research projects for the mutual benefit of these universities. Many of our students, who pursue their research projects in foreign

universities, bring high quality to their work and esteem to India and have done us proud. With steady steps, we continue our march forward. We look forward to meeting you here at VIT.

It was established under Section 3 of the University Grants Commission (UGC) Act, 1956, and was founded in 1984 as a self-financing institution called the Vellore Engineering College. The Union Ministry of Human Resources Development conferred University status on Vellore Engineering College in 2001. The Institutions is headed by its founder and Chancellor, Dr. G. Viswanathan, a former Parliamentarian and Minister in the Tamil Nadu Government. In recognition of his service to India in offering world class education, he was conferred an honorary doctorate by the West Virginia University, USA.





Vision of the Institution

Transforming life through excellence in education and research



Mission of the Institution

- **World Class Education:** Excellence in education, grounded in ethics and critical thinking, for improvement of life
- **Cutting Edge Research:** An innovation ecosystem to extend knowledge and solve critical problems
- **Impactful People:** Happy, accountable, caring and effective workforce and students
- **Rewarding Co-creations:** Active collaboration with national & international industries & universities for productivity and economic development
- **Service to Society:** Service to the region and world through knowledge and compassion



Core Values of the Institution

- Student focus
- Strong ethics
- Striving for excellence
- Respect for all
- Social development



World Soil Day
5th December

End poverty in all its forms everywhere

SDG-1

Annual Report 2019-20

Report of VIT-Vellore Campus

Vellore Institute of Technology (VIT) stands by its vision, **‘Transforming life through excellence in education and research’** and plays a direct role in reducing poverty in its community by serving as a major employer in the region and sustains the livelihood of thousands of families interlinked with it. **‘Service to the region and world through knowledge and compassion’** is one among its major missions and strives to create impactful people.

33 Undergraduate, 36 Postgraduate and 15 Research Programmes were offered in the academic year, 2019-20. Over 36,000 students, with nearly one-third of them women are the major beneficiaries. More than 1800 faculty serve in educating students from 60 countries as well as from every state in India. **VIT Online learning Institute** (VITOL: <https://vit.ac.in/vitol/>) was started in 2019 with the objective of offering online education to aspiring learners around the Globe.

VIT has been recognized as an **Institution of Eminence** (<https://vit.ac.in/about/ranking-and-accreditation>) by Government of India and aspires to become a global leader. It is focused to work towards rankings and accreditations to serve as a model for other Institutes aspiring to serve the human community and the environment.

Research (<https://vit.ac.in/research>) at VIT is aimed at societal and economic improvement of our country. It directly and indirectly focuses on alleviating poverty and sustainable development. VIT is well recognised by Government organisations, research institutes, mission-critical organisations like defence establishments, the Indian Space Research Organisation (ISRO) and Atomic Research Centres. It offers Ph.D. programmes through its various Schools and also operates through sponsored research with the aids of renowned funding agencies. VIT has always been an innovation driven Institute and has established several research centres to give an opportunity to students to participate in exciting research projects.

Centre for Sustainable Rural Development & Research Studies (CSRD & RS: <https://vit.ac.in/about/community-outreach>) works towards improving the quality of life of rural people and implements sustainable practices to improve the economic well-being of people living in the rural areas. The centre concentrates on carrying out

extension works through adoption of villages (Unnat Bharat Abhiyan), education (GV school development programme, Life skill development for Government school students), creating entrepreneurship and skill development opportunities, PURA (Provision of Urban Amenities In Rural Areas), empowering women and youth, supporting organic farming, afforestation, protecting environment (Clean River Palar), promoting sanitation and creating credit linkages to tribal farmers for holistic development. It partners with various governmental organisations and helps to uplift the life of rural citizens in the community.

	EAC – Camp I - Total No.of Participants - 100 Date: 30.01.2020 to 01.02.2020, Venue: DKM College of Women, Vellore.
	EAC – Camp II Total No. of Participants - 80 Date: 10.02.2020 to 12.02.2020, Venue: Thanthi Periyar Institute of Technology, Vellore
	EAC – Camp III Date: 11.03.2020 to 14.03.2020, Total No. of Participants - 110 Venue: Islamic College of Women, Vanniyambadi

VIT School of Agricultural Innovations and Advanced learning (VAIAL), (<https://vit.ac.in/schools/vaial>) organizes regular farmers training programmes, outreach and field programmes for the farmers. The School also actively involves in research in agricultural and allied sectors on a techno-commercial scale. The mega event organised annually the AGRI EXPO along with **CSRD** (<https://www.thehindu.com/news/national/tamil-nadu/agri-expo-and-workshop-gets-underway-at-vit/article29858604.ece>) benefits thousands of farmers, in the district. The 5th edition of the expo and workshop, where students and farmers interact with experts on farming activities and get help to increase productivity was organised between the 1st and 2nd of November, 2019. Around **3500** individuals related to agriculture actively participated in the event. Other workshops and trainings during the academic year includes Drones in Agriculture, Water resource management, 2D Resistivity Imaging, A Plausible solution for Engineering and geological problems, Significance of Hydrological intervention in Groundwater Studies, Coconut based integrated farming system, Patenting your inventions, Agripreneurship, Lab Biosafety, Soil Health Water Quality and Remediation, Serological and PCR based detection of Plant viruses, Precision Agriculture Technologies and Challenges and Quality assurance and testing of tissue culture plants.

Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in the Programmes offered by the Institution.

Sample courses of B.Sc.(Hons.) Agriculture aiding in development (<https://vit.ac.in/school/course/vaial/ug>)

Course	Activity taken up as part of the course
BAG2009, Soil and Water Conservation Engineering	Soil and water erosion in and around local region was identified to conserve soil resources
BAG1022, Fundamentals of Horticulture	Implementing cultivation techniques of horticultural crops to improve productivity
BAG1021, Fundamentals of Entomology	Identification of insects to prevent pest attacks on crops
BAG2009, Soil and Water Conservation Engineering	Assessment of flood impacts and mitigation of water erosion related problems
BAG1013, Fundamentals of Agronomy	Analysis of daily temperature to grow suitable crops
BAG1017, Fundamentals of Agricultural Economics	Assessment on analysing crop insurance schemes to aid farmers in choosing the appropriate schemes to protect their crops



VIT School of Agricultural Innovations and Advanced Learning (VAIAL) & Centre for Sustainable Rural Development and Research Studies (CSRDS&RS)

Agri Expo Annual Agricultural Expositions



Collaborators



Indian Council of Agricultural Research (ICAR)



National Bank for Agricultural and Rural Development (NABARD)



Krishi Vigyan Kendra (KVK)



Tamil Nadu Agricultural University (TNAU)



Department of Agriculture, Govt of Tamil Nadu



Department of Horticulture and Plantation Crops, Govt of Tamil Nadu



Department of Agricultural Engineering, Govt of Tamil Nadu



Tamil Nadu Veterinary and Animal Sciences University



Pasumai Vikatan



Makkal TV



2 days Agri Mela
4500 Farmers Participate
75 Exhibition Stalls
Conference Talks by Experts
Workshops on Agrotechnology
Experience Sharing by Farmers
Sale of Organic Agro Products
Exhibition of Students' Projects
Display of Research Findings
Consultancy and Agro Advisory
Awareness Camp on Agri Loans



Academic Staff College, ASC (<https://vit.ac.in/centers/asc>) is dedicated towards creating a culture of academic excellence and conducting faculty development activities for all our schools and centers at VIT. ASC helps faculty stay updated with the latest developments in teaching, research and technology and thus creates a world class learning environment for our students.



Academic Staff College

FDPs / Workshops Calendar - March 2020



Sl. No	Date	Title of the FDP	Time	Venue
1	02.03.2020	Mastering the Mind II	10.00 am to 5.00 pm	SJT 620
2	02.03.2020	Effective Teaching and Classroom Management	10.00 am to 1.00 pm	MB 210
3	02.03.2020	Constructing Questions for Assessing Higher Order Thinking	2.00 to 5.00 pm	MB 210
4	02-03.03.2020	A complete understanding on machine learning with hands-on learning using SCI-KIT learning	10.00 am to 5.00 pm	SJT 107
5	03.03.2020	Good Night Sleep & Stress Detox II	10.00 am to 5.00 pm	SJT 620
6	03.03.2020	Constructing Questions for Assessing Higher Order Thinking	10.00 am to 1.00 pm	MB 210
7	03.03.2020	Effective Teaching and Classroom Management	2.00 to 5.00 pm	MB 210
8	04-05.03.2020	Ethical Hacking and it's Cyber Security	10.00 am to 5.00 pm	SJT 107
9	04.03.2020	Effective Teaching and Classroom Management	10.00 am to 1.00 pm	MB 210
10	04.03.2020	Constructing Questions for Assessing Higher Order Thinking	2.00 to 5.00 pm	MB 210
11	05.03.2020	Awareness of Suicide Prevention and Intervention	10.00 am to 1.00 pm	MB 210
12	05.03.2020	Constructing Questions for Assessing Higher Order Thinking	10.00 am to 1.00 pm	Library Video Conf. Hall
13	05.03.2020	Effective Teaching and Classroom Management	2.00 to 5.00 pm	MB 210
14	06-07-03.2020	Designing Cloud Architecture	10.00 am to 5.00 pm	SJT 107
15	06.03.2020	Research Proposal Writing and Approaches for National and International Grants	10.00 am to 5.00 pm	SJT 507
16	06.03.2020	Effective Teaching and Classroom Management	10.00 am to 1.00 pm	CDMM 113
17	06.03.2020	Constructing Questions for Assessing Higher Order Thinking	2.00 to 5.00 pm	CDMM 113
18	11.03.2020	Carbon Capturisation	10.00 am to 1.00 pm	CDMM 204
19	25.03.2020	Remote sensing and GIS: A journey from a mere tool to an well elaborated science	2.00 to 5.00 pm	Library Video Conf. Hall
20	26.03.2020	Remote sensing and GIS approach for precision agriculture	2.00 to 5.00 pm	Library Video Conf. Hall
21	28.03.2020	LaTeX for Researchers	10.00 am to 5.00 pm	Library Video Conf. Hall



Academic Staff College
In Association with
VIT School of Agricultural Innovations and Advanced Learning (VAIAL)



VIT
Vellore Institute of Technology
(Chartered by the University Grants Commission, UGC, Act, 1956)

One Day FDP on

Precision Agriculture: Technologies and Challenges

Resource Person
Dr. Mohammad mehdi
Mechanics of Biosystems Engineering,
Sahlgrenska University of Kerman,
Iran

Takeaways

- > Precision Agriculture Cycle
- > Essential Platforms
- > Yield monitoring system
- > Variable rate technology (VRT)
- > In-field crop and soil sensors
- > Usage of soil compaction meter, GPS and EC meter
- > Economic Challenges with PA

Aug 8th 2019
Video conferencing room in Library
10:00-17:00 (IST)

Resource Contribution
Prof. Saravanan, S
Prof Annie Jennifer, M

Faculty Members and Research Scholars are requested to register through <https://vtop.vit.ac.in/> (Choose EVENTS -> ASC Event Registration)

VIT Community Radio (<https://vit.ac.in/about/communityradio>) 90.8 MHz is an initiative for the empowerment of the Vellore community. Its mission is to build an effective, vibrant and sustainable community and to support development in health, education, environment and agriculture.



Support the Advancement of Rural Students Scheme (STARS: <https://vit.ac.in/stars-support-advancement-rural-students-0>) initiated in the year 2008 aims at enhancing the rural students' quality of life. A rural Government Higher Secondary School graduated male and a female student who are academically brilliant based on their class 12 board marks and financially disadvantaged from under privileged backgrounds are selected from varied districts of Tamil Nadu and sponsored under the STARS scheme with 100% fee waiver for their academic and hostel facilities inclusive of basic medical expenses.

STARS ORIENTATION, 2019



Universal Higher Education Trust (UHET) (<https://www.uhetindia.org/>)

located at VIT, Vellore campus aims towards higher education of higher secondary school underprivileged students in the age group of 18-23 through financial assistance, career guidance, advocacy, networking, educational outreach and skill development. More than 4500 girl students have benefitted from the activities of the trust and they also focus on first generation graduation. Majority of the beneficiaries are enrolled in Arts & Science courses, followed by Engineering and Nursing.

UHET SCHOLARSHIPS DISTRIBUTION, 2019



Career Development Centre (<https://vit.ac.in/placements/pat-Office>) plays an integral role in creating excellent placements for graduating students of VIT. It organises career guidance, placements and internships for final year students in the campus and facilitates training activities to ensure employability. For the academic year 2019-20 the placement record was 84.65%.



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Campus Recruitments (2019 batch)

- 716 Companies**
- 4394 Students placed**
- 690 Super Dream Placements & Internships ***
- 2494 Dream Placements & Internships ****
- 1210 IT services companies offers**

https://twitter.com/vit_univ/status/1134828903808114689

* CTC more than 10 Lakhs per annum.
** CTC more than 4.5 Lakhs per annum.

VIT-Technology Business Incubator (VITTBI: <https://vittbi.com/>) was started with initial grant support from the Department of Science and Technology. VITTBI has active programs supported by DST, BIRAC (BioNEST) and MeitY (TIDE 2.0) incubation centre and supports Innovative Technology start-ups with access to knowledge, funding, infrastructure, mentoring and network. It majorly functions its schemes and programs through VITTBI Prayas centre, VITTBI Bio NEST, VITTBI TIDE 2.0 centre and VITTBI NIDHI Seed.



Students' Welfare (<https://vit.ac.in/campuslife/studentwelfare>) at VIT endeavours to promote, introduce, and expand any and all ventures to shape students minds and promotes daily activities being conducted by the Clubs and Chapters. Students are provided with platforms to hone their skills, cultivate leadership and team-building skills and emerge as better individuals. Various student clubs including Vriksh, Anokha, Ayuda, BIF, FEPSI, Juvenile Care, NSS and YRC function towards holistic societal upliftment.

True Green Project's (<https://vit.ac.in/true-green>) mission at VIT is to save mother earth for future generations through sustainability initiatives for conservation and scrupulous use of natural resources which will help in indirectly eradicating poverty. The project concentrates on waste management, water recycling, hygiene, environmental conservation and greener practices. VIT campuses are lush green and to an extent self-sustainable (**Green VIT:** <https://vit.ac.in/detailview/green-vit>).

* * *

Report of VIT-Chennai Campus

Preamble:

Eradicating poverty is the road for sustainable development cutting across the socio, economic, cultural and political backgrounds of people all over the world. Though globally extreme poverty situation has come down post Globalisation, still millions of people in underdeveloped or developing countries are at the brink of going back to poverty state specifically during the pandemic with more number of small and medium scale industries closing down, lay-offs by industries due to cost cutting measures, fewer job opportunities pose threat to the survival of a section of the population worldwide. The policies or methods adopted for eradicating poverty should have a people-centred approach (pro-poor and gender sensitive policy frameworks) focusing on better living condition, better job opportunities, decent salary and quality education.

STARS (Support the Advancement of Rural Students) :

VIT strongly believes that poverty shouldn't be a barrier for quality education.

STARS (Support the Advancement of Rural Students) scheme is started in VIT Chennai from 2019. This scheme helps children from under

*"A Child should never be deprived of quality education owing to poverty. This forceful thought in my mind became the seed that gave birth to the innovative **STARS** Scheme".*

- Dr. G. Viswanathan, Chancellor, VIT

privileged background with good academic record to get admitted into VIT. Children who aspire to get quality education under the STARS scheme are provided with 100% fee waiver for their academic and hostel expenses. A boy and a girl from rural Govt. Higher secondary schools from each of the districts of TamilNadu are selected based on their 12th standard marks. Most of such selected students are first generation graduates from below poverty line families. The STARS scheme paves way for good career, better social status and most importantly, fine tune them to be responsible citizens.

Enactus @ VIT Chennai Campus:

Members of the Enactus club of VIT Chennai are actively involved in improving the living condition of economically weaker sections through their projects, Ujjwal and Malar.

Project Ujjwal is aimed at combating the social inequality faced by the refugees and Self-help group (SHG) women by providing them a means of income through production and sale of paper bags. Appropriate technical training is provided to them to hone their skills and has resulted in achieving self-sufficiency and self-reliance. Enactus members helped women to sell their products to hotels, retail shops and in our campus super market. Profit made through these sales is equally divided among the workforce.

Project Malar aims at addressing unemployment amongst women in the slums of Chennai through production and sale of incense sticks. The project not only provides employment but also ensures that flowers when they wither do not turn into waste rather end up as organic incense sticks thereby enhancing the physical and mental well-being and provides a complete eco system.



PROJECT-UJJWAL



PROJECT-MALAR

Equal Rights:

International Women's day celebration at VIT Chennai had a plethora of events including a panel discussion, martial arts demonstration and various cultural programmes with the motto "Equal rights are fundamental".

Dignitaries signalled “Each for Equal” proving that Equal rights are fundamental to humans and should be rightfully assumed.

Curriculum of Law school covers a wide variety of courses which emphasis on equality at all levels. The course on Environment and Human Rights provides basic understanding about environment and human rights of which Right to Food and Food Security are part of. The course on Right to Education seeks to impart knowledge on the right to education as an important instrument of social control, which enriches human life materially as well as culturally. The course focuses on the nature of the Right to education as a basic human right recognized and protected in a number of international conventions. Emphasis is given on the right to free and compulsory education to all children of the age of six to fourteen years as a fundamental right.

Research Publications:

Faculty, research scholars and students are actively involved in research orientation towards sustainable development. A few are listed below:

- Dr.P.R.L.Rajavenkatesan & Dr.E.Prema, “Sustainable Livelihood of Tribal Communities: The progressive Visions of India“, CLIO- An Annual Interdisciplinary Journal of History, ISSN: 0976-075X, April 2020.
- S.Sarayu Priyadharshini, S.Patchainayagi, “Escape from Reality: An Analysis of Corporate Culture and Quest for Quasi Relationships in the Virtual World”, Indian Journal of Public Health Research and Development, 2019, ISSN: 0976-5506.
- V.Vijayalakshmi & Mr.B.Nagaraj, “Awareness of Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) among the Pregnant Women of Rural areas of Puducherry, India”, International Journal of Innovative Technology and Exploring Engineering (IJITEE), 2019, ISSN: 2278-3075.
- Dr.P.R.L.Rajavenkatesan & Dr.E.Prema , “Solar Power Transforming the Face of Rural India: Climate Justice for All”, IOP Conf. Series: Earth and Environmental Science, June 2020.

- D. Gowrisankar, I. Ajit, Govindarajan P, “Representation of the Women's Financial Stability Portrayed in Selected Post-Feminist Tamil Films”, International Journal of Recent Technology and Engineering (IJRTE), ISSN: 2277-3878
- Ms.S. Gnana Sangamithra, V.Vijayalakshmi, “Changing Trends in Socio-Economic Conditions of Transgender in Chennai City”, International Journal of Engineering and Advanced Technology (IJEAT), 2019, ISSN: 2249-8958.

Outreach Activities :

Students visited a Dalit and tribal hamlet in Kolathur village to understand about the Indian society religion, culture and their community structure as part of the course “Indian Society Structure and Change”. They also interacted with self-help group members.

A visit to Gurukulam, a Trust children school run by a NGO, created awareness amongst our students about the children who hail from marginalized background and the role of NGO in shaping the lives of these children in imparting education. This visit was a life changing experience for the students in understanding the society.

Students and faculty members of VITeach club, Health Club, Uddeshya, Fine Arts club, ENFUSE, Youth Red Cross, National Service Scheme, Event Managers Club and Tamil Mandram have organized many extension activities in collaboration with NGOs, Govt. offices etc. which directly or indirectly helps in eradicating poverty. Such outreach activities are carried out under Government schemes such as Sarva Shiksha Abhiyan, Scheme for Prevention of Alcoholism and Substance (Drugs) Abuse, Disability Scheme and Make in India.



Visit to Gurukulam



Visit to Kolathur Village



VIT Organic Sustainable Farms

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

SDG-2

Annual Report 2019-20

Report of VIT-Vellore Campus

VIT School of Agricultural Innovations and Advanced learning (VAIAL), was established in the year 2018 to promote sustainable smart agriculture to combat the global challenges of next-generation and promote integrated and self-sustainable organic farming. VAIAL aims to offer world class learning and training experience to the students in science, technology and business aspects of agriculture, to serve the farming community with custom-designed technologies for improved agricultural production and enhanced productivity and to innovate eco-friendly technology for uplifting the agro-industry. Core activities of the school revolves around teaching in Agriculture, training of students, organizing farmers training programmes, outreach and field programmes for the farmers as well as research in agricultural and allied sectors on a techno-commercial scale.

Student Activities



Plate 1. Nursery field preparation - Puddling



Plate 2. Nursery field preparation - Levelling



Plate 3. Nursery field preparation - Digging



Plate 4. Nursery field preparation - Plastering

Practicing Agronomy



Livestock and poultry to complement farm activities



Gir Cows: Semi-intensive system of rearing where animals are kept in concrete sheds during night and extreme climate with provision for feeding, watering and cooling mechanisms (fans).



Rabbits: Intensive system of rearing where animals are kept in concrete sheds with modified roofing and separate cages for kindling, kits and bunnies. The shelter is provided with provision for feeding, fodder and watering for the whole duration of day and night.



Kadaknath



Access to food security knowledge

Events Organised during 2019-20 at VAIAL

Programme Type	Title	From Date	To Date	No of Participants
Workshop	Drones in Agriculture	25-02-2020	25-02-2020	120
Workshop	Water resource management	22-02-2020	22-02-2020	60
FDP	2D Resistivity Imaging A Plausible solution for Engineering and geological problems	20-02-2020	20-02-2020	30
FDP	Significance of Hydrological intervention in Groundwater Studies	19-02-2020	19-02-2020	30
Training	Coconut based integrated farming system	19-02-2020	19-02-2020	60
FDP	Patenting your inventions	24-01-2020	24-01-2020	40
Training	Agripreneurship	17-12-2019	17-12-2019	238
Workshop	Lab Biosafety	07-12-2019	07-12-2019	30
Workshop	Soil Health Water Quality & Remediation	05-12-19	05-12-19	50
Training	AgriExpo	01-11-19	02-11-19	3500
Workshop	Serological and PCR based detection of Plant viruses	03-10-2019	04-10-2019	20
FDP	Precision Agriculture Technologies and Challenges	08-08-2019	08-08-2019	25
Workshop	Quality assurance and testing of tissue culture plants	17-07-2019	17-07-2019	17

News Article Links – AgriExpo : (<https://www.thehindu.com/news/national/tamil-nadu/agri-expo-and-workshop-gets-underway-at-vit/article29858604.ece>)

Few ongoing funded projects related to food and agriculture

PI	Project Title	Funding Agency	Sanctioned Date	Sanctioned Amount (Rs)
Prof. Sowbiya Muneer	Mulching sheet application for crop improvement and water conservation in arecanut	Balaji Poly Packs	01-01-20	2600000
Dr A Sathiavelu & Dr. P. Anbarasan	Agri-Clinics and Agri-Business Centres (AC&ABC) Scheme	MANAGE	15-04-19	1225000
Dr. S. Babu & Dr. S. Vino	Development and validation of signature peptide-proteome biomarkers for improved and precise detection of root wilt infection in coconut.	DST	10-05-18	4174000
Dr. S. Babu	Quality Assurance and Testing of Tissue Culture Plant Materials	DST	24-05-18	12779000

Ongoing Industry Consultation Project

Dr. Sowbiya Muneer	Mulching sheet application for crop improvement and water conservation in arecanut	Balaji Poly Packs	14-12-19	26,92,000
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Farmers Attachment Programme

Objective of the programme is to inculcate the real life experience of farming from the farmers among the students and to provide a platform for farmers to share their field problems with the experts in VAIAL to avail timely solutions. Third year students of B.Sc.(Hons.) Agriculture program are attached to a specific farmer. The student interacts with the farmer and learns farming related issues and identifies the farmer's problems and reports to the experts in VAIAL. Solutions are provided to the student, who in turn delivers the same to the farmer within 72 hrs. Students act as links between farmers and subject matter experts.

Germplasm Conservation and maintenance of genetic diversity

Black gram Accessions	Source
NO-5131, NO-236818, PLU-1050, PLU-710, PLU-461, NO-40, KU-96-3, PU-30, NUL-7. Jalpaiguri Local, IPU-94-1, PKGU-03, Mash-114, Pant Urd-19, ADT-6, KPU-405, VBN-8, COBG-653, ADT-5, PDU-6, IPU-2-43, NO-981120, KUG-479, IPU-99-18, PLU-294, Pant Urd-35, IPU-2K-22, PDU-3, CO6, ADT-3, Pant Urd-31, KUG-391, TU-942, PLU-144, PDU-2E	IIPR, Kanpur
Urad kaala, Urad kharif, Urad Hara, Urad Badwaala	Maharashtra farmer
VBN 6, VBN 5, VBN 8, VBN 7, VBN 2, VBN 1, VBN 3, VBN 4, MDU 1, CO5	Vamban, Tamil Nadu
Arcot LOCAL, Chidambaram LOCAL	None

Traditional Rice Variety	Duration (Days)	Special Characters
Basumathi	140	Long grain aromatic rice.
Mappillai samba	160	Gives strength and stamina.
Swarna masoori	135	Aromatic medium grain rice
Paal kudai vazhai	129	Red in colour. Very high in fat content.
Garudan Samba	150	Rich in nutrients and fibre.
Kaalan Namakku	120	Suitable for saline soil condition.
Navara	140	Grains red in colour, ideal weaning food for children
Thooya malli	140	Rice is fine and white. At flowering earheads look like flowers
Athur kichili samba	140	Suitable for dry sowing. High in protein and very high in iron.
Illupai poo samba	104	Fragrance like Madhuca flower. Useful for diabetes & knee pain
Kaatu yanam	180	Grain is Red in colour, bold rice. Resistant to pest and diseases.
Neelan samba	180	Rice is red and resistant to brown plant hopper and earhead bug
Rani kandha	120	Used as flattened rice
Poongar	105	Popularly known as women's rice and cures hormonal issues.
Karupu kavuni	140	Grain is long and bold in shape. It possess medicinal properties
Kullankar	120	Rice is red in colour. Highly drought resistant.
Karudan Samba	150	Nutty flavoured and it is rich in nutrients and fibre

Crop	Name of the Germplasm/Variety	Salient characters
Banana	Rasthali	Choice table variety
	Monthan	Culinary variety, resistant to drought
	Moris Green	Long distance transportation
	Red banana	Good keeping quality, red pseudostem, midrib and fruit
	Yelakki	Long distance transport
	Grand Naine/G-9	Good keeping quality, international variety
	Karpooravalli	Tolerant to corm weevil, suitable for leaf production
	Semmatti/Red Matti	Low in sugar and high in ascorbic acid
	Malaimatti/Hill Matti	Suitable for hilly regions
	Singan	Indigenous variety of Kanyakumari
	Thenmatti/Honey Matti	Sweet taste
	Aathu Kathali	-
	Karumthuzhuvan/Black Rasthali	Erect flower
	Palaymkondan	Natural cooling effect
	Poongathali/Royal Banana	Meant for the Travancore kings
	Rasa Kadali	Sweet taste
Tomato	PKM 1	Typical green shoulder, long distance transport
Radish	China King	White colour roots
Grain Amaranth	RMA 4	Creamy white seeds
Cluster Beans	Local Type	High yielder
Lab Lab	Local Type	High yielder
Brinjal	Elavampadi Local	Spiny, glossy pink colour
Turmeric	Local Type	Small sized fingers
Colocasia	Local Type	Robust growth, small sized tubers
Coconut	Tall Type	High yield, copra production
Marigold	African Type	Xanthophyll pigments
Leafy amaranthus	Local Type	High yielder with consumer preference

Endangered Species in VIT- *Calophyllum inophyllum*, *Guaiaicum officinale*, *Pterocarpus marsupium*, *Pterocarpus santalinus* (Near Threatened) and *Santalum album*

List of Drought tolerant species planted in the VIT Vellore campus

<i>Phoenix dactylifera</i>	<i>Cocus nuifera</i>
<i>Acacia</i>	<i>Dalbergia sissoo</i>
<i>Cassia fistula</i>	<i>Mangifera indica</i>
<i>Ficus</i>	<i>Phyllanthus emblica</i>
<i>Terminalia</i>	<i>Pisidium guajava</i>
<i>Azardirachta indica</i>	<i>Thespesia populnea</i>
<i>Albizia lebbeck</i>	<i>Eugenia jambolana</i>
<i>Artocarpus heterophyllum</i>	<i>Artocarpus heterophyllus</i>
<i>Annona reticulata</i>	<i>Wodyetia plam</i>
<i>Artocarpus</i>	

List of tree species planted in VIT Vellore campus

1) Alstonia scholaris	54) Murraya koenigii (curry leaf)
2) Adeanthera paronina	55) Mimosa elengi
3) Azadirachta indica	56) Moringa oleifera
4) Albizia lebeck	57) Nyctanthes
5) Artocarpus heterophyllum (jack)	58) Ochna kirkii (micky mouse)
6) Acacia auriculiformis	59) Peltophorum ferrugineum
7) Annona reticulata	60) Pterocarpus marsupium (vengai)
8) Artocarpus (altilis)	61) Phyllanthus emblica (Indian goose berry)
9) Aegle marmelos (vilvam)	62) Putranjiva roxburghii
10) Anacardium occidentale (cashew nut)	63) Pisonia alba
11) Bauhinia	64) Podocarpus
12) Bignonia magapotomica	65) Polyalthia longifolia pendula
13) Brachychiton acerifolius	66) Pongamia pinnata
14) Brownea	67) Psidium guajava
15) Butea	68) Samanea saman
16) Cassia fistula	69) Saraca asoca
17) Casuarina equisetifolia	70) Schotia latifolia
18) Cassia javanica	71) Sesbania grandiflora (agathi)
19) Carica papaya	72) Swietenia mahogany
20) Calophyllum inophyllum	73) Spathodea campanulata
21) Cordia sebestena	74) Sterculia foetida
22) Cocus nucifera	75) Sterculia alata
23) Conocarpus erectus	76) Simarouba glauca
24) Callistemon lanceolatus	77) Syzygium aqueum (water rose apple)
25) Ceiba speciosa	78) Tamarindus indica
26) Citrus (lemon)	79) Tabebuia rosia
27) Clusia rosia	80) Tabebuia argentea
28) Couroupita guianensis	81) Tabebuia avellanedae
29) Dalbergia sissoo	82) Terminalia catappa
30) Delonix elata	83) Terminalia arjuna
31) Delonix regia	84) Terminalia mentaly
32) Eugenia uniflora (Surinam cherry)	85) Terminalia bellirica (thandri)
33) Ficus benjamina	86) Tectona grandis
34) Ficus religiosa	87) Thespesia populnea
35) Ficus racemosa	88) Gmelina arborea (kumil teak)
36) Ficus bengalensis	89) Carambola (star fruit)
37) Ficus lyrata	90) Eugenia jambolana
38) Filicium decipiens	91) Pterocarpus santalinus (red sandal)
39) Guaiacum officinale	92) Santalum album (sandal)
40) Holoptelea integrifolia (aya)	93) Barringtonia
41) Hibiscus tiliaceus	94) Neolamarckia cadamba
42) Jacaranda	95) Melia dubia (malai vembu)
43) Kigelia pinnata	96) Ficus racemosa (athi)
44) Lannea coromandelica (othiyar tree)	97) Artocarpus heterophyllum (jack fruit)
45) Lagerstroemia speciosa	98) Agathis robusta
46) Lawsonia inermis	99) Caryota urens palm
47) Leucaena leucocephala (subabul)	100) Muntingia calabura
48) Madhuca longifolia (illupai)	101) Roystonea regia palm
49) Mangifera indica	102) Wodyetia palm
50) Manilkara zapota	103) Borassus (panai maram)
51) Michelia champaca	104) Date palm
52) Millettia ovalifolia	105) Plumeria rubra
53) Millingtonia hortensis	

Vermicomposting Unit



Vermicomposting is a well-known waste recycling technology to produce vermicompost, a nutrient rich organic manure using earthworms. There exists a huge demand for vermicompost in agricultural farms, gardens and landscaping sectors. VIT vermicomposting unit is established with an objective of recycling leaf litter (dry leaves) waste collected in the Vellore

campus on daily basis and producing vermicompost for usage in agricultural fields as manure, and also as manure for the trees, plants, bushes and lawns in the campus premises. The dry leaves are processed with farmyard manure (FYM) and earthworms. On an average, the capacity of this unit is 120 tons of vermicompost per year. The whole unit is constructed with eco-friendly materials with natural insulation.

Utility of this unit:

- i) **Teaching:** Students of agriculture and biotechnology degree programmes in VIT have bio-composting and waste recycling topics in syllabi and this unit will be used for teaching practical classes which would provide experiential learning experience.
- ii) **Students projects:** Students of agriculture and all other branches of science and engineering in VIT will be exploring the processes, products, value addition, new technology development etc., by taking up UG and PG projects.
- iii) **Research:** Faculty members and research scholars will be doing intensive research with the support of government funded projects and improving the nutrient concentration, supplementation for developing new products, field level testing etc.,



iv) **Entrepreneurship:** Students of agriculture, biotechnology and other branches will have the opportunity of getting trained in the technology to take up entrepreneurship start-ups in vermicomposting.

v) **Technology transfer to farmers:** Through the farmers training programmes and field level demonstrations, the technology will be transferred to the farmers. Scientific and technical support will be provided to the farmers for setting up their own vermicomposting units.

vi) **Training students of other institutes:** Training programmes will be organized to the students of Schools and Colleges to create awareness on waste to wealth concept.

vii) **Product development, patenting and commercialization:** The vermicompost products and processes that are being developed in this unit will be patented and commercialized.

Uniqueness: To our knowledge, this is the first established and functional vermicompost unit in the country that recycles leaf litter waste as exclusive source material, along with farm yard manure, to produce vermicompost manure.

Expansion: Similar vermicomposting unit will be established in other campuses of VIT. Vermicomposting using food waste is also proposed.

FEW VIT VAIAL FARM PRODUCES





Healthy and affordable food choices

Healthy, wholesome food and a variety of dining options are available to the hostel students and all VIT employees and students inside the campus through messes, food courts and various eateries. Given the great diversity of tastes and cultures, students have access to multi-cuisine catering services that serves vegetarian, non-vegetarian, Indian and International food. Students can also choose and order from a limited list of special dishes available on prior registration at the Restaurant-style Mess. Dining areas are open as early as 7:00 AM with night canteens available from 10:30 PM to 12:30 AM. The kitchens are hygienically operated and adhere to the prescribed food standards. A balanced menu is prepared every month by the Student Mess and Menu Committee in consultation with the hostel administrators. A sample mess menu is given below.

DAYS	BREAK FAST	LUNCH	SNACKS	DINNER
Monday 09.12.19 23.12.19	Idly, Vada, Sambar, Peanut/tomato Chutney Pineapple Juice Veg : Multi Grain Sundal Non Veg: Boiled Egg	Phulka, Mutter masala, Tamarind Rice White Rice, Sambar, Rasam, Cup Curd, Bitter guard fry, Dahi Vada, Fryums Sweet : Fruit Kesari	Burger	Chole Bhatura, White Rice, Sambar, Rasam, Loose Curd Nool Khol Sabji Palak Soup, Banana Seasonal Fruit
Tuesday 10.12.19 24.12.19	Masala Dosai, Sambar, Chutney Mosambi Juice Veg : Sauté Black Chenna Sundal Non Veg : Scrambled Egg	Chapathi, Dhal Thadka, Jeera Rice, White Rice, Sambar, Rasam, Cup Curd, Sapan Kizhangu Fry, Papad Veg : Soya Chunks Gravy, Sweet: Kulfhi Non Veg : *Fish Curry/Fish Fry	Cutlet 2 Nos Ginger Tea	Roti, Dingiri Mutter, Veg / Egg Noodles White Rice, Sambar, Rasam, Loose Curd Bottle Guard Sabji Tomato Soup Papaya
Wednesday 11.12.19 25.12.19	Mooli Paratha, Curd, Pickle, Upma Chutney, Mango Milkshake Veg : Sprouted Moong Dhal Non Veg : Masala Omelette	Stuffed Kulcha, Rajma dhal, Ghee Rice White Rice, Vatha Kulambu, Rasam, Cup Curd, Keerai Kootu, Appalam Sweet: Badusha /Laddu	Raw banana/onion Bhaji	Chapati, Dhal Rajasthani, Kal Dosai, Veg Stew, White Rice, Sambar, Chutney, Rasam, Loose Curd Veg Noodle Soup Veg : Cheese Balls (4 Pieces) Non Veg : Chicken 65 (4 Pieces)
Thursday 12.12.19 26.12.19	Masala Uthappam, Pav Bhaji Masala, Sambar, Chutney Pomegranate Juice Veg : Mochai Payaru Sundal Non Veg : Boiled Egg Masala	Phulka, Lauki Dhal, Veg Hydrabadi, Mint Rice White Rice, Sambar, Rasam, Cup Curd Beet Root Sabji, Fryums Sweet : Rasmalai / Rasgula	Egg Puff/Veg Puff Hot Badam Milk	Tandoori roti, White Rice Sambar Rasam, Loose Curd, Cluster Beans Poriyal Chow Mein Soup, Seasonal Fruit Veg : Paneer Chat pot/ Paneer Do Plazha Non Veg : Ginger Chicken / Pepper Chicken
Friday 13.12.19 27.12.19	Poori, Potato Masala, Brown Bread, Apple Juice Veg : Green Gram Sprouts Non Veg : Omelette	Phulka, Malai Kofta gravy, Coconut Rice White Rice, Sambar, Rasam, Cup Curd Green Gram Pumpkin Sabji, Papad Sweet : Carrot Halwa / Bread Halwa	Mysore Bonda, Chutney	Chapathi, Yellow Dhal, Veg Dopiyaza gravy White Rice, Sambar, Rasam, Loose Curd Peerkankai Poriyal, Hot and Sour Soup, Fruit salad with Ice cream
Saturday 14.12.19 28.12.19	Dosai, Sambar Chutney, Papaya Juice Veg : Bengal Gram Sprouts Non Veg : Scrambled Egg	Butter Naan, Butter paneer masala, Lemon Rice White Rice, Pappu Kooru, Rasam, Cup Curd Potato Fry, Fryums Sweet : Coconut Barfi	Pani Puri (5 nos)	Phulka, Dhal, Kadai Veg, Lachha Paratha White Rice, Sambar, Rasam, Loose Curd Sweet Corn Soup Banana

Note: 1. Bread, Butter and Jam will be provided during Breakfast

2. Tea, Coffee and Milk (150 ml) will be provided along with breakfast and snacks; Milk and Coffee will be provided during dinner

3. Dhal powder, Ghee and Lemon Wedges will be provided during lunch and Vegetable salad will be provided during lunch

4. Curd - 2 Cups and Banana - 2 no's only will be provided; Seasonal Fruits (apart from Banana) will be served during dinner

5. *Fish Curry / Fish Fry / Mutton Briyani to be provided atleast once in a month



Associate Chief Warden
Associate Chief Warden
Ladies Hostel
VIT University, Vellore - 632 014

Chief Warden
Chief Warden
Ladies Hostel
Vellore Institute of Technology (VIT)
(Deemed to be University under section 3 of the UGC Act, 1956)
Vellore - 632 014, TN, India

Director
Director
Ladies Hostel
Vellore Institute of Technology (VIT)
(Deemed to be University under section 3 of the UGC Act, 1956)
Vellore - 632 014, TN, India

Report of VIT-Chennai Campus

PREAMBLE

Urbanization and population exploitation have an impact on food utilization. In developing countries, the capacity to produce food for the entire population is limited. Zero waste management of VIT promotes and develops sustainable and professional waste management system in campus through the mission by promoting resource efficiency over sustainable production and consumption. In addition, all kinds of research and projects have been accomplished for the dissemination of information.

POLICIES: FOOD AND NUTRITION SECURITY

Researchers are working on developing more sustainable food production methods and achieve its mission through promoting resource efficiency through sustainable production and consumption. Some clubs like health club provides awareness among all about physical and mental health, awareness about various health issues, its possible treatment and prevention, rendering social service in the form of visits to needy, trying to meet their needs, wastage of food etc., observing various health related days and to highlight its importance, conducting fun events which involve either mental or physical wellbeing, thus stating the importance of health. For eliminating hunger, VIT provided donations to government funds during various natural calamities and pandemic for meeting the essential purpose for the affected people.

SUSTAINABLE FOOD PRODUCTION

Sarva Shiksha Abhiyan (SSA), Scheme for Prevention of Alcoholism and Substance (Drugs) Abuse conducted various awareness programs, visited orphanage and old age home. Based on the Curriculum Ethics and Values, the students create consciousness through NSS programs on leading a healthy life, malnutrition, use of available land for producing our own food, risk factors of using tobacco and liquors. The Youth Red Cross club of VIT Chennai inspires, encourages and initiates the student members in all forms of humanitarian activities in order to minimize the human sufferings, alleviation and even prevention, thus contributing to create a more congenial climate for peace. VITeach is a student run social club at VIT Chennai. Students from different branches and batches come together to teach the children of a government school in nearby villages, Chennai. The Vellore Institute of Technology (VIT) contributed ₹1.25 crore to the Tamil Nadu Chief Minister's Public Relief Fund for COVID-19 relief work.

S. No.	Date	Quantity	Amount (Rs.)	Handed over to
1	7.4.2020	Rice -250 kg, Wheat flour-100 kg	15,500	Commissioner Office, Chennai Corporation
2	18.4.2020	100 bags of groceries	70,800	Rajiv Gandhi Nagar, Melakottaiyur
3	18.4.2020	200 bags groceries	100,000	Vandalur Taluk Office
4	21.4.2020	Rice -625 kg	22, 500	Tiruporur MLA Thiru Idhayavarman
5	9.5.2020	100 bags of groceries	38,000	Dr.Parasuraman, MS Swaminathan Foundation
6	28.03.2020	-	1.25 Crore	Chief Minister's Public Relief Fund (CMPRF)



Provisions being handed over to Corporation Chennai (Rice -250 kg, Wheat flour-100 kg)



NSS VIT distributed provisions to Rajiv Gandhi Nagar, Melakottaiyur, Kanchipuram



Provisions being handed over to Tahsildar, Chennai

NSS VIT distributed provisions to Rajiv Gandhi Nagar, Melakottaiyur, Kanchipuram



Provisions being handed over to Thiruporur MLA



Provisions being handed over to MS Swaminathan Foundation

VIT donates ₹1.25 crore to CMPRF

The Vellore Institute of Technology (VIT) on Saturday contributed ₹1.25 crore to the Tamil Nadu Chief Minister's Public Relief Fund. The demand draft for ₹1.25 crore was handed over to the Vellore District Collector A. Shanmuga Sundram on Saturday.

VIT founder and chancellor G. Viswanathan said the amount was one day salary donated by faculty and staff of Vellore Institute of Technology (Vellore and Chennai campuses) and the contribution made by the management of VIT. Mr. Viswanathan said that VIT would extend all necessary help to the government in its fight against COVID-19.

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3 GOOD HEALTH AND WELL-BEING



Ensure healthy lives and promote well-being for all at all ages

SDG-3

Annual Report 2019-20

Report of VIT-Vellore Campus

1. Research

Transforming life through excellence in education and research is the vision of Vellore Institute of Technology (VIT). According to the vision all the 17 Schools and 10 Centers were performing quality research. Among them, the School of Biosciences and Technology (<https://vit.ac.in/schools/sbst>), School of Advanced Sciences (<https://vit.ac.in/schools/sas>), School of Electronics Engineering (<https://vit.ac.in/schools/school-of-electronics-engineering>), CBST (<https://vit.ac.in/centers/cbst>), CBCMT (<https://vit.ac.in/centers/cbcmt>), CNBT (<https://vit.ac.in/centers/CNBT>) are extensively working on Human Health and Well-being.

Researchers in the institute are actively pursuing research in cancer biology, drug development, infectious diseases, drug delivery, pharmaceutical chemistry, bio-implants, health care devices, environmental toxicology, etc.

List of ongoing projects at VIT on good health and well-being

- Infectious disease diagnosis: Immunodiagnosis of malaria, tuberculosis, *Salmonella typhimurium* infections, Brucellosis, COVID-19
- Early diagnosis of cardiovascular disease
- Development of therapeutic proteins to treat obesity, cardiovascular diseases, autoimmune diseases such as RA, SLE, etc blood clotting disorder such as haemophilia A.
- Development of alternate pathways and tools to overcome antibiotic resistance
- Understanding the mechanism of diabetes, cardiovascular diseases, obesity, Alzheimer's disease and autoimmune diseases.
- Development of natural products to treat cancer (breast, colon, liver etc.), diabetes, cardiovascular diseases and obesity.
- Development of microfluidic platforms to detect important analytes of blood for clinical settings.
- Improvement of conventional metallic implants in order to increase their bioactivity and service period.
- Development of soft and hard biomaterials using biomimetic principles for treating tissue loss and organ loss conditions that often arise due to trauma or cancer resection.

- Development of engineered tissues, 3D printed tissues and in vitro cancer models for a thorough understanding of intercellular dynamics and supporting effective drug testing and discovery endeavours.
- Assessment of bio-toxicity of common and industrially relevant nano-materials.
- Development of nanomaterial based optical sensors for detections pollutants, food contaminants, and disease biomarkers.
- Biosensor development for health care and environmental applications including COVID-19 diagnostic development
- Molecular target therapy and photodynamic therapy against cancer and developing novel diagnostic molecules
- Non-invasive brain delivery of neurotherapeutics for theranostic applications against Alzheimer disease
- Developing unique porous metal implants for both long bone defects as well as for the replacement of damaged portions of the maxillofacial region
- Design of implantable antennas for RF-linked Implantable Medical Devices.
- Development of Wearables for healthcare monitoring with Medical Standards
- Development of flexible polymeric cantilever fabrication for biosensor application
- A Flexible and Wearable Smart Electrode Bandage for accelerated Wound Healing through Electrical Stimulation

2. Collaboration and Health services

In the present-day world scenario, research collaboration with other institutes and industrial establishments within India and other countries and sharing expertise and knowledge is inevitable to achieve tangible outcomes in healthcare-related research. VIT is actively partnering with different institutes in India and abroad (<https://vit.ac.in/internationalrelations/partneruniversities>), such as Christian Medical College, Vellore, Chettinad Hospital, Chennai, Ramachandra Hospital, Porur, Mohan Diabetes Center, Chennai, Aravind Eye Hospital, Pondicherry, Ricovr Healthcare Inc, USA, Kaohsiung Medical University, Taiwan.

Health Services

Primary health centre (<https://vit.ac.in/vit-care>) in VIT, Vellore Campus, provides round the clock primary health care services to all the students, staff and their dependents, faculty and their dependents and other employees working/residing at VIT Vellore Campus.

Finance for health care

To ensure healthy lives and promote well-being for all employees, following health care schemes are in place.

- Group Insurance Scheme for all VITians
- Mediclaim Insurance / Accident Policy for Employees and Dependents

3. Health Outreach program

Through its different entities such as student clubs (<https://vit.ac.in/campus/Clubs/Health%20&%20Wellness>), National Service Scheme (NSS), Youth Red Cross (YRC), and various other programmes, VIT is reaching out to the community and helps them in various ways. For example, Juvenile Care organized Cancer Care Home Visit of students to help out cancer patients; LEO Club arranged a diabetes camp; YRC organized voluntary blood donation camp; Uddeshya Club in collaboration with Health Club conducted organ donation awareness rally; Yuva Club – Mental health awareness and personal wellbeing seminar; NSS organized different programmes - Road safety, air pollution awareness rally and seminar, rural sanitation survey at Keelaikottaiyur.

The institute also aligned itself with Government of India initiatives such as Fit India Programme and Poshan Abhiyaan (a programme to improve nutritional outcome among the people). Some of the other student clubs which are taking part in health care related programmes inside and outside of the campus are:

- Sports club
- Smile over Stress
- Nutrition club
- Cycling club
- Fitness N beyond
- Yoga Club
- Ayuda – ola and young children
- Anokha – Unprivileged kids

Blood Donation Camp by YRC & Rotract Club, Aug 6th, 2019



(<https://www.facebook.com/vituniverJsity/posts/blood-donation-camp-was-organised-by-the-youth-red-cross-society-and-the-rottract/10157359043554787/>)

4. Shared Sports Facilities

VIT as one of the premier academic institutions in India and it has many state of the art sports facilities such as tennis courts, basketball courts, volley ball courts, table tennis courts, badminton courts, gymnasiums, cricket pitches, outdoor



stadiums and an Olympic standard swimming pool. Apart from using these facilities to train our own students in sports and games, we invite local school students to train in these facilities during their summer holidays. The coaches and grounds men of the institute facilitate their training in various sports such as tennis, basketball, volley ball, table tennis, badminton, athletics, cricket, throwball, gymnasium, swimming etc. (<https://vit.ac.in/campuslife/sports>).

In addition VIT conducts various sports competition on important national days and memorial days to the school students and college students using the facility available in the campus.

5. Free Sexual health care for students

The institute has a well-maintained primary health center comprised of male and female doctors and support staff who will be available 24/7 for consultation for any ailments, including sexual health-related. Apart from this, the counselling division (<https://vit.ac.in/campus-category/Counselling-Division>) under the department of student welfare consists of many counsellors who can be contacted in person or by other means at any time to get counselling including sexual-related awareness and confidentiality of the discussions will be maintained as per the university norms.

6. Mental health support

Knowing the importance of mental health of students, faculty and staff, the institute has established a counselling division (<https://vit.ac.in/campus-category/Counselling-Division>) that comprises highly qualified psychiatrists, psychologists and counsellors. The free service of these experts is made available to all the VITians. The counsellors offer a safe forum for the people who are counselled and the matters shared with them will be kept confidential.

7. Smoke-free policy

VIT is a completely smoke-free campus. It has a policy on the complete prohibition of the use of tobacco products, and the sale and consumption of these products are banned inside the campus.



Hoardings and display boards regarding this and the ill effects of smoking are displayed in many prominent locations to create awareness among the students, faculty and staff.

VIT NCC cadets organised a cycle rally to create awareness to the public regarding the ill effects of smoking, alcohol and drugs.

Report of VIT-Chennai Campus

PREAMBLE

The following is a comprehensive report on 'SDG 3 – Good Health and Well-Being' for Vellore Institute of Technology (VIT) Chennai. SDG 3 deals with ensuring healthy lives and promoting well-being of people of all age groups to build prosperous societies. VIT Chennai promulgates a very high standard work culture that encompasses a healthy environment (physical and mental health) and social well-being.

Policies/Major decisions regarding SDG 3

The policies or major decisions regarding SDG 3 are elucidated as they follow

1. Health Centre



Health Centre Block & Ambulance Facility

Chettinad Hospital & Research Institute (CHRI), a constituent college of Chettinad Academy of Research and Education (CARE), a Deemed to be University Under Section 3 of the UGC Act 1956 at Kelambakkam, Chennai through its primary health centre at VIT Chennai provides round the clock primary (basic) health care services to all the students, staff and their dependents, faculty and their dependents and other employees working/residing at VIT Chennai. The Health Centre is located near the Academic Block-II (<https://chennai.vit.ac.in/campus/healthcentre/>). The primary health centre includes:

- Observation beds
- Consultation room

- Doctors and Staff Nurses
- Housekeeping facilities
- 2 Ambulances
- Emergency Help Line Number: 044-39931100

The number of students graduated in core health sector during 2019-2020 is 5. The students are placed in companies like GE Health and Healthplix.

2. Students' Counselling – Mental health support

A sophisticated unit comprising two counsellors who are specialized in Psychology are available on campus and online for providing necessary mental support to students, faculty, and staff members. Counsellors are trained professionals who can respond to your concerns in an objective and non-judgmental manner. The counselling unit provides a safe forum to speak freely as what is shared will be kept private and confidential.





We, the Student Counselors wish to reach out to our students.

This gentle reminder as we have done in the past.

We would like to also tell the students that:
All such conversations- (over the phone as well as correspondence over mail) will be kept strictly confidential as we have always stood by our ethics.

If any of the students finds it uncomfortable to speak and instead wishes to mail us, they could do so by writing to any one of the Counselors
And most importantly, we would like to emphasize the fact that reaching out for help is an acceptable and an absolutely essential part of getting a whole new perspective to the issue at hand.

Our students would have completed their CAT 1 test schedule and will now be ready for the regular online classes to begin.

At this juncture, I would like them to reflect on the statement below:

A great accomplishment shouldn't be the end of the road,
just the starting point for the next step forward.

When/if the going forward gets difficult, we the Counsellors-



Dr. Maya R (Mobile 9444333030)
maya.r@vit.ac.in



Ms. Bhuvaneshwari (Mobile 9791142617)
bhuvaneshwari.s@vit.ac.in

Students' Counsellors

3. Fitness and Recreation – Yoga & Atrophic (Mental Health)

VIT organizes Yoga camps to decrease the entropy and confusion in students where mind, body and soul culminate into positive and perennial happiness and peace (<https://chennai.vit.ac.in/campus/sports/fitness/>).

3.1 Gymnasium

The Institute's newest facilities for students include two gymnasia, one exclusively for men, and one exclusively for women. A central multi-facility piece of equipment enables several enthusiasts to work out at the same time. Girl students have a separate 4-station multi-gym. Both gyms are spacious and well equipped with modern facilities to enable comfortable and safe workouts and practices.



Photograph of a Gymnasium at VIT Chennai

4. Prevention of Harassments

If any woman faculty, staff, or girl student has any grievance, including any kind of harassment, the same can be brought to the notice of the Convenor or any of the Committee Members of Internal Complaints Committee for necessary action and redressal.

Any physical/mental harassment towards fellow students including ragging, quarrelling, using abusive language and violent behaviour is strictly prohibited. Smoking is strictly prohibited inside the entire campus including Hostel premises. Substance abuse is strictly prohibited.

5. Medical Insurance

The Management is providing mediclaim coverage for the employees and their family for a sum of Rs. 2 Lakhs, and the premium for 2 lakhs is borne by VIT Chennai.

6. Smoking and Alcohol Free Campus

Smoking and consumption of alcohol is strictly prohibited inside the campus. Students are encouraged to participate in the Anti-smoking Campaign. Selling of smoking items and alcohol are completely prohibited not only inside the campus but also around 200 m radius outside the campus as well. Substance abuse is viewed seriously, and the person involved in these acts will be expelled from the institute.

Academic details regarding SDG 3

The following courses are offered as part of B.Tech programs at Vellore Institute of Technology Chennai.

- HUM1021- Ethics and Values
- HUM1022 - Psychology in Everyday Life
- HUM1045 - Introduction to Psychology

Major events organised

1. Activities

Academic Staff College (ASC), VIT Chennai has conducted the following programs for good health and well-being of all.

Table 1 – Programs conducted by the Academic Staff College

S.No.	Details of the Program	From	To	No. of Days
1	Investor Awareness Program by Mr. Dinesan Kallidil, Regional Head, South Region, Emkay Global Financial Services Limited.	15-11-2019	15-11-2019	1
2	Research Methodology for Faculty Members and Research Scholars , Dr. T. Subbulakshmi, Professor, SCOPE and Dr. Venkatesh, Professor, VITBS, Vellore Institute of Technology Chennai.	23-04-2019	24-04-2019	2
3	From “ME” to “WE” by Mr. Joshy Thomas, Sr. Manager, Hyundai Motors, Sriperumbudur.	08-03-2019	08-03-2019	1

2. Lectures organized relevant to SDG 3

Guest lecture on **‘Social issues among young adults’** by **Ms. S. X. Hdwick Rosy**, Retired, CRRT consultant, Community Development Wing, Tamil Nadu Slum Clearance Board, Chennai for students of I year M.Tech, Software Engineering on 01-11-2019.

Seminar on **‘Social Inclusion’** by **Social Activists** namely **Ms. Jeeva Amma**, **Mr. Sharankarthick Raja**, and **Mr. Malini Jeevarathinam** on 09-09-2019.



Digital Poster of the Seminar, ‘Social Inclusion’

‘Knowledge and Attitude on Sexual health and Sexually Transmitted Diseases: Student Perspective’ enlightened students on various topics related to sexual health and sexually transmitted disease. This session created awareness in understanding their own sexuality and sexual health.



Photograph taken during Knowledge and Attitude on Sexual health and Sexually Transmitted Diseases: Student Perspective

School of Mechanical Engineering offered a Guest lecture on '**Corporate Harassment**' by Mr. Arun Raj, Plant HR Manager, Sri City at Mondelēz International, Chennai on 06-09-2019. Mr. Arun is a seasoned HR professional with more than 9 years of diverse HR experience. He shared his professional and personal experiences regarding Corporate Harassment to the students, and discussed the solutions to some of the common problems that could possibly occur to the students, when they are employed in the corporate sectors.



Photographs taken during lecture on 'Corporate Harassment'

IEEE Signal Processing Society (SPS), Madras Chapter and School of Electronics Engineering (SENSE), Vellore institute of Technology Chennai organized an IEEE SPS Distinguished Lecture on **Neural Prostheses for Amputees and Patients with Spinal Cord Injuries** by **Dr. V John Mathews**, Professor, School of Electrical Engineering and Computer Science, Oregon State University on 22-10-2019. This lecture focused on the recent technological innovations such as functional neuro-muscular stimulation (FNS) which offers considerable benefits to paralyzed individuals. FNS can produce movement in paralyzed muscles by the application of electrical stimuli to the nerves innervating the muscles. The first part of this talk describes how smooth muscle movements can be evoked using electrical stimulation via electrode arrays inserted into peripheral nerves. Animal experiments demonstrating the feasibility of the method will be described. The second part of this talk was on efforts to decode human motor intent from neural signals. Machine learning algorithms for accomplishing this objective are presented. The

ed information can then be used to evoke desired movements of paralyzed muscles or to control prosthetic devices in patients with limb loss. Results of experiments involving human amputee subjects are described and discussed.

School of Electrical Engineering (SELECT) offered a lecture on 'Drug Addiction & Prevention' by Ms.T.Gayathri, Psychologist, V- Empower, Egmore, Chennai on 15-10-2019. Ms. T. Gayathri, Psychologist and counsellor from Madras University gave the students valuable education on the topic 'drug addiction and prevention'. Being a psychologist, she is well experienced about these things and was the best person to guide the students on this topic. Various points were covered in her lecture starting with the various kinds of prevailing drugs to the hazards and difficulties caused by them. Students were told about the symptoms one might see in a drug addict. Various preventive methods discussed by her in order to help out the students affected, to come out of the situation. The ultimate message that was conveyed to the students was to stay away from such kinds of drugs and also to help others to come out of it. School of Civil Engineering (SCE) organized a seminar on 'HIV / AIDS & Role of Information Technology on Environment and Human Health' by Dr. Mohamed Sajeed, Assistant Professor in Department of Orthopaedics, Shri Sathya Sai Hospital and Research Institute.

3. Extension activities relevant to SDG 3

The following are some of the extension activities regarding SDG 3.

3.1 Number of extension and outreach programs conducted in collaboration with industry, community and Non- Government Organisations

Table 2 – Programs organized in collaboration with industry, community and Non-Government Organisations

S.No.	Name of the activity	Organising unit/ agency/ collaborating agency	Name of the Scheme	Date
1	Fitness Challenge -2020	Indian Coast Guard Ministry of Defence, Government of India.	Flagship event of Coast Guard Week Celebrations	08-12-2019
2	Blood Donation Camp	Vellore Institute of Technology Chennai.	Health Club & Rotaract Club	06-12-2019

Publications

1. Latha, R., Vetrivelan, P., "Wireless body area network (WBAN)-based telemedicine for emergency care", Sensors (Switzerland), pp.1-18, April 2020.
2. Aswathy, M.A. and Jagannath, M., Performance analysis of segmentation algorithms for the detection of breast cancer, Procedia Computer Science, Vol. 167, pp. 666-676, April 2020.
3. M. Suchetha and Navaneeth Bhaskar, "Analysis of salivary components as non-invasive biomarkers for monitoring chronic kidney disease", International Journal of Medical Engineering and Informatics, Vol.12, Issue 2, pp.95-107, April 2020.
4. Akilan B, MuhilanS, and Ramesh R, "Stroke Prediction Using Artificial Neural Network and IoT Based Wearable Device", International Journal of Advanced Science and Technology, Vol.29, Issue 5, pp.9999-10011, May 2020.
5. Rajeswari J and Jagannath M, "Screening of obstructive sleep apnea in an urban population in south India", Obesity Medicine, Vol.18, Issue 1, pp. 2451-8476, June 2020.
6. D. Bhagya and Suchetha Manikandan, "Speed of Sound-Based Capnographic Sensor With Second-Generation CNN for Automated Classification of Cardiorespiratory Abnormalities", IEEE Sensors Journal, Vol.19, Issue 19, pp.8887-8894, October 2019.

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Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

SDG-4

Annual Report 2019-20

Report of VIT-Vellore Campus

The vision of the Vellore Institute of Technology (VIT) is Transforming life through excellence in education and research. The Mission of the University are as follows: Excel in education, grounded in ethics and critical thinking, for improvement of life. An eco-system to extend knowledge and solve critical problems through happy, accountable, caring workforce and students. Active collaboration with national and international industries & universities for productivity and economic development. Service to the region and world through knowledge and compassion. VIT's contributions to provide Quality Education in-line with SDG04 are given below.

Ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

VIT Group of Institutions offer [64 Undergraduate](#), [35 Postgraduate](#), 16 Integrated Programmes, [2 Research programmes](#) and 2 M.Tech Industrial Programmes. In addition to full-time Ph.D Degrees in Engineering and Management Disciplines, Ph.D. in Science and Languages and Integrated Ph.D. programmes in



engineering disciplines. Research Centers, integral of respective schools encourage inter-departmental collaborative participation of students in exciting research projects. A student admitted should register in one of the schools depending on the degree/ programme selected to pursue. 28421 male and female students were admitted during the academic year 2019-20 (<https://vit.ac.in/files/AQAR2019-20/index.html>). Equal access to male and female candidates is provided in all programs. Male to female percentage is found to be **74% : 26%** in VIT-Vellore Institute of Technology.

VIT-Support the Advancement of Rural Students (STARS)

"A Child should never be deprived of quality education owing to poverty. This forceful thought in my mind became the seed that gave birth to the innovative STARS Scheme". – Dr.G.Viswanathan, Chancellor, VIT- Vellore

STARS scheme implemented in VIT enhances the rural students' quality of life. For children in rural villages of Tamil Nadu who grow up in difficult circumstances, VIT has become more than a place of academic instruction. It is a home away from home where they feel safe and happy, surrounded by caring Professors / Proctors who not only give them the education and skills to face the future, but also become their emotional pillar.

Since 2008 rural students of Tamil Nadu have been admitted through STARS scheme. Each student's story is an inspiring story of change. Daily wage labourers and domestic helpers find it difficult to educate their children due to their unstable income and difficult living conditions. Their children who are academically brilliant, continue to live their lives in poverty like their families or settle down to basic jobs which satisfies neither their basic needs or their intellectual hunger. While many people in our society ignore these hard facts and go ahead with their lives, VIT Stands tall as it takes these children in its fold through the STARS scheme. VIT STARS Scheme helps these students from under privileged background to achieve what they deserve by giving them **100% fee waiver for their academic and hostel facilities including basic medical expenses.**

The transition to higher education, which is particularly difficult and expensive for rural youth, requires support. To meet this concept in reality, VIT launched this social innovation scheme. Based on their 12th std. marks, one boy and a girl from rural Government



Higher Secondary schools in the different districts of Tamil Nadu are chosen under this STARS scheme. Most of the selected meritorious students are first generation graduates from the below poverty line families. 68 students are admitted during the academic year 2019-20, and 56 of them are first generation graduates in their families.

VIT stands proud in giving high-quality education to the rural students of Tamil Nadu and provide the doorway for a good career, better social status and most importantly, fine tune them to be responsible citizens. (<https://vit.ac.in/stars-support-advancement-rural-students-0>)

In a function marked to felicitate headmasters of 69 Government and aided schools in Vellore district, which secured 100 percent pass percentage in class 10 and 12 Government exams, Dr. G. Viswanathan, Chancellor of VIT presented the headmasters with a citation and cash award of INR 5,000 during a function. VIT also provided tables and chairs worth INR 22,00,000-00 free of cost to Government schools in Vellore district.

Substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

The Career Development Centre of VIT plays an integral role in creating the illustrious placement record of VIT. It ensures smooth functioning of the placement activities in the campus. The centre further facilitates training activities of the students and makes sure they get placed in the best of both national and international companies. 4914 students are placed in 739 companies with an average CTC of INR 7,13,000-00 (<https://vit.ac.in/career-development-centre>).

VIT Technology Business Incubator (VIT TBI) helps students to start technology start-up businesses with all the necessary resources / support that the start-up needs to evolve and grow as a mature business. VIT TBI was started with initial grant support from the Department of Science and Technology (DST), Ministry of S&T, Govt. of India has become a multi-stakeholder organisation.



VITTBI has active programs supported by DST, BIRAC (BioNEST) and MeitY (TIDE 2.0) incubation centre. VITTBI supports Innovative Technology start-ups with access to knowledge, funding, infrastructure, mentoring and network (<https://vittbi.com/index.php>). VITBI organized a 3-day Entrepreneurship



Awareness Camp between 11th and 13th September 2019. About 120 students participated and benefitted from the sessions delivered by entrepreneurs and industry experts. The following table shows some of the training activities conducted by VITTBI during the year 2019-20.

Sl. No.	Name of the Resource Person	Topic	Event Date
1.	Mr. Badrinath Speciale Invest	Investment offering from Speciale Invest that invest in AI, ML driven SaaS Enterprises, Bio-Sciences, Cyber-security, EV & Autonomous Vehicles, Health-tech, IOT, Med-tech and Space-tech	25-6-2019
2.	Dr. Suresh Nair Founder Design Alpha	Design for Manufacturing	8-7-2019
3.	Mr. Rakesh SINE, IIT Bombay	BIRAC Biotechnology Ignition Grant	12-7-2019
4.	Dr. Thillai Rajan IIT Madras	The venture on YNOS to support entrepreneurs: A perfect tailor-made solution for early stage entrepreneurs to multiply the chances of fund raising.	15-9-2019
5.	Ms. Salma Moosa Co-Founder of Start-ups Club	The next Unicorn start-up could be you	26-9-2019
6.	Mr. Venkatesan BioNEST Centre	PCB Designing Steps and Manufacturing Process	17-6-2020

VITTBI conducts Entrepreneurship Awareness Camps. The Entrepreneurship Awareness Camp is a 3-day non-residential programme covering the nuances of entrepreneurship. The sessions are designed in line with the guidelines provided by the supporting organizations. The sessions are interspersed with lectures, interactions, panel discussions and experiential learning workshops. About 75 degree and diploma students from different disciplines of Engineering, Science and Management participate in these camps. These camps are open to students within VIT University and other institutes in the region.

VIT encouraged the following 3 graduating students of 2019 batch by giving a grant of INR 5,00,000-00 for accelerating their venture creation activities.

1. Anubahv Mishra (FindMind Analytics Pvt. Ltd.)
2. Charmi Pabari (Punar Rehab Solutions Pvt. Ltd.)
3. Pranav Kumar (Illuminify Technologies Pvt. Ltd.)



<https://vittbi.com/docs/newsletters/VIT-TBI-Oct-2019-Newsletter.pdf>

Ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development



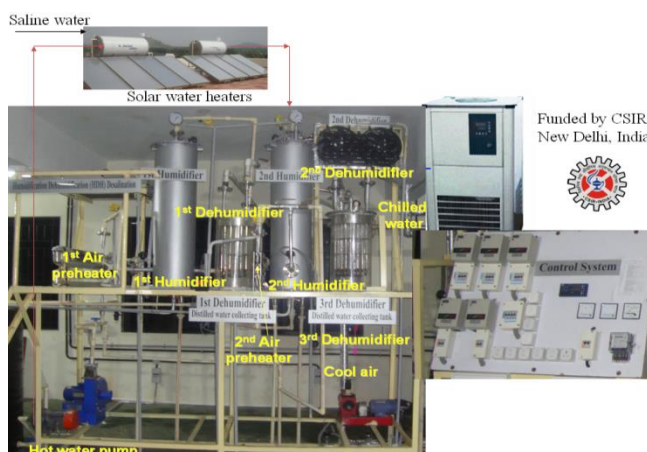
VIT adopts eco-friendly and green initiatives to promote sustainable practices in its lush and verdant campus. A few remarkable efforts include energy conservation, water conservation and waste water recycling. The in-house transportation policy and the extensive research programmes are other sustainable initiatives to uphold green values.

Having adaptive thinking and adaptability in relation to environmental context and sustainable development is one of the Program outcomes of VIT. Students are trained to work for sustainable development. One of the Schools of VIT has a vision to be a leader in imparting world class education leading to nurturing of scientists and technologists of highest caliber who would engage in sustainable development of the globe. The following subjects are taught to students for imparting knowledge and skills needed to promote sustainable development.

Sl. No.	Subject Code	Name of the subject
1.	MGT1006	Environmental and Sustainability Assessment
2.	CHY1002	Environmental Sciences
3.	MEE3999	Technical Answers for Real World Problems (TARP)
4.	MEE1011	Renewable Energy sources
5.	MEE2052	Sustainable Energy
6.	MGT1049	Sustainable Business Model

CO₂ Research and Green Technologies Centre of VIT is a unique advanced research laboratory, to carry out research on carbon capturing and utilization (CCU) with a focus on green energy technologies development. The laboratory has been set up keeping in view the growing significance of Carbon Capturing and Storage (CCS) in recent times. The main objectives of the centre are:

- To develop technologies for CCU
- To develop sustainable and renewable green energy technologies
- To work on waste heat recovery, energy, water conservation and waste management.



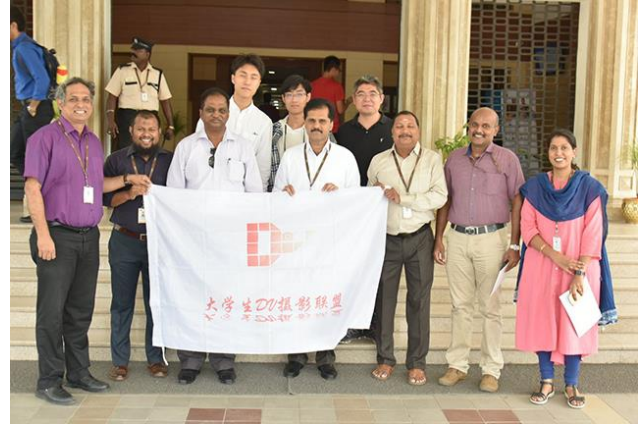
In order to convert academic research into useful technology, the centre has undertaken a number of technically viable projects that include both bench scale and pilot scale projects. Technical solutions are developed for several teething problems at the centre. New alternates and modifications are implemented towards continuous operation.

Students, representing various cultures were part of the parade to showcase the country's diversity during cultural events conducted by VIT. About 15 to 20 different cultures are showcased. Students represented various States as the campus itself has students from every State of India. Students dress up in the respective State's traditional attire, showcasing the culture's uniqueness by way of dance and music and also through martial arts. Students are trained to appreciate the culture of students from other states or countries which promote the culture of peace and contribute to sustainable development.



With over [350+ international MoUs](#) across the globe, Vellore Institute of Technology has a strong international presence abroad. The International Relations office of Vellore Institute of Technology with institutes and universities all over the world helps the students to explore diverse environments and various cultures across the world. International Relations team help the institute to connect students and faculty with peers many foreign institutions abroad. The international partner universities are spread in various countries throughout the world – USA, Canada, UK, Australia, Asia-Pacific, Europe, Middle East, Africa, and South America.

VIT also offers an [International Transfer Program \(ITP\)](#) where the students can opt for studying at a partner university after completing a minimum of 2 (two) years of their bachelor's degree in VIT. The students can opt for International Transfer Program in partner universities in the USA, UK, Belgium, Sweden or Australia. This international program is offered to Engineering streams. The International Relations of VIT also brings in over 175+ faculty from foreign universities to take up teaching and research assignments at VIT. International programs don't end here. There are summer and winter internships available all over the globe for the students to earn a fellowship, valuable work and study experience.



Substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

A Five Day International Training Programme on Community Based Disaster Risk Reduction (CBDRR)- Competency Programme for Universiti Tenaga Nasional (UNITEN), Malaysia and Tenaga Nasional Berhad, Malaysia, from April 22nd to 26th 2019 organised by CDMM, Vellore Institute of Technology, Vellore 632014, India

VIT - Vellore and Shandong University of Technology (SDUT), Zibo, China, jointly organized 2nd International Summer school on "International summer school on Internet of things and Data Analytics" during 1-13 August 2019.

26 students and a faculty member from SDUT have participated in this program. This summer school combines lectures and hands-on exercises with the use of open-source software tools available on IoT techniques with the small electronic device embedded in objects, machines and things that connect to wireless networks and sends and receives data. They also have got an exposure to techniques and processes of data analytics automated into mechanical processes and algorithms that work over raw data for human consumption.

Report of VIT-Chennai Campus

PREAMBLE

Vellore Institute of Technology (VIT), for the past 30 years has made a mark in the field of higher education in India imparting quality education in multi-cultural ambience, intertwined with extensive application oriented research. VIT was established with the aim to provide quality higher education on par with international standards. It persistently seeks and adopts innovative methods to improve the quality of higher education on a consistent basis. VIT strives:

- a) To maximise industrial connectivity and to create centres of excellence in niche areas of research
- b) To enrich technological and managerial human capital nurtured in a multicultural ambience
- c) To provide a common platform for the agglomeration of ideas of personnel for various walks of life for learning enrichment

Policies / Major decisions taken regarding SDG-4

STARS –Scheme for the Advancement of Rural Students

STARS- It is a scheme for supporting and enhancing the quality of life of rural students undertaken by the great philanthropist and Chancellor of VIT, Dr G Viswanathan in the year 2008. VIT-STARS scheme helps the students from under privileged background to achieve what they deserve by availing 100% fee waiver for their academic and hostel facilities including medical expenses.

Academic Details pertaining to the SDG (Launch of program, inclusion of course, modifications in syllabus etc..)

The B. Tech, M. Tech, and PhD research programmes carried by the various schools in the campus lay enormous importance on quality education. In a quest to achieve that, practical skills are given much priority. The majority of the subjects are linked with project based learning (PBL) which bridges theory and laboratory practical including a wide variety of technology and their applications.

Major events organised:

- a) Some of the events like conferences, workshops and seminars organised by various schools at VIT Chennai towards imparting quality education during the academic year 2019-20 are listed below:

S. No	Name of the Event	Date	No of Participants
1.	Workshop on Outcome Based Education	31.01.2020	101
2.	Seminar on Innovative Methods in Teaching by ASC	19.02.2020- 19.03.2020	60
3.	Seminar on Design Thinking: Introduction and Application in Education by ASC	04.03.2020	65
4.	FDP on Technology for Education	11.03.2020 - 13.03.2020	45
5.	Outcome Based Education Workshop by ASC	14.03.2020 – 15.03.2020	400

Workshop on Outcome Based Education:

A workshop on outcome based education was conducted by the office of ranking and accreditation with the following objectives:

1. The teacher needs to fix the outcome, the parameters on which the lecture should be planned.
2. Importance of program specific outcome (PSO), program outcome (PO), and course outcome (CO) should be known to the faculty members and students as well.
3. Faculty members should strive to develop learning resources like video files, audio files, and open source software.
4. Faculty members should work towards sustained innovation and quality education.



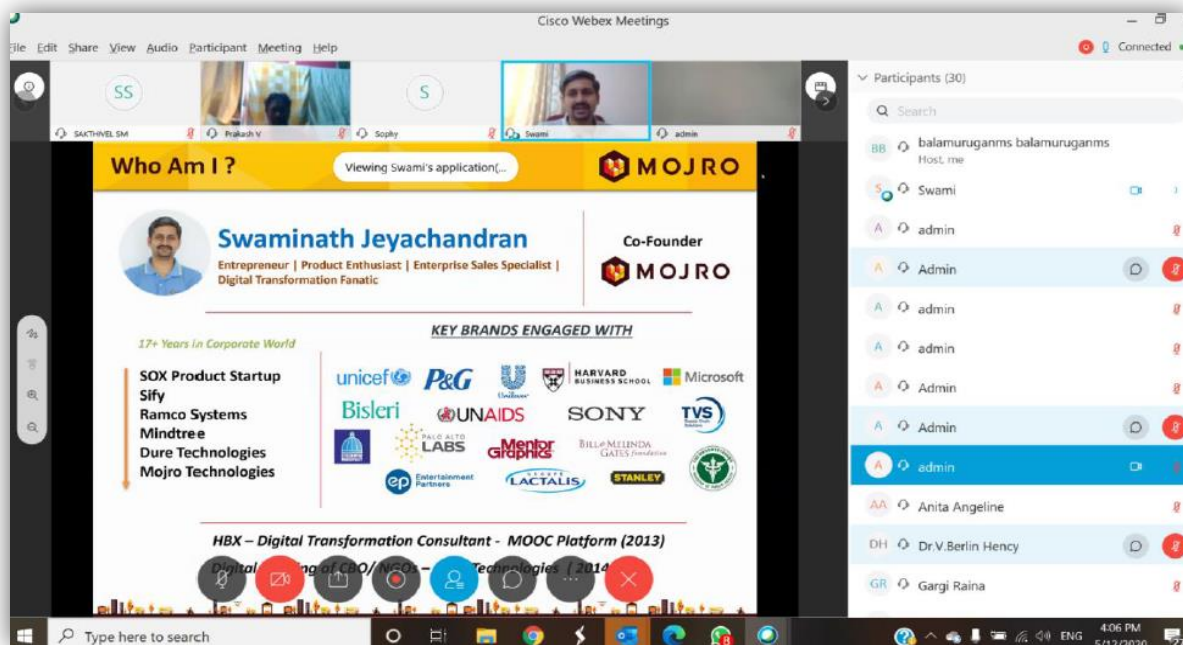
Dr. A. Brintha Therese, Deputy Director, Ranking and Accreditation felicitating the speakers



Lecture by resource person on Outcome Based Education (OBE)

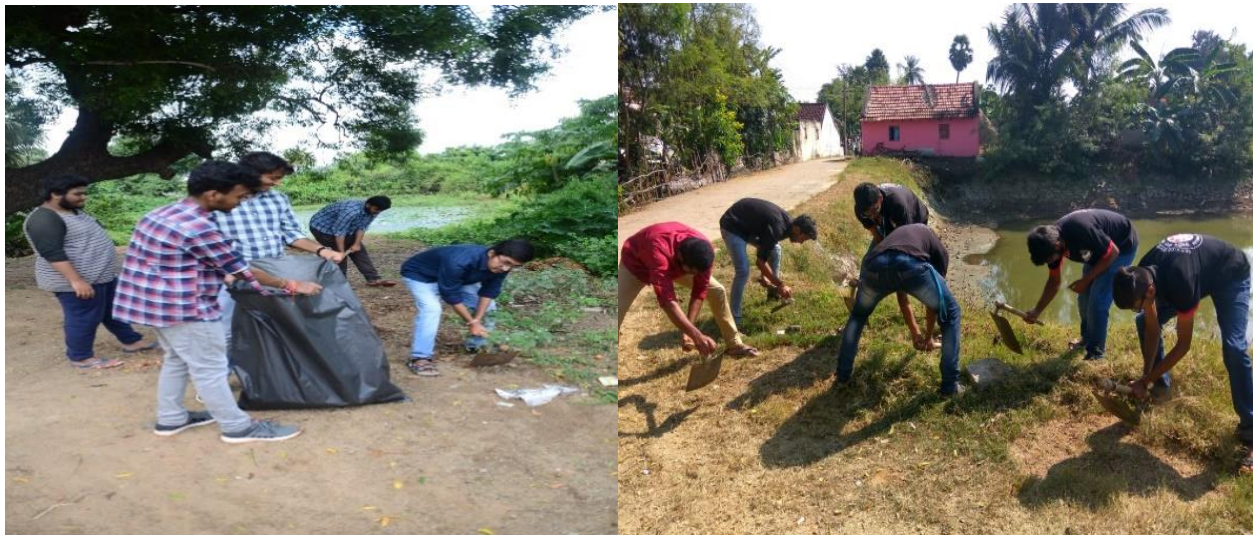
Workshop on MOOC Preparation

A workshop on MOOC preparation rendered the participants a way to explore the usage of online courses for learning, teaching, and professional development and also provided a gateway to build their capability to plan, design, and implement online courses that are in tune with international standards.



Water Management Educational Opportunities

It provides educational opportunities for local communities to learn about good water management. This program was conducted by NSS volunteers of VIT, Chennai. This awareness program on water conservation was conducted for the villagers around VIT Chennai on 15/10/2019. They also extended their services to clean plastic and other toxic materials in the village areas.



Volunteers of NSS cleaning the **water bodies of plastic and other toxic materials** from Kayar Village near Thiruporur with the support from VIT Management



School of Civil Engineering along with Estate office organized free training program for VIT Chennai construction workers on **“Water conservation in construction site”**

National Level Workshop

A national level workshop was conducted on “Total Organic Carbon Analysis of Solid and Liquid Samples” in association with M/s Swan Environmental Pvt Ltd, Hyderabad on 28th February, 2020 at School of Civil Engineering, Vellore Institute of Technology, Chennai to educate local, regional, national and international communities about clean water.

Thus VIT strongly inculcate quality education to students in all aspects ranging from theoretical knowledge to all practical skills and deployment of their technical skills to real world issues.



Achieve gender equality and empower all women and girls

SDG-5

Annual Report 2019-20

Report of VIT-Vell



VIT is renowned for its **no discrimination policies** especially when it comes to students admissions, faculty and staff recruitments and is a safe haven for career development of every individual youth and women. Women occupying posts of Deans, Directors, Professors and Staffs in Schools and Centres and their contribution to academics and research can be observed through the home website (vit.ac.in). Over 36,000 students, with nearly one-third of them women are being educated at VIT.



Signing of MoU between **Vellore Institute of Technology (VIT)** and **Organization for Rare Diseases (ORDI)** on **14th March, 2020**

Support the Advancement of Rural Students Scheme (**STARS**: <https://vit.ac.in/stars-support-advancement-rural-students-0>) aims at enhancing the rural students' quality of life. A rural Government Higher Secondary School graduated **male and a female student** who are academically brilliant and financially disadvantaged are selected from varied districts of Tamil Nadu and sponsored under the STARS scheme with 100% fee waiver for their academic and hostel facilities inclusive of basic medical expenses.

Universal Higher Education Trust (**UHET**) (<https://www.uhetindia.org/>) promoted by VIT aims towards higher education of underprivileged students through financial assistance, career guidance, advocacy, networking, educational outreach and skill development. More than **4500 girl students** have benefitted from the activities of the trust and they also focus on first generation graduation. Centre for Sustainable Rural Development & Research Studies (**CSRD & RS**: <https://vit.ac.in/about/community-outreach>) works towards improving the quality of life of

people and implements sustainable practices to improve their economic well-being through skill development and education leading to empowerment of women and youth.



Events like **International Women's day** and gender sensitization programs are conducted every year. Gender Equity programs organized by the institution during the year 2019-20 include Debate on Women's Equality, Fact or Fiction, Women on wings, Women equality day, Women Rules, Eureka-Rural-women day, Strategies for upliftment of rural women, Women on Wings 2.0, Seminar on women's health and many more.

Women Achiever Awards for Sponsored Research Excellence: 2019-20



Welfare Measures

Students are future leaders and need to be provided with opportunities to grow and express their thoughts freely. To make sure that every child is looked after, each faculty as a **Proctor** mentors around 20 students. Details on periodical newsletters, clubs, chapters and events can be glimpsed through our website (<https://vit.ac.in/campuslife/studentwelfare>).

The primary aim of the Department of the Student Welfare is to make every student in VIT stay safe and we work hard towards this goal by joining hands with the **Counselling Division**. VIT offers confidential and professional one to one counselling and psychological support for its Students, Staff and Members of Faculty through male and female counselors. Grievances, if any, can be brought to the notice of General Grievance Redressal Committee for necessary action and redressal. Committee for **prevention of discrimination and grievance redressal, anti-ragging, institutional student grievance redressal and internal complaints** are in place. VIT maintains a **ragging free** campus (<https://vit.ac.in/anti-ragging-committee>).

First aid centres at hostels, and a **Health centre** (<https://vit.ac.in/campuslife/healthservices>) inside the campus functions 24x7 for the welfare of all VIT members, with the availability of **lady doctor**. **Extended learning** facility (<https://vit.ac.in/capability-enhancement-schemes>) for students at VIT helps the students to prepare for higher studies in India and abroad. Courses offered include GATE, GRE, GMAT, CAT, IAS, UPSC, IELTS and TOFEL.

Students are encouraged to go to the **library** till 12 midnight to strengthen their academics. Shuttle bus services are made available once in 30 mins from the ladies hostel gates to the library to facilitate movement. Students can avail the **early and late hour safe transport escort facility** until the railway station and bus stand to ensure safe travel during late hours. A **day care centre** to cater to the needs of young kids of faculty and staff members is in place. Male guards, female guards, CCTV surveillance, biometric and turn style devices at gates ensure the **safety and security** of all inside the campus 24x7.

VIT provides state of the art facilities with many play grounds, stadium, indoor courts as well as a number of centres for **physical education & sporting** activities that help students stay as fit as a fiddle and to develop a spirit of sportsmanship. In order to encourage the students in sports activities the Department of Physical Education conducts Intramural tournament in various sports and games for Men and Women separately (<https://vit.ac.in/campuslife/sports>). It conducts selection trials to raise University teams in

various disciplines for Inter University and other tournaments and offers scholarships and monetary awards.

Exclusive **placement drives** for female students by inviting companies like IBM, Capgemini, Vestas-Preference, CGI-Thought works, Amazon, Cisco, Ingersoll Rand, Saint-Gobain and Hero Motors are organised.

Hostels at VIT

VIT hostels (<https://vit.ac.in/campuslife/hostels>) stand by its caption “**Home away from Home**” and facilitate a comfortable, safe, inclusive and secure living. The environment at hostel provides opportunities to students to form lasting friendships and ease the transition from home to the Institute. Living on campus provides students with opportunities to connect with a diverse population of people, develop stronger interpersonal and communication skills, engage in campus leadership, organizations, activities and establish relationships. Hostel administrative team is always available to support the students from different backgrounds.

Students enter VIT with loads of dreams and promises towards their academic career to fulfil. Hostels play a significant role in acclimatizing freshers to an entirely new environment as they learn to live away from parents, make new friends, expand their horizon of activities and learn by experience to take self-decisions. The hostel infrastructure and aesthetic environment serves as a breeding ground for students to focus on their academics, showcase their creative talents and shape their personality.

Facilities specific to women at Ladies Hostel

VIT ladies hostel is one among the best in the country offering services including well equipped air conditioned gymnasium, indoor and outdoor sports facilities (Basket Ball, Table Tennis, Squash, Badminton, Swimming etc.), study dormitories, first aid centre, swimming pool, music classes, driving classes, mechanized laundry, pharmacy, Wi-Fi, general store, food outlets, photocopy facility and a beauty salon within the hostel premises. Students are encouraged to enroll in driving (lady trainer available), music, dance and swimming classes to make proper use of their free time and also to keep fit by utilizing the gymnasium and sports facilities available in the Ladies Hostel.

Various events starting from Self-defence workshop, lectures and demos on life skills, fresher's party to sports and celebrations are conducted throughout the year to make the students stay at hostels a memorable one. Events organized during the academic years, are presented every year in the form of newsletters (Newsletter, 2019-20: <https://vit.ac.in/files/lh-newsletter/index.html>). Highlights of few events conducted are narrated below.

Self Defense Workshop - On the 11th of August, 2019, 'Self defense workshop' for the seventh consecutive year was arranged for more than 700 freshers as like every year to serve as an eye-opener. Instructors from Krav Maga, (military self-defense system developed by Israel) Chennai, served as resource persons and taught the students on how to handle adverse situations and combat harassment.



Zumba - “Platinie’s Dance club”, Vellore was invited to give a preliminary session on Zumba, a famous exercise fitness regime on the 19th of September, 2019. The dance club also periodically trains faculty, staff and students at VIT.



Basic Life Support (BLS) skills - Workshop organized on the 27th of November, 2019. Dr. G. Priya, Associate Professor, Emergency Medicine, CMC, Vellore and Prof. T.S. Ravikumar, former Head, Emergency Nursing, CMC, Vellore served as resource persons.



Handling Fire and Fire Extinguishers – Workshop was conducted by “VIT Emergency Response Team” on the 12th of December, 2019.



Kasam Children's Home – A visit to the home for ladies hostel students was organised on the 29th of October, 2019. Such visits can create a spark in the minds of students which may help serve in bringing light in the lives of the under privileged in future.



Holi - The festival of spring, colors, love and forgiveness is the most enjoyable event at hostels and is celebrated with colours, DJ and yummy treats. This year's Holi was celebrated on the 10th of March, 2020.



Fests at VIT (<https://vit.ac.in/campuslife/fests>)

We at VIT believe that education isn't confined to academic excellence, but extends to the overall development of a student. To facilitate this, VIT conducts various events and workshops. Riviera, the annual International Sports and Cultural Fest, is one of the major events that provides students a stage to showcase and shape their talent in various technical and managerial areas. GraVITas an annual technological and design carnival provides a platform to all individuals to showcase their skills and improve their innovation skills in the fields of technology.

Crosscutting issues - Institution integrates crosscutting issues relevant to professional ethics, gender, human values, environment and sustainability into the Curriculum. Few examples of efforts taken towards crosscutting by the schools through its courses are shown below.

Name of the Course

Crosscutting Activity

BAG1023,
Fundamentals of
Agricultural Extension
Education

Guest lecture focused on the importance of agricultural extension towards the development of rural society. Improving rural population through improved technology in agriculture and allied activities. The session also covered topics related to adoption of new techniques in various sectors of agriculture like crop production, livestock, horticulture, and sericulture.

BAG1026, Rural
Sociology and
Educational
Psychology

A training program conducted on “one cent garden for one family” mainly for the **women folks**. Development of sustainable vegetable home garden. Effective usage of available space. Apt choice of vegetables and their cultivation methods. Judicious crop rotation to harvest veggies and greens daily.

HUM1021, Ethics and
Values (**Common to
all UG programs**)

Poster exhibition on prevention of drug and alcohol consumption inculcating ethical values to younger generation.

(<https://vit.ac.in/detailview/ethics-and-value-poster-exhibition>)



Report of VIT-Chennai Campus

PREAMBLE

- a) End all forms of discrimination against women and girls
- b) Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making
- c) Enhance the use of enabling technology, in particular, information and communications technology, to promote the empowerment of women

Policies / Major decisions taken regarding the SDG

VIT strives to offer free undergraduate education to underprivileged girls of the society as a means to empower and make them self-reliant. Ms Dhevayani, a tribal student from Madurai, who topped the class 12 board exams, was promised full free education in a course of her choice, B. Com/BBA by VIT.

The leadership at VIT boasts about equal representation of women in positions like Executive Director (Dr Sandhya Pentareddy), ProVC VIT Chennai (Dr V. S. Kanchana Bhaaskaran), deans and directors of various schools of the institute (one third being women). The institute offers equal opportunities to women faculty, who constitute 40-50% of the strength of the respective schools.

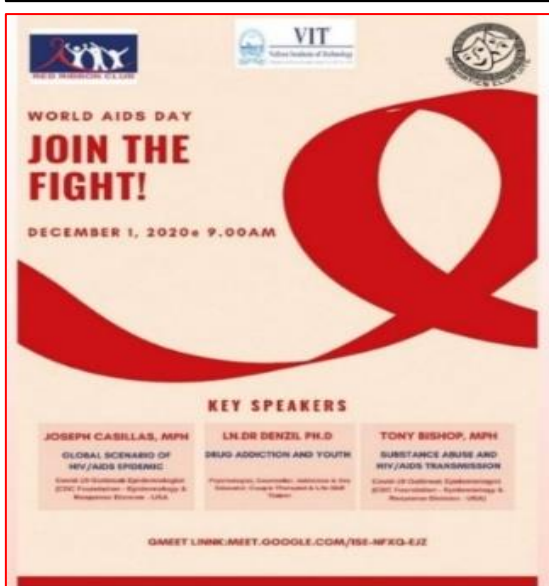
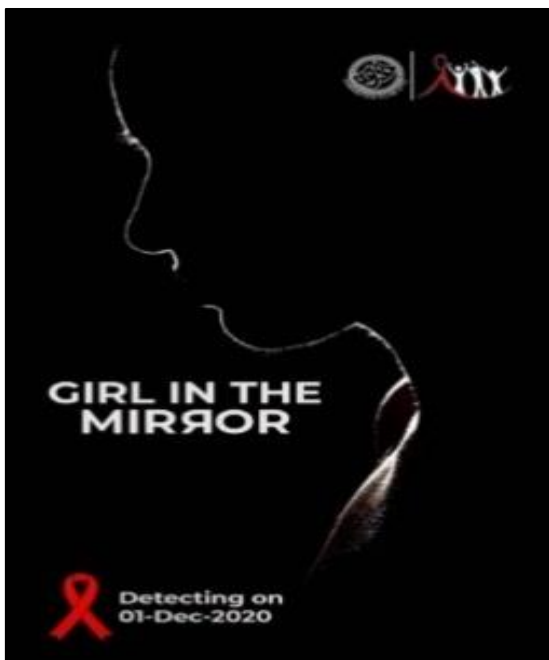
Academic Details pertaining to the SDG (Launch of program, inclusion of course, modifications in syllabus etc..)

VIT School of Law (VITSOL) offers courses LAW4062 (Women and Criminal Law) and LAW3102 (Law of Crimes-I) under B.A, L.L.B (Hons.) which stress on the need of gender equality and make one aware of the offences against women.

Major events organised

In view of **International Day for the Elimination of Violence against women** (25th November 2020) & **World AIDS Day** (1st December 2020) respectively, the **RED RIBBON CLUB** at Vellore Institute of Technology Chennai organised series of events based on the theme, **INTERRELATION OF VIOLENCE, HIV / AIDS AND DRUG USE**, starting from 25th Nov to 1st Dec 2020. The purpose is to create a sensitization among the students community on various

Issues related to violence and crime and also instill a sense of responsibility in addressing these issues for a sustainable change in the society.



Series of webinars to sensitize the students on gender equality
Development Cell



International Women's day was celebrated in the campus on March 6th 2020 organised by the Women Development Cell

Seminars/ Workshops/ FDPs/ Conferences organised for Teaching and Non-Teaching Staff members:

In addition to the activities organized by women development club, other schools and Academic Staff College (ASC) also took equal part in sensitizing the teaching and non-teaching staff members on gender equality by conducting seminars and workshops on the related aspects. Some of them are listed below:

School	Seminar/ Workshop	Title	Date	Number of Participants
ASC	Seminar	Prevention of Sexual Harassment in Work Place	20.08.2019	217
VITBS	Workshop	One Day Training Programme on Human Rights for Women	13.09.2019	40
SAS	Workshop	Women Self Defence Workshop	14.09.2019	30
VITSOL	Seminar	Legal Awareness Programme on Laws related to Women	03.01.2020	95

Thus apart from imparting high quality education on technical, management and law skills at VIT Chennai, the institute also owns the responsibility of inculcating the gender equity awareness among students, faculty and staff members.

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6 CLEAN WATER AND SANITATION



Ensure availability and sustainable management of water and sanitation for all

SDG-6

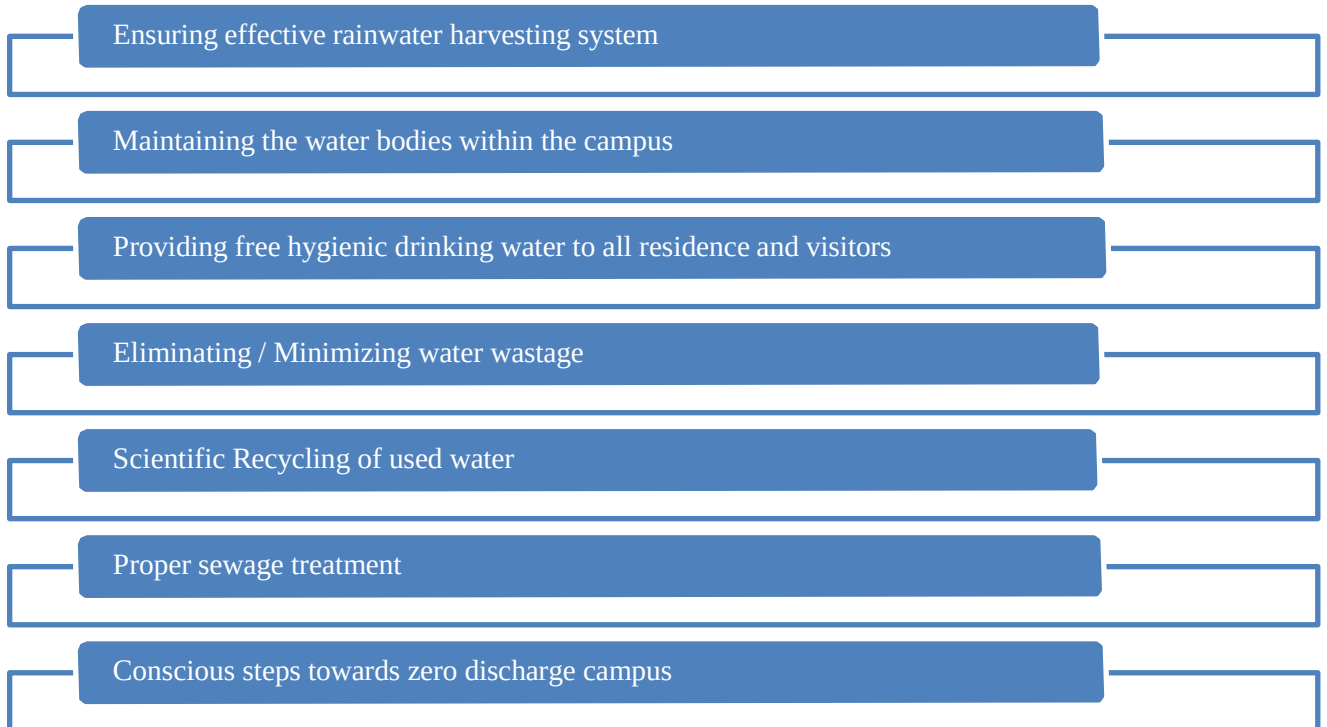
Annual Report 2019-20

Report of VIT-Vellore Campus

Preamble:

Water is the prerequisite for life as we perceive it today. The development of human civilization is closely tied to the water sources. In the modern times the need for Clean Water and Sanitation is all the more significant and it is a most important metric indicating the level of human civilization.

VIT is committed to respecting the significance of water. Over the years of its growth, the institution has developed a series of measures to make a sensible use of this invaluable resource. Some of the policy decisions in this direction include.



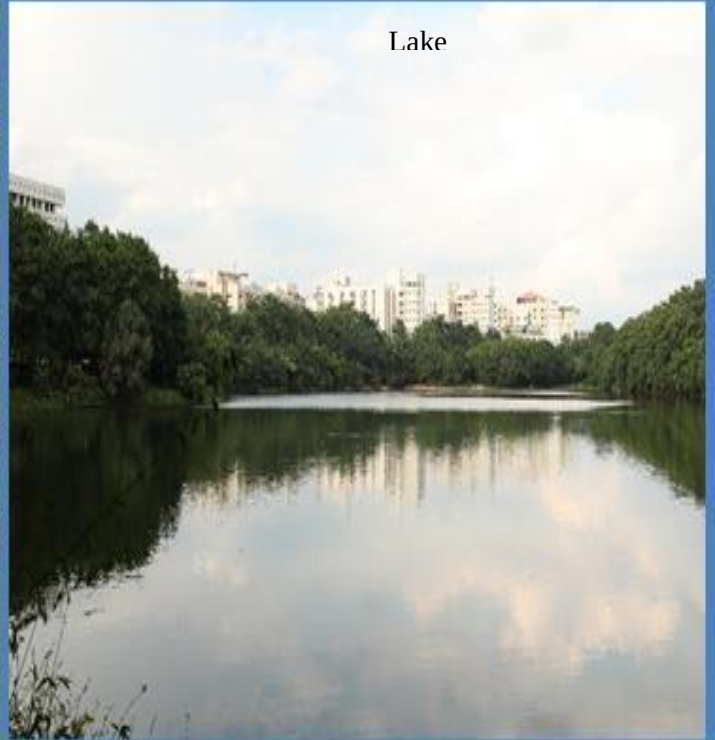
Measures taken to improve the water body resources:

31 numbers of Rainwater harvesting pits, Bore well /Open well recharge, Construction of tanks and bunds, Wastewater recycling Maintenance of water bodies and distribution system in the campus.

Open well recharge



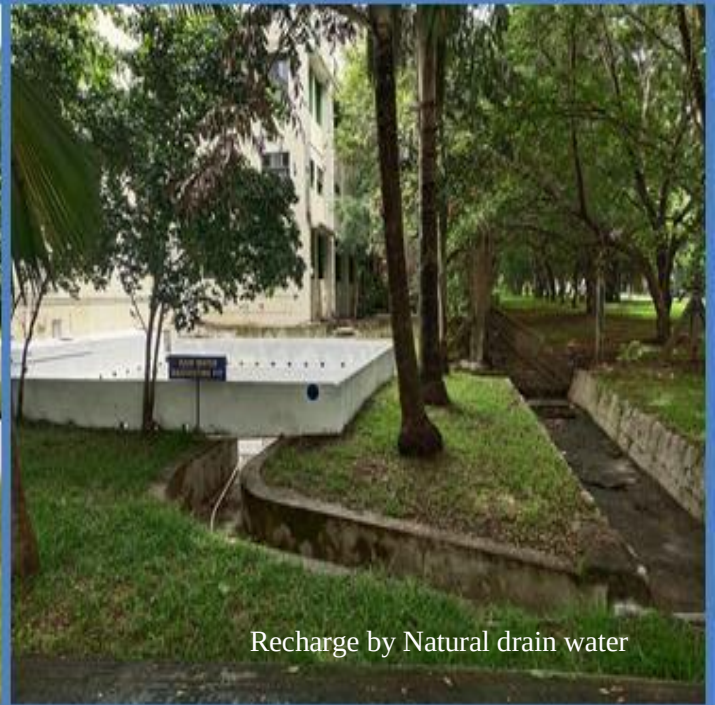
Lake



Borewell Recharge



Recharge by Natural drain water



Ever wondered what VIT University does for Water Conservation on a daily basis? The Water Treatment Plant in our University roughly processes and purifies around 10 Million litres of water. <https://www.youtube.com/watch?v=v1MIVhV9Mu8>.

An MoU has been signed between School of Civil Engineering, VIT, Vellore and the Center for WaSH-AID, Duke University. Highlights of MoU include but are not limited to collaboration on air quality measurement for sanitation technologies and pursuit of joint funded projects related to engineered technologies and health.

School of Civil Engineering, VIT Vellore has entered into a memorandum of understanding (MoU) with National Environmental Engineering Research Institute (NEERI), Nagpur, a Research Institute under the Council of Scientific & Industrial Research (CSIR), Government of India. The two institutes will work together on various field of Environmental Engineering with a special focus on Air and Noise pollution, Water and Wastewater Treatments, Monitoring, treatment & management of industrial effluents, environmental impacts and mitigations measure and find ways to solve community related environmental problems.

The NSS programme was inaugurated at Government Higher Secondary School in Pennathur near Vellore by Dr. G. Viswanathan, Chancellor, VIT. The National Service Scheme (NSS) Special Camp is organised every year in an adopted village with the active participation of students from VIT. Activities during the camp include volunteering at government schools, conducting clinical blood tests and creating awareness on conservation of water and land resources in the chosen village.

World Water Day observed on 22nd March every year on different themes, is an opportunity to learn more about water related issues and take action to make a difference. It focuses on the importance of freshwater and advocates for the sustainable management of freshwater resources. 'Water and Climate Change' is the theme of World Water Day 2020.

Water conservation week was organized from 18th to 22nd March, 2019 in Vellore campus to spread the awareness among the campus inhabitants and people around.

Consistent with its belief, the Institute has taken a major initiative to clean a major water body in its neighbourhood - the Palar river. There was a large growth of prosopis juliflora along the river bed. Being an invasive plant, the growth was very rapid and it also played a significant role in depleting the ground water resources. VIT took up the task of clearing the river bed and the cleaning of the river bed for about 1.06 million sq.m was cleared in two phases.

This initiative was well recognized by the local population and the government of Tamil Nadu recognized the initiative by conferring “Green Award”. Also, VIT has bagged the ‘Clean and Smart Campus Award 2019’ and ‘Swachh Campus Ranking 2019’ of Higher Educational Institutions. The awards were received by VIT Vice President Mr. Sankar Viswanathan from Honourable Minister for Human Resource Development, Govt. of India, Shri. Ramesh Pokhriyal in New Delhi.



Report of VIT-Chennai Campus

PREAMBLE

The climate change leads to extreme weather events, unpredictable water availability, water scarcity and contamination of water. The quality of water deteriorates due to urbanization, dumping of chemical waste and sewages and hence compromising the quality of water will result. But unsafe water kills more people each year than any other calamities.

Sustainable Practices of VIT involves various practices adopting the green policy. The green initiatives promote sustainability in the institute. The energy conservation facilities, water conservation, water recycling facility, green building, source segregated solid waste collection and processing, and green campus landscape contribute to the development and maintenance of the campus and consequently, VIT is recognised as a Green Campus. Sustainability is the core of the campus infrastructure.



Rainwater Harvesting at VIT Chennai

Appropriate rain water harvesting methods are practiced on the campus to save water. An artificial lake is constructed on the campus to collect the water from storm water drains. The overflow from the lake is connected to the other ponds on the campus so that the entire rainwater is harvested and conserved. The roof top water during the rain is collected in the underground storage tanks and is used as stored water for firefighting purposes. Also, landscaping of the campus was done with few depressions and small mounts and by cultivating grass / small trees and plants over the ground to reduce the run-off and ultimately increase the ground water re-charge.



An artificial lake and pit for Rainwater harvesting

Recycled Treated Water for Gardening/Landscaping and Flushing of Toilets

All the wastewater generated on the campus is collected and conveyed to a modern wastewater treatment plant and treated to a satisfactory level to recycle the water for gardening/landscaping and flushing of toilets. This helps in conserving the water to a great extent and helps in recharging the groundwater, which is the main source of water supply on the campus. Also, the nutrient and water value of recycled water is of great help in building the campus green. The recycled water is sprinkled to supply the optimal water for irrigation and thereby avoiding the water logging on the campus.



Sewage Treatment Facility



Water Supply and Management

The water supply on the campus is done by drawing ground water from 11 open dug well and 4 bore wells. First the water would be pumped to the firefighting tank and the overflow would be taken to the domestic water tank. This operation ensures ever ready situation for firefighting in case the need arises. The water from the domestic tank would be pumped to overhead tanks for general purpose use. For drinking purposes, the water from the domestic water tank is treated in Reverse Osmosis (RO) plant housed atop the buildings before supplying to users.

Sustainable Water Use

Many invited lectures were organised on Water Issues Related to Thermal Power, Desalination Techniques in Water Purification, Desalination Techniques -An Overview, Lectures by Indian Coast Guard- Pollution Control Unit (Pollution Response Team) and Indian Coast Guard (ICG) Ship, Chennai Port Trust, Indian Meteorological Department for creating awareness among students and faculties. Several Guest lectures were organised on Zero Liquid discharge system on a tannery effluent treatment plant (Conducted for industrial effluents treatment and disposal and pollution control and monitoring classes and Solid waste management. As a part of curriculum, the students were taken to Chembarambakkam water treatment plant, Ambur tannery effluent treatment plant, Perungudi Sewage treatment plant, Koyembedu and Sewage treatment plant at Chennai. As a part of curriculum, courses on Industrial Wastes Treatment and Disposal, Pollution Control and Monitoring, Water Resource Engineering and Solid Waste Management have been offered.

VIT Chennai is a part of multilevel Institutional Industrial collaboration: Centre for Sustainable Treatment, Reuse And Management for Efficient, Affordable and Synergetic solutions for water (Water-IC for SUTRAM of EASY Water (SUTHRAM) Project a water innovative centre collaborated with 8 partner institutions sponsored by DST, WTI Govt. of India (Cost of project is 893 lakhs). The research group of VIT Chennai is working on water and wastewater quality analysis and process design, Innovative Nano material synthesis and performance studies, Solid waste management, Biological nutrient removal, Biological Sludge digestion methods and energy



Workshop on "Ion Chromatography and Water Purification Systems"

recovery, organic layered polymer nano composites, development of membranes for waste water treatment and Surface and ground water modelling. The outcome of the research was published in various international journals as “Process performance and reuse potential of a decentralized wastewater treatment system” Several patent filed related to water treatment like “Water Management Technology: Under Smart City Waste Water Management Using IoT-Based, Machine Learning Technology”

The researchers organised National Level Workshop on "Ion Chromatography and Water Purification Systems" with an objective to operating advanced/sophisticated instrumentation for analysis of water and wastewater. Also, it enables the participants to get an overview about the current developments in the water purification systems. National Level Workshop on Clean Water and Clean Energy is also conducted.



Workshop on "Ion Chromatography and Water Purification Systems"

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7 AFFORDABLE AND CLEAN ENERGY



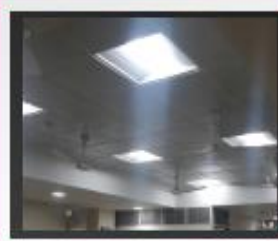
BIOMASS



BIO GAS PLANT



LED



SENSOR



SOLAR



Ensure access to affordable, reliable, sustainable and modern energy for all

SDG-07

Annual Report 2019-20

Report of VIT-Vellore Campus

Preamble

Renewable energy solutions are becoming cheaper, more reliable and more efficient every day. Our current reliance on fossil fuels is unsustainable and harmful to the planet, which is why we have to change the way we produce and consume energy. Implementing these new energy solutions as fast as possible is essential to counter climate change, one of the biggest threats to our own survival.

Vellore Institute of Technology (VIT) has facilities for alternate sources of energy and energy conservation measures like

- Solar energy
- Biogas plant
- Wheeling to the Grid
- Sensor-based energy conservation
- Use of LED bulbs
- Energy efficient ceiling fan used in all new and renovated buildings
- 5 star rated energy efficient pumps
- Radiant surface cooling system to reduce HVAC load
- Energy efficient data center
- Centralized chiller plant

I. Installation of solar projects

In the year of 2003, 8.25 kW Solar panels were installed at a cost of INR 5 million, fully funded by VIT. In 2015, a 500 kW which can produce approximately 2500 units daily was set up. Another 625 kW of rooftop solar PV was installed in 2018 September. Recently, November 2020, VIT also established 1000 kW of rooftop solar PV system with remote energy monitoring

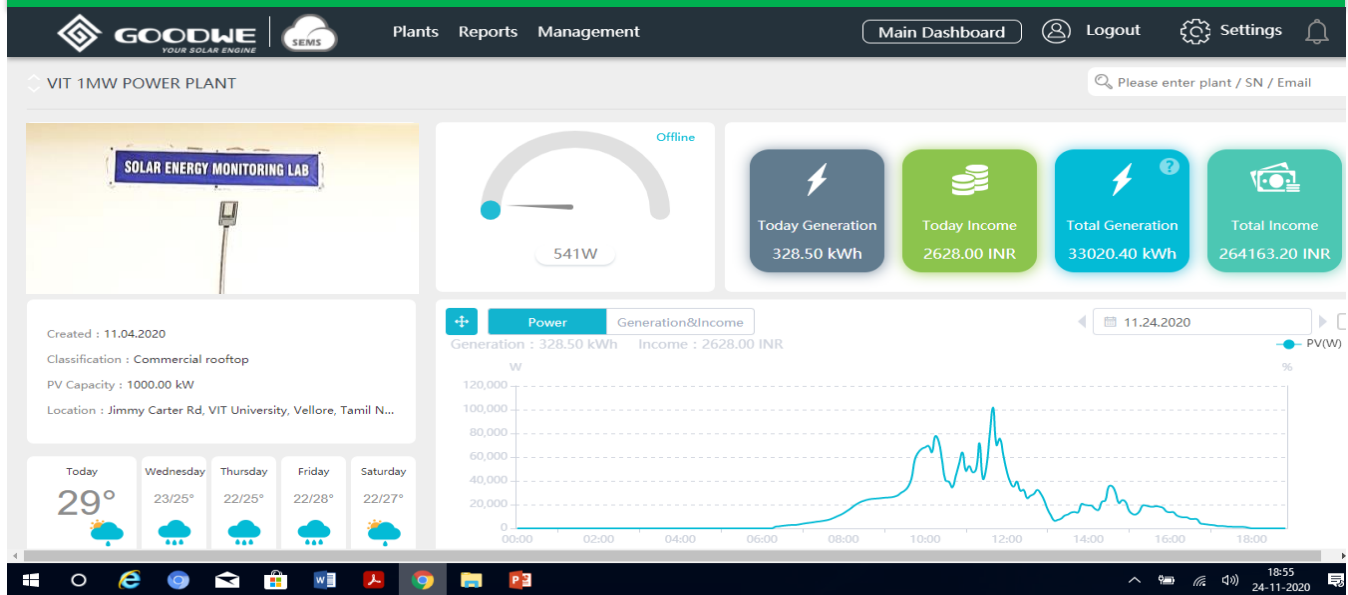
facility ie. solar energy monitoring lab. 90 Lakhs units of wind power is purchased per annum through third party power purchase agreement. A fully operational 10 kW solar dish Stirling engine power plant (INR 8 million), which is recognized as the most efficient technology, was imported from Germany. The working gas is either Helium or Hydrogen. A 80000 litre solar water heater installed in the academic and Hostel campus meets the pre-heated water demand on campus. Most of the hostel buildings are equipped with solar water heaters. Heat pump based water heating system is used in the recently built hostels with 80000 liters capacity per day. The undergraduate students of VIT, in association with the University of Strathclyde, United Kingdom, have installed an off-grid photovoltaic (PV) solar system in a community college near VIT.

Roof top Solar panels





Solar PV Generation Online Monitoring



Online Energy Monitoring



II. Centralized Chiller Plant of 5500 Tons of refrigeration

In hostels and academic blocks 85 % of split and windows ACs are replaced by centralized chiller water based cooling for the rooms, meeting halls, laboratories and auditoriums from 2019. This unit consumes only 55 % electrical energy when compared to conventional ACs. This is another milestone at VIT in terms of energy saving measures.

Chiller system



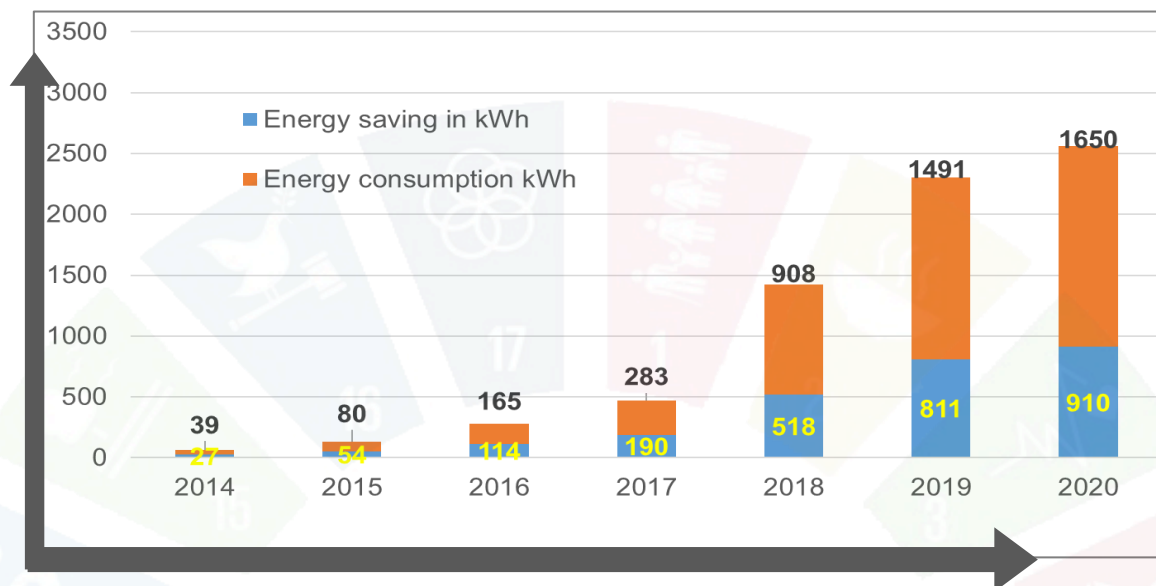
Energy, emission and social cost of carbon savings

Savings (in one-year)	
Energy (kWh)	43,95,349
Emission (kg of CO ₂)	63,03,778
Operating cost (Rs.)	3,53,82,558
Social cost of carbon (Rs.)	4,02,79,880

III. Replacement of conventional lightings with LEDs

All the newly constructed hostel blocks are installed with 10 W LED lamps and the hostel toilets and corridors are installed with 20 W and 15 W LED lamps respectively. A few of the washrooms/ restrooms in the academic buildings are equipped with occupancy sensor based LED lights. All the streetlights and pathways lights are replaced with 80 W LED of lesser

wattage (1/5 of conventional) when compared to conventional light sources like metal halide and sodium vapour lamps of 400 W.



Biodiesel heavy vehicles and solar powered cars in campus since 2012, buses operating within the campus are powered with 30% biodiesel. These vehicles have covered more than 60,000 km without any breakdown. A Laboratory model glass unit produces the biodiesel. At present, Pongamia and Jatropha oil are used for biodiesel production. Works are in progress to use Sterculia and Vilosa seeds too. Apart from the seeds, even the use of kitchen waste for biodiesel production has become a thrust area of research.

A solar powered (255W x 4 solar panels) 12 seater car equipped with a pair of 3.7 kW DC motor, christened as the 'Green Energy Vehicle', is fully operational (nearly 8 hours a day) during the working hours.

As a part of the energy awareness and conservation programme, VIT hosts numerous workshops and training sessions on a regular basis. Energy Conservation week is a regular practice in line with Energy conservation day- December 14. During this week 3rd and 4th days were observed as 'No Air Conditioner' and 'No Automobile' days of the VIT campus respectively.

ASME's International Human Powered Vehicle Challenge with more than 400 participants provided an opportunity for the students to develop practical and sustainable modes of transportation.

Link: <https://vit.ac.in/about/Sustainability/EnergyConservationProgramme>

IV. Radiant surface cooling system

VIT developed innovative cooling system, energy efficient solution for the educational building. Also, to promote advancement in building thermal comfort, district energy system in accordance with India cooling action plan (ICAP).

1. Radiant cooling with indirect Evaporative Cooling for open classrooms and the corridors.
2. Radiant cooling with chiller system for seminar halls, laboratory and closed classrooms.



V. Promoting sustainable practices

VIT has established the CO₂ Research and Green Technologies Centre, which is a unique and advanced research laboratory, to carry out research on Carbon Capturing (better)-and Utilization – CCU, whereas many other leading research institutions are concentrating on Carbon Capturing and Storage – CCS. The centre was inaugurated on 15th Feb 2010 by Dr. Farooq Abdullah, Hon'ble Minister for New and Renewable Energy (MNRE) Govt. of India. The green facade drape subway walls are yet another unique feature in VIT. They absorb the entire atmospheric pollutants spewed by the vehicular emissions.

The on-going research activities on these green drapes have proved their atmospheric cleansing capability. A physical green drape on high-rise buildings can save considerable amount of building's annual energy consumption. The green drapes can serve as excellent acoustic dampers too.

The School of Electrical Engineering (SELECT), in association with the School of Electronics Engineering (SENSE), has developed low cost energy efficient systems, in particular, energy efficient light automation devices, which are fully functional in some of the new laboratories and hostels.

a. Biomass Power plant

VIT has installed a biomass based power plant of 96 kW capacity using the biomass available in and around Vellore District. The power plant produces about 1500 kWh of power a day utilizing nearly 1.8 metric tons of Juliflora wood. This power is supplied to four hostels in the VIT campus.

The producer gas generated in the gasifier can be used as dual fuel in the conventional DG set for power generation or for thermal application directly. Since its inception, the biomass power plant has produced 11.8 lakh units of electricity



b. Biogas power plant

VIT has installed a 300 m³ capacity biogas plant which uses the sludge from the wastewater treatment plant. The plant funded by MNRE is under operation since December 2012. A 40 kVA biogas engine is operated utilizing the gas generated from the biogas plant and the evacuated power is supplied to run the wastewater treatment plant. This has resulted in conservation of about 20,000 kWh of power since 2013.

Biogas power plant with generator



Quality audits on environment and energy

The objective is to make Vellore Institute of Technology, Vellore, as energy efficient campus by means of using renewable energy, energy efficient technologies and appliances by proper Energy Audit. An energy audit is an inspection survey and an analysis of energy flows for energy conservation in a building. This will involve the analysis of energy consumption of Vellore Institute of Technology by knowing the different loads that are in use, their ratings, their consumption, the consumption pattern and providing alternatives to reduce the energy consumption and thereby reducing the cost spent on electricity bills and also reduce the harmful effects on the environment due to conventional way of power generation. It may include a process or system to reduce the amount of energy input into the system without negatively affecting the output. Thus by the help of this audit the institution is made both energy and cost efficient.

1. Energy audit report:
http://naac.vit.ac.in/naac_old_21/c7/716/Proofs/Energy_audit_report.pdf
2. Policy document on environment and energy usage:
http://naac.vit.ac.in/naac_old_21/c7/716/Proofs/Policy_document.pdf
3. Beyond the campus environmental promotion activities:
http://naac.vit.ac.in/naac_old_21/c7/716/Proofs/Beyond_the_campus_environmental_activities.pdf

Green campus initiatives include:

- *Restricted entry of automobiles*
- *Use of Bicycles/ Battery powered vehicles*
- *Pedestrian Friendly pathways*
- *Ban on use of Plastic*
- *landscaping with trees and plants*

1. Energy conservation week -2019:
http://naac.vit.ac.in/naac_old_21/c7/715/Proofs/Energy_Conservation_Week.pdf
2. Value Added Program on Energy audit:
<https://vit.ac.in/school-electrical-engineering-select/value-added-program-energy-audit>
3. Circular on restricted entry of automobiles:
http://naac.vit.ac.in/naac_old_21/c7/715/Proofs/Circular.pdf
4. Use of Bicycles/ Battery powered vehicles:
<https://vit.ac.in/about/Sustainability/TransportationPolicy>
5. Circular on Ban on :
http://naac.vit.ac.in/naac_old_21/c7/715/Proofs/Plastic_free_campus.pdf

Research Publications: Affordable and Clean Energy (from 2017 to 2020)





Report of VIT-Chennai Campus

Preamble

The main targets under this SDG are:

- a) To ensure access to affordable, reliable and modern energy services
- b) To increase substantially the share of renewable energy in the global context
- c) To facilitate clean energy research and technology, including renewable energy, energy efficiency, and advanced and cleaner fossil-fuel technology

Policies / Major decisions taken regarding the SDG

The sprawling VIT Chennai campus is an energy efficient campus. The institute has won the accolade of green rated infrastructure. Solar panels are installed in abundance for efficient energy storage and conversion. Various energy conservation measures that are carefully considered and implemented in the campus are listed below:

1. All the elevators in the campus are provided with AC variable voltage, variable frequency drives (ACVVF). Recently the elevators are grouped and configured to stop at specific floors instead of stopping at all the floors to save considerable energy.
2. Power factor maintained is at 0.95 or higher. This will reduce electrical power distribution losses during installation.
3. Compact fluorescent lamps (CFL) with high frequency ballast are used in hostel rooms. Also all corridors are fitted with 16/18 W LED lamps. This reduces the power consumption greatly.
4. Energy efficient fluorescent tube lights (T-5) are used in place of conventional fluorescent tubes (FTL). The replacement is done with 16 W LED tube light whenever the FTL is not working.
5. All fluorescent light fixtures are incorporate electronic chokes which have lower power loss compared to electro-magnetic chokes and result in superior operating power factor. This indirectly saves energy. Electronic chokes also improves life of the fluorescent lamps. All fluorescent light fixtures uses high frequency ballast and thereby consumes less energy.
6. Energy efficient fluorescent lamps & CFL lamps give approximately 30% more light output for the same amount of power consumed and therefore require less number of fixtures and lower wiring costs. The sodium vapour lights installed in the streets are



replaced with LED lights which consumes only $\frac{1}{4}$ of the energy as that of sodium vapour lamps.

7. An APFC relay based on thyristor switching is used for power factor correction/ improvement within a few cycles of deviation from the set value and reduces inrush currents as well.
8. Transformers have minimum no load losses as compared to conventional transformers. All cables are separated well to avoid heating during use. This also indirectly reduces losses and improves reliability.
9. Solar water heater system is used in hostels blocks. Thus the renewable energy is used appropriately for energy conservation.
10. Instead of split or window type air-conditioners, three of our hostel blocks are connected with centralized chiller plant based air-conditioners which save 40% of energy as compared to that of split air-conditioners. Roof top solar panels of 550 kW are installed at our building roof tops in hostel and academic blocks for the same.



Power water saving through sensor based water taps



550 kW rated solar panels installed at roof top



VIT Chennai - A Green Campus



Solar and wind powered LED street lights



Academic details pertaining to the SDG (Launch of program, inclusion of course, modifications in syllabus etc.)

The School of Electrical and Electronics Engineering (SELECT) offers B. Tech and Ph.D in Electrical Engineering. A wide range of research specializations such as Power systems, Power Electronics, Control Engineering, Electric Vehicles, Power Converters for Renewable power generation system, Controllers for grid integration, Special machines and drives for Industrial applications, Microgrid, Internet of Things, Robotics, Wireless power transfer system, Industrial Automation and deregulated power system are carried out by a diverse and versatile team of faculty members and students in the school. In addition to this, School of Advanced Sciences (SAS) and VIT School of Law (VISOL) offer courses on Environmental Sciences, with course code CHY1002 and LAW1102 respectively which impart sound knowledge on sustainable energy conservation and management to the students.

Major events organised Conferences / Workshops / Symposium

With the infrastructure instituted at VIT Chennai, the following programs were conducted during the last academic year for the teaching and non-teaching staff members in order to emphasize the significance of affordable and clean energy in the campus with reference to the global context.

S. No	Title of the Programme	Date		No of days	No of participants attended
		From	To		
1.	Workshop on Design and Benchmark of Power Converters for Power forge	08.02.2019	08.02.2019	1	18
2.	Workshop on Clean Water and Clean Energy	10.02.2019	10.02.2019	1	41
3.	Workshop on Hands on Training on Renewable Energy Generation Systems	19.07.2019	19.07.2019	1	10
4.	Seminar on Grid Integration of Renewable Energy Sources-Challenges and Possible Solutions	27.07.2019	27.07.2019	1	20
5.	Workshop on Introduction to dsPIC microcontrollers for PWM generation in Power Electronics	07.09.2019	07.09.2019	1	29
6.	International Conference on Power Engineering, Computing, and Control PECCON 2019	12.12.2019	14.12.2019	3	130
7.	Workshop on PCB design and circuit design for Power Converters	21.02.2020	22.02.2020	2	12
8.	Online National Workshop on Towards Achieving C Neutrality TACN 2020	29.05.2020	29.05.2020	1	40

These events had a focus on the access and availability of reliable, renewable and clean energy for the campus in the global context. Few glimpses of the programs is given below:



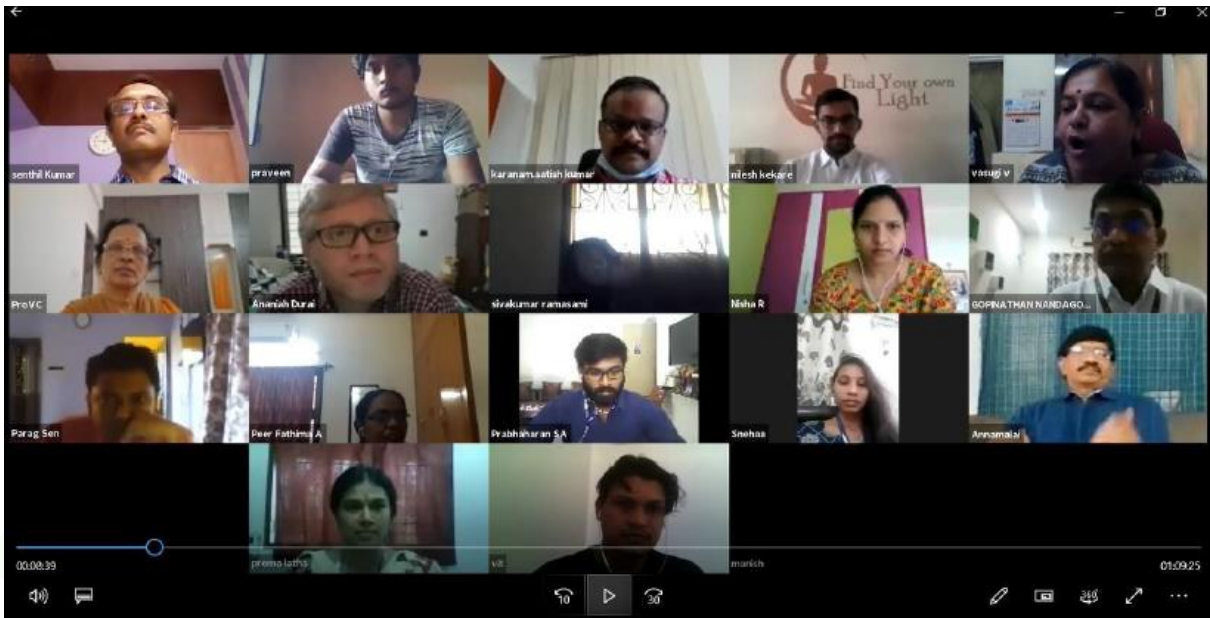
Workshop on Design and Benchmark of Power Converters for Power forge



International Conference on Power Engineering, Computing, and Control PECCON 2019



Workshop on PCB design and circuit design for Power Converters



Online National Workshop on Towards Achieving C Neutrality TACN 2020

List of publications:

Faculty members and research scholars are always working on various research problems pertaining to energy conservation and produce significant results. Their findings are peer reviewed and published in various reputed journals too. Some of their publications are listed below:

- 1) M EEdwin, M Saranya Nair, S Joseph Sekhar, "Review for Power Production and Economic Feasibility on Hybrid Energy Systems for remote communities", International Journal of Ambient Energy, 2020, pp1-13.
- 2) Sharma A et al, "A secure, energy-and SLA-efficient (SESE) E-healthcare framework for quickest data transmission using cyber-physical system", Sensors (Switzerland), 2019, pp 1424-8220
- 3) Ramya K.C et al, "Fuzzy based hybrid incorporating wind solar energy source by reduced harmonics", Journal of Intelligent and Fuzzy Systems, 2019, 1064-1246
- 4) Arul Rajagopalan et al "A Socio Cultural Study on Solar Photovoltaic Energy System in India: Startification and Policy Implication", Journal of Cleaner Production, 2019, 2277-3878
- 5) Arul Rajagopalan et al "A Review of Optimal Operation of Microgrids", Indonesian Journal of Electrical Engineering and Computer Science, 2019, 2502-4752
- 6) Febin Daya J.L et al "Design and Construction of an Automatic Solar Tracking System", International Journal of Pure and Applied Mathematics, 2019, 1311-8080
- 7) Febin Daya J.L, Sooraj V, "A High Gain LCL Architecture Based IPT System For Wireless Charging of EV", IET Power Electronics, 2019, 1755-4535
- 8) Lenin N.C, Hemantha Kumar R, "Overview on Direct Torque Control Schemes for Permanent Magnet Motor Drives and its Application to Hybrid/ Electric Vehicles", IET Power Electronics, 2019, 1755-4535
- 9) Lenin N.C, Ramesh P, "High Power Density Electrical Machines for Electric Vehicles- Comprehensive Review Based on Material Technology", IET Transaction in Magnetism, 2019, 0018-9464
- 10) Karthikeyan, Annapoorani I, "Co-Simulation and Hardware Implementation of Multi-Port Rectifier for Power System and Renewable Energy Applications", Wind Engineering, 2019, 0309-524X



- 11) Sri Revathi B, Prabhakar M, "A Novel Compact Converter for DC Distribution", Electric Power Components and Systems, 2019, 1532-5008
- 12) Febin Daya J.L, Sooraj V, "Estimation of Optimal Operating Frequency for Wireless EV Charging System under Misalignment", Electronics, 2019, 2079-9292
- 13) Sitharthan R et al "Automated Power management Strategy for Wind Power Generation System Using Pitch Angle Controller", Measurement and Control, 2019, 0020-2940
- 14) Amirtharaj S et al "Optimal Utilization of Renewable Energy Sources in MG Connected System with Integrated Converters: An Agonn Approach", Analog Integrated Circuits and Signal Processing, 2019, 0925-1030
- 15) Gnana Swathika OV et al "IOT Based Energy Management System for standalone PV Systems", Journal of Electrical Engineering Technology, 2019, 1975-0102
- 16) Bhagyasri S and Kanimozhi G, "EV Charging through three Port Wireless Power Transfer", International Journal of Recent Technology and Engineering, 2019, 2277-3878
- 17) Arindam Mukherjee et al, "Investigation of a PV FED Improved Smart Home EV Battery Charging System Using Multi Output Hybrid Converters", International Journal of Renewable Energy Research, 2019, 1309-0127
- 18) Priyanka M et al, "Feasibility Study of Replacement of Hybrid Renewable Energy-A Case Study", International Journal of Innovative Technology and Exploring Engineering, 2019, 2278-3075
- 19) Paratha Sarathi Subudhi S and Krithiga S, "PV and Grid Interfaced Plug in EV battery Charger Operating in P-VG and P-V and V-G mode", International Journal of Recent Technology and Engineering, 2019, 2277-3878
- 20) Jayaveronica A et al, "Robust PI Controller Design for frequency stabilisation in a Hybrid Microgrid System", IET Generation Transmission and Distribution, 2019, 1751-8695
- 21) Senthil Nagayam V, Premlatha L, "Wireless Power Transmission for Dynamic Charging of Battery Application in Multipurpose Smart Solar Bag", International Journal of Engineering and Technology, 2019, 2248-8958
- 22) Paratha Sarathi Subudhi S et al "Wireless Electric Vehicle Battery Charging System for Solar Powered Residential Application", International Journal of Power and Energy System, 2019, 1078-3466
- 23) Sujitha N and Krithiga S, "Grid tied PV Electric Vehicle Battery Charger using Bidirectional Converter", International Journal of Renewable Energy Research, 2019, 1309-0127
- 24) Venugopal P and Vigneswaran T, "State of Charge Estimation Models for Li-ion Batteries in Electric Vehicles", International Journal of Innovation Technology and Exploring Engineering, 2019, 2278-3075
- 25) Vijaykumar P et al, "IoT Based Wireless Smart Shoe and Energy Harvesting System", International Journal of Innovative Technology and Exploring Engineering, 2019, 2278-3075
- 26) Karunamurthy K et al "Prediction of solar pond performance parameter using artificial neural network", International Journal of Computer aided Engineering and Technology, 2019, 1757-2665
- 27) Pradeep R and Venugopal T, "Experimental study of Li-ion battery cooling using mixture of phase change materials", International Journal of Electric and Hybrid Vehicles, 2020
- 28) Tamilselvan P et al, "Experimental Analysis of VCR Engine Operated with Prosopis Julifera Biodiesel B", International Journal of Renewable Energy Research, June 2020
- 29) Prema E and Rajavenkatesan PRL, "Solar Power Transforming the Face of Rural India: Climate Justice for All", IOP Conference Series: Earth and Environmental Sciences, June 2020

Thus VIT Chennai campus is striving towards efficient use of affordable and clean energy with reference to the global context.



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

SDG-8

ANNUAL REPORT 2019-20

Report of VIT-Vellore Campus

Vellore Institute of Technology provides teaching, learning and research infrastructure to students and faculty members to excel in their career and to achieve sustainable economic growth, productive employment and decent work.

During the academic year 2019-20, about 86 Scopus indexed papers are published by VIT on Decent Work and Economic Growth. The titles of some of the papers are given below:

Sl. No.	Title of the paper
1.	Productivity and quality improvement through DMAIC in SME
2.	Innovation and economic growth in European Economic Area countries: The Granger causality approach
3.	Internationalization of small and medium enterprises in Indian business incubators
4.	A study on sustainable growth rate for firm survival
5.	The association between foreign direct investment (FDI), economic growth (EG) and government expenses on infrastructure (GI) in India
6.	Role of engineering education in sustaining the economic development of India

Promote development-oriented policies that support decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises

VIT has provided teaching positions to 156 faculty members during the academic year 2019-20; the total number of faculty members on roll is 1866. About 1600 supporting staff works in VIT. Decent work place along with a reasonable salary is given to faculty members as well as the staff of VIT.

VIT - Employee Advantages (<https://careers.vit.ac.in/about-us/>)

- VIT has revised the salary structure based on 7th Pay Commission recommendations
- Employment Provident Fund & Gratuity
- Medclaim Insurance / Accidental Policy with United India Assurance for Employees and Dependents
- Free Health Centre benefits (extended to family members also)
- Encashment of Earned Leave
- Special Pay to Staff Members for Continuous Service
- 25% Concession to avail Bus Facility to Staff Members
- Sabbatical Leave to pursue Higher Education / Research
- Laptops are issued to Faculty members while at service to pursue Research and Academic work
- Faculty members are encouraged to take up consultancy, projects and research work.
- Faculty members are sponsored to
- Pursue further studies
- Present papers in conferences abroad periodically.
- VIT is an equal opportunity employer.
- VIT attracts the brightest and best talent pool available in the industry.
- Our human resource policies and practices are geared towards attracting and recruiting the best, rewarding, recognising and retaining them. These policies and practices are comparable to some of the best in the industry.
- In our work environment, all employees are valued and respected and have opportunities to develop their full potential and pursue a career path of their choice.

The Technology Business Incubator (TBI) conducts many programs for promoting creativity, innovation, entrepreneurship and help many students to start micro-enterprises known as 'Start-ups' to promote sustainable economic growth. The VIT Technology Business Incubator (VIT-TBI) offers a four-week Entrepreneurship Development Programme for science & technology graduates. According to a VIT, this non-residential programme trains the science & technology graduates and diploma holders in the essentials of conceiving, planning, initiating and launching



An awareness programme for the Biotechnology Ignition Grant from BIRAC was organized for the faculty and research scholars on the 29th of Jan 2020. The session was delivered by Dr. Pranita Phatak from SINE, IITB.

an economic activity or an enterprise successfully. The programme content includes class room training on essentials of entrepreneurship, survey of the prevalent socio-economic scenario, identification of business opportunities, role and function as well as schemes of assistance offered by various constituents of the support system, preparation of a technically feasible and economically viable project report, and the nuances of management of an enterprise. A six week Technology Entrepreneurship Development Programme in Industrial Internet of Things (IIoT) was initiated on the 19th February 2020. Various aspects of technology and business have been addressed by academicians and industry experts; about 22 participants underwent the training which was organized under the DST-NIMAT project (<https://vittbi.com/>)

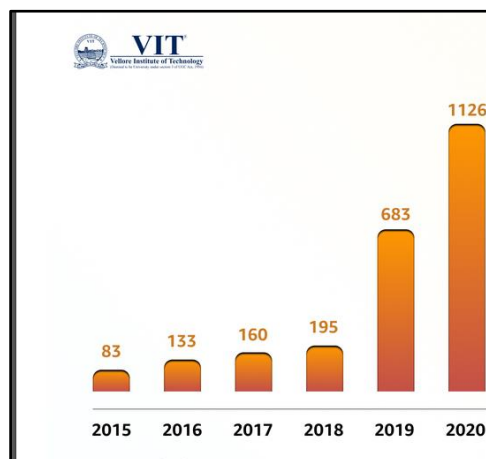


Achieve full and productive employment and decent work for all women and men, including for young people, and equal pay for work of equal value

VIT prepares students to get placements in industries offering high cost-to-company (CTC). Some of the companies offering high CTCs are given below.

Company	CTC	Microsoft	INR	44,00,000
AppDynamics	INR	39,20,000	D.E.SHAW	INR
35,25,000	UDAAN	INR	35,00,000	WorkIndia
35,00,000	Cloudera	INR	31,33,000	Amazon
29,50,000	Motorq	INR	26,00,000	Morgan Stanley
INR	25,30,000	PayPal	INR	23,80,000
Wells Fargo	EGS India	INR	20,00,000.	

In this placement offer, the students are presented with offers with Cost of Company (CTC) of INR10,00,000-00 and above per annum. About 140 companies offered 1126 super dream placements offers during the year 2020. Among them,



PLACEMENT TREND (YEAR WISE)	
Items	2020
Total Registered	5805
Total Placed	4914 84.65%
Dream	2513
Super Dream	1126
Number of Companies Visited	739
Average CTC in L.P.A	7.13
Highest CTC	41,60,000

Microsoft has offered the highest CTC of INR 41,60,000-00 per annum. 7 students have got their placement in Microsoft with the Super Dream Offer. In Dream placement offer,

2513 students are presented with offers with Cost of Company (CTC) of INR 5,50,000-00 and above per annum. More than 386 companies have been giving this placement offer to enable students to have multiple choices in the dream placement category. They can choose among various streams including IT Services, product consulting, banking, Core Engineering companies among other options. Such placement opportunities allow the students to freely select the offer that is present in their area of interest. VIT is a proud holder for the Limca book of records for the highest number of recruitments through placements done from a single institution by IT sector companies for 7 years. Cognizant, TATA Consultancy Services, Accenture, Wipro, and Infosys are a few names in the IT sector that have their placement bases in VIT. Also, the Placement cell in VIT is responsible for internships for students.

Substantially promote employment, education and training

VIT conducts industry conclave, consortiums, contests, hackathons, skill development programs, Alumni events, Industry certification, higher education training, Industry internships, soft skills training, placement training, and career counselling and train students to get employment in industries having decent

work with reasonable and higher salaries <https://vit.ac.in/career-development-centre>. Apart from placements for students in their final year, the Placement Cell provides international internships with leading MNCs across the globe. An average of 10 students every year get an opportunity to get internships in USA, UK, Ireland, Japan, China, Israel, Taiwan, UAE, Kenya, Germany, Nigeria and Italy. These internship programs help the students to earn a stipend, in addition to hands-on experience and practical application of everything they have learned. While VIT ensures that all its students obtain placement in leading MNCs, it also makes sure that they get internships and have valuable work experience.

A global strategy for employment

VIT's Centre for Sustainable Rural Development & Research Studies (VIT-CSR&RS) acts as a bond between VIT and society, to provide better and effective services for the development of rural areas through various innovative initiatives. VIT students, under the guidance of the faculty

and staff, engage in social upliftment activities to foster rural community development through various projects and programs.

The vision of this center is to improve the quality of the life of rural people by meeting their rudimentary needs of the present without compromising the ability of the future generations through participative planning and implementation of sustainable practices and improving the quality of life and economic well-being of people living in the rural area. The mission of this center is to promote and implement the sustainable rural development practices through participative planning, education, capacity building, effective networking, research techniques, and knowledge management through innovative methods to enlighten the rural community for self – reliant rural development (<https://vit.ac.in/about/community-outreach>).

Extension Works:

- Adoption of villages for holistic development.
- Entrepreneurship development activities.
- Skill Development and Women Empowerment.
- Higher education for all in Vellore District.
- Agriculture and allied activities to promote organic farming.
- Youth development activities.
- Entrepreneurial development activities for SHGs.
- Promotion of health and sanitation in rural areas.
- Green Vellore- protection of the environment.
- Clean River Palar for efficient water management.
- Infrastructure development and environmental enhancement in Government schools.
- Livelihood development activities linked to economic development.
- Credit linkage to Tribal Farmers for holistic development.
- Organic farming.
- Digital literacy campaign.
- Financial literacy promotion.



VIT-CSR&RS organized a mega job mela at university campus at Vellore. More than 30 companies participated, and offered 2,000 job openings. Candidates who have passed 8th, 10th, 12th standards, ITI, diploma, degree, B Tech, MBA, nursing, catering technology, tailoring, driving or any other qualifications also applied.

Adoption of villages for holistic development

VIT, as a professional higher education institution, contributes directly to the development of the rural sector. VIT has adopted five villages address the huge developmental disconnects between the rural and urban sectors, such as inequity in health, education and basic amenities as well as creating employment opportunities

The imperatives of sustainable development demand an eco-friendly development and the creation of appropriate employment opportunities. The students have learnt the urgent need for technology development for rural areas to address their day to day challenges.



The vision is to bring transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an inclusive India.

<https://vit.ac.in/about/community-outreach/projectsandprograms>

Empowering Tribal Community

The National Bank for Agriculture and Rural Development (NABARD) has launched a Joint Liability Group (JLG) scheme to provide access to institutional credit for small, marginal, tenant farmers, and oral leases and share croppers. JLGs are essentially credit groups of small/marginal/tenant farmers/asset less poor who do not have proper title of their farmland. These informal groups of 4-10 members are engaged in similar economic activities and are willing to jointly undertake to repay the loans.



Mega Loan Mela - 01.02.2020 at Jawadhu Hills, Tiruvannamalai District



MEDP - Training Tailoring Skill Development

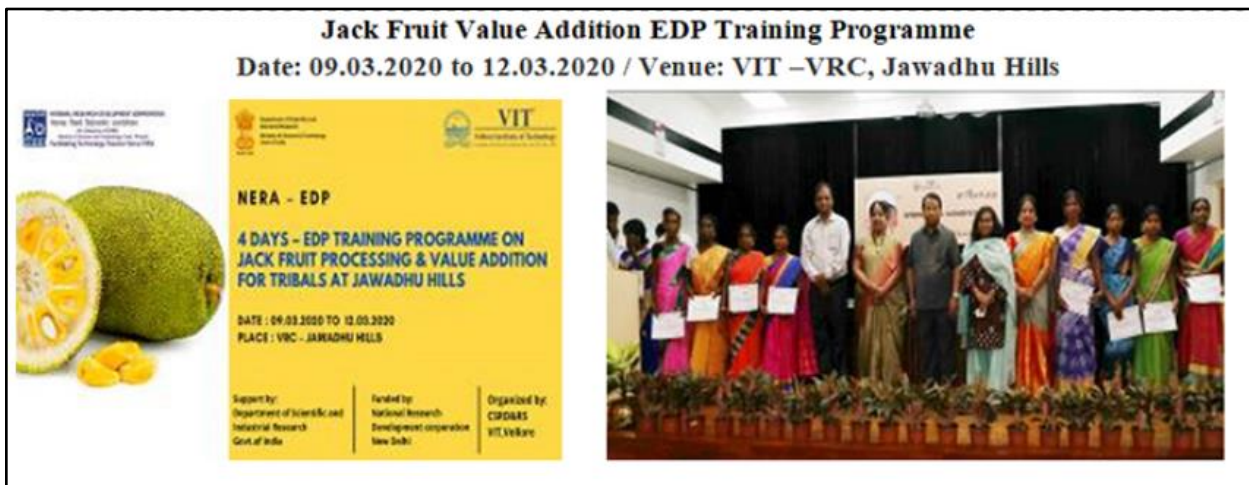
VIT is an endorsed JLG Promoting Institution associated with NABARD Tiruvannmalai and extends his supports via financial support for awareness creation and capacity building of all stakeholders under the JLG Scheme In Jawadhu Hills, Tiruvannmalai District consists of 11 Village Panchayats. Until the year 2019-20, VIET linked 147 JLGs and 19 farmers group for credit linkage for an amount of INR 442,00,000-00 with support of NABARD and Indian Bank, Jamunamarthur . Every year the Mega Loan mela is organized and loans are disbursed to JLGs for livelihood development activities with subsidy (<https://vit.ac.in/about/community-outreach/projectsandprograms>).

Entrepreneurship Development Program

VIT-CSR & RS, in collaboration with EDI (Entrepreneurship Development Institute) and District Industries Centre, train the candidates in various skills to groom them as successful entrepreneurs. The following Entrepreneur cum Enterprise Development programs were conducted during the academic year 2019-20 (<https://vit.ac.in/about/community-outreach/projectsandprograms>).

Sl. No.	Training Program	Duration	Number of Participants
1.	New Entrepreneur cum Enterprise Development Scheme	13-11-2019 to 29-11-2019	30
2.	BM & BP for AIEDP Aspirants	28-1-2020 to 30-1-2020	25
3.	New Entrepreneur cum Enterprise Development Scheme	24-2-2020 to 13-3-2020	26

The VIT-CSR&DS and National Research Development Corporation (NRDC), Government of India, with the objective to promote, develop and commercialize the technologies got the approval for conducting EDP training programs for rural areas of Vellore under the administrative control of the Dept. of Scientific & Industrial Research, Ministry of Science & Technology (<https://vit.ac.in/about/community-outreach/projectsandprograms>).



Life Skill Development for Government School Students

Life Skill Development is implemented through GV School Development initiatives by VIT-CSR&DS to 302 students in 6 Schools with the support of Vellore School Education Department.





The training includes promotion of skills and attitudes such as self-awareness, empathy, communication, interpersonal skills, decision-making, problem-solving, creative thinking, critical thinking, coping with emotions and stress, etiquette, gender sensitization, and others (<https://vit.ac.in/about/community-outreach/projectsandprograms>).



VIT's Good Girls And Boys (GGB) is youth organization, aims to promote and spread awareness about sustainable development amongst the most integral part of our societies, the youth. As stated by the United Nations, the Sustainable Development Goals encompass a wide variety of issues plaguing our societies, nations and the world entirely. The opportunity to work for a cause and the drive to make the world a better place is what makes GGB a refreshing, yet rewarding experience to be a part of. VIT students touch countless lives of people from all walks of life and inspire others.

* * *

Report of VIT-Chennai Campus

Preamble

The following is a comprehensive report on ‘SDG 8 – Decent Work and Economic Growth’ for Vellore Institute of Technology Chennai (VIT Chennai). SDG 8 deals with sustainable and fair economic growth that enhances the societies to create necessary conditions that allow people to have quality jobs which invariably stimulate the economy while not harming the environment. VIT Chennai focuses primarily on employees’ decent work culture which includes providing sophisticated infrastructure, a comfortable and benevolent work environment and enhancing the prosperity of employees.

Policies/Major decisions regarding SDG 8

The policies or major decisions regarding SDG 8 are elucidated as follows.

1. Code of Conduct

The “Code of Conduct for Employee” is established and demonstration of the same is given to all the newly joined employees via Faculty Induction Programs, as well as the existing employees (<https://chennai.vit.ac.in/files/Conduct-Rules-for-Employees.pdf>).

2. General Amenities



Canteen and Food Court Complex

The general campus amenities are aimed to make every student feel very lively, fun-filled, and a resourceful community to enrich their erudite years. Some of the major general campus facilities aid in providing a good ambience for an enjoyable learning experience. They are listed below:

- Canteens and food courts provide easier access to food and refreshments
- Health centre with in-patient facility and ambulances provide the required 24×7 health care facility
- Transport facilities for day scholar students, staff and faculty members
- Walkways for safe, easy and congestion-free movement of students inside the campus
- Banks and ATM facilities
- Electrical power backup which is provided by standby power generators
- Guesthouse for the convenience of the visiting family members of students with online booking facility
- Gymnasium for male and female students with state-of-the-art equipment
- Sewage Treatment Plant



Canteen (Interior View)



Bank & ATM facility

With clubs, chapters and college festivals, students are exposed to a competitive environment not only within the campus but also outside the campus.

3. Smart Classrooms

The classrooms are well designed rooms that incorporate everything needed for a pleasant learning atmosphere. The wide spacious classrooms contain a whiteboard and also a projector. The Professor can switch to different modes of teaching as and when required so the teaching is not monotonous and the lectures are put across in the best way possible. This hi-tech equipment enables our faculty to conduct classes in a way that helps students to make use of

every available resource from one point at the click of a button. These classrooms are also often used for seminars and events from time to time. Video capturing facilities are also available for enhancing the teaching-learning process.



Smart Classroom (Interior View)



Video capturing facility

4. Salary and Recruitment/Promotion Norms

The salaries and allowances of the regular faculty and staff members are paid as the Government norms. High standard and well-established norms are set for the recruitment of the employees and the promotion of the existing employees.

5. Academic Staff College (ASC)

Academic Staff College (ASC) is dedicated to creating a culture of academic excellence and conducting faculty development activities for all our schools and centres at VIT Chennai. ASC conducts regular dialogue with different stakeholders of the institute and coordinates with schools and centres towards achieving a decent and knowledgeable work environment. ASC network with international resource persons and universities as well as industry experts and invite the best resource persons to deliver lectures and workshops. ASC helps our faculty members and staff members stay updated with the latest developments in teaching, research and technology and thus to create a world-class learning environment for the students.

6. Fully Flexible Credit System (FFCS)

In the continuous pursuit of academic excellence and creating a student-friendly learning environment, VIT introduced the Fully Flexible Credit System (Shortly referred to as FFCS). FFCS is a way in which students have complete freedom in tailoring their course and in a way they wish. It accommodates the wants and needs of the entire student community. With this system, a student can prepare his/her own timetable with the specific courses he/she intends to do in that semester along with the timings of classes and choice of professors. Learning has never been this fun. Students have the flexibility to pursue their other interests in sports or club activities and scheduling of classes will take it along the way. It is a beneficial system that is tailor-made to suit all the kinds of students with all learning needs, whether someone wishes to complete subjects early or pursue subjects of the other branches for acquiring a Minor/Honours degree. Also, this system ensures offerings of subjects from all disciplines, encouraging students to pursue multiple interests and develop holistically.

The salient features of FFCS are as follows:

- Choice in the order of selection of courses for each semester
- Choice in the timings/time slots in the selection of courses
- Choice in the selection of number of courses per semester
- Choice of preparing his/her own Timetable and Academic Plan

- Balanced curriculum with engineering, science, humanities and management courses
- Ample opportunities to do interdisciplinary courses
- Soft on slow learners by offering important/common courses in all semesters
- Optional Summer/Intersession semester to do courses
- Opportunity of undergraduate research experience
- Value addition with double Major/Minor/Honours option
- Branch change option in B.Tech. at the end of first year

7. Internal Committees

The following are some of the internal committees to perform the courteous task within the organization to enhance quality and a decent work environment.

7.1 Internal Complaints Committee

If any woman faculty, staff, or girl student has any grievance, including any kind of harassment, the same can be brought to the notice of the Convenor or any of the Committee Members of Internal Complaints Committee for necessary action and redressal. Any physical/mental harassment towards fellow students including ragging, quarrelling, using abusive language and violent behaviour is strictly prohibited.

7.2 Intellectual Property Rights Cell

Intellectual Property Rights Cell (IPRC) is being formed and the objective is to promote patenting. The following members will constitute the IPRC.

1. Dean, Sponsored Research, ex-Officio – Convener
2. Dr. Sugumaran. V – Member
3. Dr. John Kennedy. L –Member

7.3 Vigilance Cell

A 'Vigilance cell' is being formed and the objective of this cell is to be on the alert of any misconduct/unwanted activities/risks and take preventive measures. The following members will be part of the team:

1. Dr. R. Venkatesh – Convener
2. Dr. S. Elavenil – Member

8. Medical Insurances for the employees

The Management is providing mediclaim coverage for the employees and their family for a sum of Rs. 2 Lakhs, and the premium for 2 lakhs is borne by VIT Chennai.

Academic details regarding SDG 8

The following courses are offered as part of B.Tech and BBA programs respectively at VIT Chennai.

- MGT1003 – Economic Analysis for Managers
- MGT1024 – Organizational Behaviour
- CLE2022 – Economics and Business Finance for Civil Engineer
- HUM1021- Ethics and Values
- HUM1036 - Engineering Economics and Decision Analysis

Major Events Organized

1. Faculty training

Faculty and staff members are given adequate and periodic training on Outcome-Based Education (OBE), other teaching-learning processes through Academic Staff College (ASC).

S. No.	Name of the Program	From	To	No. of Days
1	Hands on Mathematics Through “A Smart And Self Learning Companion”	31-08-2021	31-08-2021	1
2	Lights, Camera, Action (Film Making and Editing)	10-09-2019	10-09-2019	1
3	Self-Defence	14-09-2019	14-09-2019	1
4	Fitness Workshop	27-09-2019	27-09-2019	1

2. Lectures organized relevant to SDG 8

- School of Computer Science and Engineering organized a guest lecture on ‘Why Should You Choose a Career in Computer Vision?’ by Mr. Tata Ganesh, Senior Machine Learning Engineer, Capillary Technologies on 30/10/2019. Computer vision is an interdisciplinary scientific field that deals with how computers can be made to gain high-level



understanding from digital images or videos. From the perspective of engineering, it seeks to automate tasks that the human visual system can do.

- VIT Business School has organised a one-day panel discussion on union budget 2020 on 11th February 2020 at VIT Chennai. The eminent speakers in various areas related to auditor, macro economists, agricultural economists participated and shared their views on the union budget. Nearly 120 participants including students, faculties and research scholars attended the session and shared their views.
- School of Computer Science and Engineering organized a guest lecture on 'Investor Awareness Program' by Mr. Dinesan Kallidil, Regional Head, South Region, Emkay Global Financial Services Limited on 15-11-2019 for students, staff and faculty members. The topics discussed in this lecture are as follows:
 - Indian Stock Market and Opportunities available to Indian Investors
 - Smart Index Trader Program



- - -



Shri Ram Nath Kovind

Hon'ble President of India

on

14th April, 2020

Plenary Hall Vigyan Bhawan, New Delhi



Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

SDG-9

ANNUAL REPORT 2019-20

Report of VIT-Vellore Campus

Promoting innovation in technology, leading to industry connectivity and building physical infrastructure attuned to these goals are vital to long-term economic development of not only a country, but also of humanity at large. Technological progress is obviously the key to finding lasting solutions to both economic and environmental challenges, such as providing new jobs and promoting energy efficiency. Promoting sustainable industries, and investing in scientific research and innovation, are evidently important ways to facilitate sustainable development. Further, it has long been recognized that growth in industry, innovation and infrastructure is pivotal to several other disciplines of development such as productivity and incomes, improvements in health and education outcomes. Evidently, investment in infrastructure could also be related to more avenues for addressing areas around clean water, affordable energy, and even climate change. Keeping these facts in view, VIT, as a centre of excellence in education and research, has always been aligning its policies in tune with attaining the goal industry-innovation-infrastructure. The following points are notable in this context:

A. INDUSTRY INTEGRATION INTO ACADEMIA:

Basic research with an inclination towards industry has been happening in VIT during the past years. However, several basic issues in industry are not adequately addressed. VIT has been observing that the lack of substantial integration with industry and other stakeholders in India would demand the adoption of innovative strategies to face the mammoth global challenges (<https://vit.ac.in/files/VIT-innovation-and-startup-policy.pdf>). Further, many times, industries resort to a rule-of-thumb approach in their problem solving, and are denied of exposure to the research happening in the academic institutions. To offset the lacuna, a strong industry interaction is imperative. Collaborative and cooperative research with industry could lead to direct Intellectual Property (IP) generation and/or translation into industrial realization (<https://vit.ac.in/sites/default/files/VIT%20IPR%20POLICY.pdf>).

Industry Guest Lecture, included in all the courses has paved the way for strong interactions between the institute and industry. From the Technical Answers for Real word Problems (TARP) course (<https://vit.ac.in/sites/default/files/academic/Academic-Regulations.pdf>), the students are able to apply their subject knowledge into real-world problems of the industry.

The project-based internships, currently being encouraged by VIT, is a good learning process which brings new perspectives and is keeping abreast with the industry trends (<https://vit.ac.in/sites/default/files/academic/Academic-Regulations.pdf>). More than 15 industry-sponsored labs help the students learn the concepts practically through interaction and working methods. Regular industry conclave meetings in every school are further strengthening VIT's interaction with industry and its technology road maps. Periodic industry visits help the students to update their understanding of the subject and the industry practices in each domain. Preparing and inspiring student minds (PRISM) is an innovative project experience organized in collaboration with Samsung. Industries like Honeywell, JCI, Microsoft, Texas instruments innovation challenge, Makeathon, Codeathon, Buildathon and Hackathon activities are regularly conducted in VIT to address real-world problems faced by the industry. Industry mentors help our students through various entrepreneurship camps. Innovative project collaboration between industry and VIT is being carried out through cooperative knowledge creation and exchange. Industry participation makes students learn from new perspectives and helps create rapport with industry persons. It provides greater clarity and has an impact on their placement interviews. The most meaningful aspect is that such tie-ups acknowledge and capitalize on the relative strengths of academia and the industry. Thanks to VIT's strategy, students are deployed on prestigious projects by the industry. Industrial mentors recognize the work done by the students, which in turn has resulted in innovation challenge awards and the prestigious ARIIA award from the Government of India in 2019.



I. Industrial Expert Lecture:

As per the curriculum, faculty members used to organize the industrial expert lectures for each and every course. This has been meant for understanding the need of the industries. This kind of lecture actually reduces the gap between the industry and academia. A total of 2038 Industrial expert guest lectures have been conducted so far.



II. Industry Academia Conclave:

Each school is encouraged to conduct the industry academia conclave (IAC) for bridging the theoretical ideas into technological devices. In this particular year, the School of Electrical Engineering (<https://vit.ac.in/school-electrical-engineering-select/one-day-industry-academia-conclave-e-mobility-integration>), School of Electronics Engineering (<https://vit.ac.in/school-electronics-engineering-sense/3rd-industry-academia-conclave-2019-create-smart-future>), School of Mechanical Engineering, VIT-Business School (<https://vit.ac.in/vit-business-school-vit-bs/industry-academia-conclave-2019-futuristic-business-leaders>). A total of 6 IAC has been organized by the various schools of VIT. For instance, the 2nd IAC 2019 was conducted by the School of Mechanical Engineering (SMEC), VIT Vellore on 15 November 2019. 36 Representatives from 31 industries took part in the conclave. 59 faculty members interacted with the representatives from industries. Mahle, SRK polymer, Simtek, BHEL, Sandvik, Scanray, Olitech, ABCmetfab, NIOT, Kemppli are some of the reputed industries which took active part in

the Industry Conclave. Shri Narayana Rao M, MTAR, Hyderabad and former Managing Director, MIDHANI, Ministry of Defence, Government of India was the Chief Guest who inaugurated the Industry Academia Conclave. Representatives from industries shared research topics and possible consultancy works. Follow-up actions are taking place between faculty members and representatives from industries to have collaborative research works, consultancy works and joint product developments.



III. Harvesting Industry Linkages in Academics:

(i) Consultancy Projects:

Industry participation in academics has resulted in 446 consultancy projects in the last three years (<https://vit.ac.in/research/industrial-consultancy>) .

(ii) Internships and Placements:

In addition to the consultancy projects, Industry linkages have resulted in 1926 project-based internships and 700 plus companies visiting regularly with attractive job opportunities to our students through the “dream” and “super-dream” offers (<https://vit.ac.in/placements/statistics>) .

(iii) Patents and Startups:

Industry participation in academics has also facilitated 163 patents published in the last three years (<https://vit.ac.in/sites/default/files/Granted-patents-2010-2021.pdf>). By exploiting these practices, VIT-TBI supported 25 start-ups, and over 107 workshops on Industry-Academia Innovative during the last 5 years. Almost all the programmes of science, engineering and technology, offered by VIT will have an industry component inasmuch as at least one out of eight modules in each course will be related to industry, and that module will be addressed by a resource person from industry. Further, a substantial part of the syllabi for engineering courses are devoted to industry.

Following are some of the other major innovative steps undertaken by VIT for the furtherance of academia-industry relation.

a) Consultancy as a tool to stimulate industry partnership:

VIT has a policy on consultancy including revenue sharing between the institution and the individual and encourages its faculty to undertake consultancy and the same is displayed in the institutional website (<https://vit.ac.in/sites/default/files/VIT-Consultancy-Policy>). Further, VIT encourages faculty members to establish a strong connection with various industries. Faculty members visit identified industries periodically and interact on a continuous basis. This continuous interaction enables faculty members to identify industrial problems for solving through consultancy mode or through student projects. After interactions for about a year and after some salient outcomes in terms of collaboration, the relationship is formalised through Memorandum of Understandings. Sustained interactions have also resulted in industries like Danfoss, Schneider Electric India, Johnsons Controls India and Valeo setting up Industry Sponsored Laboratories (<https://vit.ac.in/research/sponsored-research>). SpoRIC has created a Technology Development Cell as a network of Institutions and Industries with VIT as the nodal coordinating agency. The major functions of Technology Development Cell are: (i) To increase access of industry to cutting edge technology developed within institutions. (ii) To capitalise on the research base of VIT and partner institutions for evolving world class technology. (iii) To take up collaborative applied research projects along with Industries. (iv) To assess and identify potential technology areas to create a productive ecosystem of industry and institutions. The specific concessions given to faculty members to focus more on Industry Consultancy and Connect include: Transparent revenue sharing mechanism, sponsorship of travel and other expenditure during all official visits, grant of on duty for all such visits, consideration of contributions in extension activities in performance evaluation and reduced academic workload for significant contributions (<https://vit.ac.in/VIT-Consultancy-Policy/index.html>).

b) There are several laboratories funded by Industry including, Motorola wireless and RFID Application lab, ETAS simulation lab, IBM Mainframe centre, Pearson Vue esting centre, Microsoft innovation centre, CISCO centre etc. that train the students in state-of-the-art application and instrumentation. Some of the advanced lab facilities in the campus includes, VCARE, Nano Composite, Sol- Gel Biosensor, SEM, NMR Spectrometer, to name a few (<https://vit.ac.in/research/sponsored-research>).

B. INNOVATION ECOSYSTEM:

Institution has created an ecosystem for innovations including the Incubation Centre and other initiatives for creation and transfer of knowledge. The institution has a well- established “Technology Business Incubation” center known as “VIT Technology Business Incubator (VIT-TBI)”, and it has been operational since March 2003 (www.vittbi.com/#/). It is a joint initiative with the Department of Science and Technology, Govt. of India, VIT-TBI has subsequently partnered with TIFAC, TDB, DSIR, MSME and BIRAC of the DBT on various innovation and entrepreneurship programs. VIT-TBI has worked with international agencies such as UNIDO and “infoDev” (The World Bank Group) in the past, which in turn has made provisions to have access to infrastructure, prototype development, research assistance, funding, business and consulting, in a single window mode to early stage technology entrepreneurs. It also makes use of the huge research infrastructure of the institute. VIT-TBI is also a “PRAYAS Center” under the NIDHI scheme of DST for nurturing knowledge-based and technology-driven ideas and innovations into successful start-ups. Further, “BioNEST” - A Bio-incubation Center at VIT has been set up with the support from BIRAC, and is a state-of-the art incubation center supporting innovative start-up companies and bio entrepreneurs engaged in the broad areas of life sciences and medical devices.

a) Industry interaction in bio-based Schools and Centres: It is common knowledge that, until late 1990’s, the Life Science/Bio-science Schools (and their Departments) in Indian context, were not grooming their students to be a part of the industry. Realizing these lacunae, VIT has initiated the introduction of industry components into the curricula and syllabi of Bio-science School since more than a decade. During these years, there has been a spiraling growth in the number of (Bio) students of VIT in receiving exposure to the industry ambience; it could be in the form of internships, project-based learning and various other training programmes. Significantly, since 2012, VIT has been holding BIOSUMMIT every year involving major drivers in industry with a view to bridging between the industry and academia. In addition to talks and interactions involving industry personnel, Biosummit would also host panel discussions involving students, faculty members and the industrialists. The major outcome of this venture is that more and more students are getting opportunities to get exposed to the industry (<https://vit.ac.in/detailview/biosummit-2019>).



b) Innovation laboratory: VIT houses an extensive Innovation Laboratory to encourage the students to get involved in innovative research (<https://vit.ac.in/id-innovation-lab>). Significantly, this opportunity is accessible to undergraduate and postgraduate students alike. Creation and maintenance of the Innovation Laboratory did pave the way for students' successful participation and winning prizes in industry fests, hackathons and makathons held both within India and abroad.

The other major activities of VIT-TBI include:

- (i) Extending seed funding & grants to start-ups in the technology domains of Energy, Healthcare, Agriculture, Biotechnology and Information technology, and providing infrastructure and resources for R&D with facilities for Design, experimentation and product Development for innovators/startups
- (ii) Encouraging New Product Development in cutting-edge technologies benefiting the society
- (iii) Organising structured innovation & entrepreneurship capacity building programmes for all the stakeholders at regular intervals
- (iv) Managing the Entrepreneurship Cell (E-Cell) of VIT for the promotion of entrepreneurship on campus

- (v) Through the E-Cell, support innovative student startup projects with VIT grantsup to Rs.5 Lakhs in phases. Details of VIT-TBI are available on <http://www.vittbi.com/>.
- (vi) Towards establishing a conducive innovation ecosystem, as part of the curriculum, all students undergo two University Core Courses (i) Introduction to Innovative projects and (ii) Lean Start-up Management.
- (vii) These project-based courses enable students to learn through hands-on projects. All schools of VIT periodically organize various Hackathon, Codeathon and Designathon competitions for students

About 60 companies have been incubated or are in the process of being incubated during the past 15 years. Some of the prominent companies incubated by the VIT TBI are: Xcode Life Science Pvt. Ltd., (<https://xcodelife.co/>); Thinkcore Technologies Pvt. Ltd., (<http://www.thinkcoretech.com/>); The Meditube Media Pvt. Ltd., (<https://www.themeditube.com/>); Kvyor Genomics Pvt. Ltd., (<http://www.kyvorgenomics.com/>); Virtis Bio Labs (<http://www.virtisbiolabs.com>).

c. Recognition for Innovation:

Vellore Institute of Technology (VIT) has secured the top spot among private institutions in the Atal Ranking of Institutions on Innovation Achievements (ARIIA 2019) awarded by the Ministry of Human Resource Development (MHRD). In order to promote innovations in Higher Education Institutions (HEI), MHRD came out with ARIIA. ARIIA is an initiative to systematically rank all major higher educational institutions and universities in India on indicators related to “Innovation and Entrepreneurship Development” amongst students and faculties. VIT Chancellor G. Viswanathan received the award from His Excellency Mr. Ram Nath Kovind, President of India, during the presentation ceremony held for the release of the National Institutional Ranking Framework (NIRF) in the year 2019.

(<https://www.thehindu.com/news/national/tamil-nadu/vit-named-most-innovative-private-institution-atal-ranking-of-institutions-on-innovation-achievements-ariia-2019-ministry-of-human-resource-development-mhrd/article26786817.ece>).



Atal Ranking of Institutions on Innovation Achievements (ARIIA 2019) awarded by the Ministry of Human Resource Development (MHRD)



Certificate of ARIIA 2019 award

In addition to ARIIA award, VIT also bags the FICCI Higher Education Excellence Award 2019 for "Excellence in Enabling Research Environment (<https://vit.ac.in/vit-bags-ficci-higher-education-excellence-award-2019-excellence-enabling-research-environment>)



VIT bags the FICCI Higher Education Excellence Award 2019 for "Excellence in Enabling Research Environment"



Certificate of FICCI Higher Education Excellence Award 2019

C. INFRASTRUCTURE AND LEARNING RESOURCES:

The institution has adequate facilities for teaching - learning. viz., classrooms, laboratories, computing equipment, etc. Response: Departments of Vellore Institute of Technology are located in the Main campus (VIT Vellore) and the VIT Chennai campus. VIT is spread over 563.65 acres of land. Of the total built-up area of 7,65,294 sq.m, an area of 2,20,158 sq.m is used for academic activities (classes, labs, library, auditoriums, etc.) and 4,56,319 sq.m

for hostels. The remaining area is used for support facilities like playgrounds and canteens. At VIT, strategies are adopted for delivering teaching – learning process, which includes interaction and direct contact between the student and teacher in class rooms, laboratories and library. We have well-furnished classrooms, ubiquitous ICT facilities, state-of-the-art laboratories and excellent computing facilities for nurturing teaching – learning and research. The picture given below illustrates how the services are designed so that students can learn effectively. Classrooms: VIT has 375 class rooms that cater the needs of UG and PG programs, including specialized interdisciplinary programs. All the classrooms have LCD facility, Wi-Fi connectivity and equipped with smart board as well as white board. This facilitates multimedia presentation and also enables lecture capturing. It is well equipped with facilities of effective teaching and learning as per AICTE (for UG & PG programs), Council of Architecture (for UG programme) and The Bar Council of India (for UG programme). VIT is very well equipped with laboratory facilities for hands-on training of UG and PG students. Additionally, it has specialized laboratories that provide interdisciplinary facilities with state-of-the-art equipment for PG & Ph.D. students to carry out their research work. The institute has 341 teaching and research labs in various programs.

a) **Computing Equipment:** Currently, computing equipment has become the backbone network of any discipline and smartphone and Wi-Fi enabled for students of Generation Z. With foresight, VIT established IT infrastructure that has been widely spread across academic buildings, laboratories and hostels using high speed robust networks with access to Internet through multiple ISPs. All computers are connected to the internet over high-speed cables facilitating a 1:4 availability of computers to students. The computer laboratories cover many cutting-edge research sectors, such as Networking & Pervasive, Cloud Computing & Data Analytics, Analog & Digital Circuits, to mention only a few. VIT provides uninterrupted access to information and network services with

12.155 Gbps of internet bandwidth and over 2251 Wi-Fi access points. The security solutions

from Palo Alto, McAfee, CISCO AMP & K7 etc. are used to secure campus IT facilities. Energy efficient, large data storage system built to the needs of the stakeholders for storage of their academic data. As technology demands, it has also subscribed to a wide variety of software licenses. File Description Document Upload any additional information View

Document Paste link for additional information View Document 4.1.2. The institution has adequate facilities for cultural activities, yoga, games (indoor, outdoor) and sports. (gymnasium, yoga centre, auditorium, etc. In order to be mentally and physically fit, VIT provides state-of-the-art facilities with magnificent air- conditioned gymnasia, snooker hall, play grounds, stadium, indoor courts as well as a number of centres for physical education & sporting activities that help students stay healthy and fit (<https://vit.ac.in/campuslife/sports>). These facilities develop a spirit of sportsmanship among students.

b) **Library as a Learning Resource:** Having adopted the state-of-the art technology with Integrated Library Management System (ILMS) and has digitisation facility, the library facility of VIT is one among the best available in the country (<https://vit.ac.in/academics/library>). VIT Central Library began the process of automation in 1998, with barcode technology using the in-house software for issue and return of books. In 2008, it was upgraded to a fully automated process with commercial ILMS, LIBSYS version 4.0 with web-centric applications. In 2015, LIBSYS software version 7.0 with RFID technology was introduced. The new LIBSYS-ILMS has modules for book acquisition, cataloguing, circulation and serial management (periodical management). Members can browse and search the library collections with extended bibliographic details using WebOPAC (federated search) facilities. Value added services such as Current Awareness Services (CAS) and Selective Dissemination of Information (SDI) service are also provided. In 2019, the library migrated to the ILMS-KOHA 19.05 from LIBSYS-7.0 Version with RFID Technology and biometric authentication. MARC 21 (Machine Readable Catalogue) interface is available with AACR2 format for information browsing and searching. The Central Library is equipped with a modern, high speed scanner, BOOK EYE- 4 for document scanning which follows the copyright act. The library has developed an Institutional repository intranet portal which contains a list of publications (which do not fall under copyright act) of faculty members and Ph.D. thesis in a browsable and searchable format (<https://vit.ac.in/files/library-policy.pdf>).

Facilities for e-content development comprise: 1. Media centre 2. Audio visual centre 3. Lecture Capturing System(LCS) 4. Mixing equipment and software for editing,

* * *

Report of VIT-Vellore Campus

Preamble

- a) Develop quality, reliable, sustainable, and resilient infrastructure with focus on affordable, and equitable access
- b) Enhance scientific research, encourage innovation and sustainability increasing the number of research and development works
- c) Support domestic technology development, research and innovation
- d) Significantly increase access to information communication technology

Policies / Major decisions taken regarding the SDG

The research group at School of Mechanical Engineering (SMEC) in VIT Chennai is actively involved in cutting edge and innovative projects such as cost effective waste water recycling, solid waste management systems which are sponsored by DST SERB and DST WTI, GoI. The institute ensures recycling of grey water for circulation in toilets and gardening purposes. The energy efficient infrastructure ensures proper energy conversion and storage. The well planned and comprehensive infrastructure layout have been excellently planned to make the maximum utilisation of the campus. The campus is thus a perfect atmosphere for research and studies.

Academic Details pertaining to the SDG (Launch of program, inclusion of course, modifications in syllabus etc.)

The School of Electrical and Electronics Engineering (SELECT) has 12 labs with modern infrastructure and a Center for Industrial Automation sponsored by MSME. In addition to core electrical and electronics lab infrastructure, state of the art facilities are available in labs like Smart grid lab, Protection and switch gear lab, PCB fabrication and testing lab, and Advanced Electrical drives lab. The School has the latest simulation tools to cater to various specializations and it is equipped with the latest experimental and computational facilities. Laboratory facilities enable the students to solve real world engineering problems defined by industries, participate in various project competitions and obtain internships. Students get “Industry Ready” through industry linkages and get placed in core electrical companies, software and analytics sectors. The schools has signed MoUs with universities and industries like LUCAS TVS, kWatt Solutions, Nokia Solutions, CDCE HP Automation and Robotics, Daewon India Auto Parts Pvt Limited, Sekisui Dilm Molding Pvt Ltd and Shri Vishnu Magnetic Pvt Ltd to give students the opportunity to get industry exposure through various collaborative activities. Several lab based certifications programmes are also organized to train students in

conducting experiments with industry standards for better placement prospects. Students are associated with the faculty members in real time consultancy projects.

The School of Electronics Engineering (SENSE) has modern state-of-the-art laboratories in the areas of Semiconductor Devices, Micro and Nano Devices, Analog Circuit Design, Digital System Design, Digital Signal Processing, Embedded Systems and Architecture, Microprocessors and Microcontrollers, Communication Engineering, Wireless Technologies, Internet of Things (IoT), Microwave and Optical Communication, Computer Networks and Advanced VLSI Design.

The School has the latest industry-standard simulation tools (TCAD, Intellisuite®, Cadence®, Tanner, Mapusoft RTOS, HFSS, ADS, Microwave studio, Netsim and RSoft tools) catering to various circuit branch specializations, and is equipped with facilities for synthesis, characterization and measurement of experimental and theoretical results.

The state-of-the-art “Microwave and Antenna Measurement” lab has been successfully offering professional test services that involve the antenna characterization in the anechoic chamber. The anechoic chamber is fully automated and fully shielded chamber ranging in frequency from 700 MHz to 18 GHz dedicated for RF Measurements.

The pride of the School of Mechanical Engineering (SMEC) lies in the significant research funding received from several government agencies and private agencies such as DST, DRDO, MNRE, CSIR, CVRDE, CPDO, IE, AR&DB, CVRDE, BRNS, ISRO, UGC, NRB, AICTE, and Assault Systems La Foundation, etc., Memoranda of Understanding (MoU) have been signed with various industries, research organizations and leading universities. The school has modern facilities, enabling cutting edge research in a wide spectrum of technological areas. The school actively assists local industries in product design, complex-part manufacturing, and other competent areas.

Major events organised

- a) Workshops, Conferences and Seminars: Apart from various schools, VIT Chennai has an Academic Staff College (ASC) for providing training to the faculty members and staff in the essential and emerging areas that would lead to innovation. ASC and other schools across the campus conducted many workshops, conferences and seminars to promote industry institute interaction and promote innovation in various emerging fields. Some of them are listed below:

School/ Centre	Workshop/ Conference/ Seminar	Title	No.of days	Total no of participants
ASC	Seminar	IoT with Machine Learning – Use Cases	1 (23.08.2019)	20
ASC	Seminar	Industry 4.0 and Block Chain Technology	1 (23.08.2019)	10
SELECT	Workshop	Industrial Automation and Industrial IoT (IIoT)	1 (12.10.2019)	10
SMEC	Workshop	Industry Certification of Solid Works	1 (12.10.2019)	32
SMEC	Workshop	Simulation of conventional and innovative refrigeration systems using cycle-tempo	2 (4.01.2020-05.01.2020)	21
SCOPE	Seminar	Information Security, AI and Industry 4.0-At Full Throttle	06.02.2020	42
SELECT	Workshop	IoT Based Smart Monitoring and Control Systems	1 (22.02.2020)	30
SMEC	Workshop	One Day National Workshop on Intelligent Vehicle Technologies	1 (13.03.2020)	80
SENSE	Seminar	Internet of Things to Internet of Everything	1 (30.04.2020)	74
SENSE	Seminar	E-Learning Lecture: Outlook in Post Covid-19	1 (1.05.2020)	22
SSL	Seminar	Covid-19 and Technological Solutions	1 (19.05.2020)	103
SENSE	Seminar	IoT verticals from Theory to Practice	1 (23.05.2020)	8
SMEC	Seminar	Research on End Milling of Maraging Steel using PVD Coated/Cryogenic treated Cemented Carbide inserts and Selection of Fan-Methodology in Transport Refrigeration	1 (05.06.2020)	41
SELECT	Seminar	Connected to IoT networks and Data Platform	1 (12.06.2020)	32
SCOPE	Seminar	Smart Everywhere: How IoT is making Impact on us	1 (18.06.2020)	49
SMEC	Seminar	Education 4.0-Industry 4.0	1 (20.06.2020)	92
SCE	Seminar	Value Chain of the Real Estate Industry	1 (28.06.2020)	55
SCOPE	Seminar	Role of the Next Generation Distributed Ledger Technology: IoTA in Developing Secure and Smart IoT Solution	1 (06.09.2020)	67
SCOPE	Seminar	Scope for Entrepreneurial Skills	1 (06.11.2020)	31

Lectures organised to enhance student awareness

The faculty members of VIT Chennai organised many lectures by industry experts to enhance student awareness on solutions for typical industry problems. This would give them a good exposure on the applications of theoretical concepts being taught in their courses. Some of the lectures organised by our faculty members are listed below:

S. No	Name of the faculty member	Title of the lecture	Date
1.	Velmathi G	Technological Solutions to Silicon Industry by Mr. S. Gokulakrishnan, Design Engineer, Mobiveil Technologies Ltd, Chennai http://www.mobiveil.com/	06.11.2019
2.	Bindu B	Trends for Wearable and Medical Devices by Professor, Dr. Subhas Mukhopadhyay School of Engineering, Macquarie University, NSW 2109	16.12.2019
3.	Usha Kiran Kommuri	Application of Sensors and Instrumentation in Industry by Mrs. Chenthamarai Selvam, Deputy Director & Sr. Principal Scientist (Rtd), CSIO, Chennai	31.01.2020
4.	Jagannath M	Robotics and Automation and Wireless and Mobile Communication by Mr. R. Nithya Shankar Product Testing and Student Mentor SP Robotics Makers Lab, Chennai	19.02.2020
5.	Ananiah Durai Sundararajan	Opamp and its Industrial Applications by Mr. Vikram Gopinath J.S., RTL Design Engineer, Microchip Technology Chennai	21.02.2020

These guest lectures by the industry experts were eye-opener for the students. Based on these lectures, few projects were undertaken by the students which provide feasible solutions for some of the industry problems.

Guest Lecture on 'Technological Solutions to Silicon Industry' by Mr Gokula Krishnan, Design Engineer, Mobiveil Technologies Ltd, Chennai, on 06.11.2019, imparted a valuable discussion on the development of Si Intellectual properties (SIP), platform and solutions for Data Centre,

Networking and IoT markets. The lecture revolved round the explanation of the memory controller and flash storage devices that impressed the students.



Dr. Velmathi G felicitating the speaker from Mobiveil Technologies Ltd.

Dr Subhas Mukhopadhyay, School of Engineering, Macquarie University, NSW, on 16.12.2019, delivered a talk on 'Trends for Wearable and Medical Devices'. He explained the advancement of sensing technologies, embedded systems, wireless communication technologies, nano technologies, and miniaturization in developing smart medical systems to continuously monitor activities of human beings.



Dr. Subhas Mukhopadhyay delivering a talk to the students

Guest Lecture entitled 'Applications of Sensors and Instrumentation in Industry' by Mrs Chenthamarai Selvam, Deputy Director and Sr. Principal Scientist (Retd) CSIO, Chennai, on 31.01.2020, dealt with contemporary issue and the underlying challenges in application of sensors and instrumentation in the Industry.



Dr. Chenthamarai Selvam felicitated by a student of VIT, Chennai

Guest Lecture entitled 'Robotics and Automation and Wireless and Mobile Communication' by Mr R. Nithya Shankar, Product Testing and Student Mentor, S P Robotics Makers, Chennai, on 19.02.2020 encompassed around the components required for building a robot, selection criteria of the component, and robot programming for real world application.



Demonstration of Robot design by Mr R. Nithya Shankar, S P Robotics Makers

Guest Lecture entitled 'Opamp and its Industrial Applications' by Mr Vikram Gopinath, JS RTL Design Engineer Microchip Technology, Chennai, on 21.02.2020, dealt with the proper design of basic circuits of Op-amp and its scope of applications in the industry.



Mr. Vikram Gopinath of M/s. Microchip Technology delivering the talk.

Thus VIT Chennai continuously works towards the industry-institute interaction to develop innovative solutions to the real world problems with the abundantly growing infrastructure.

10 REDUCED INEQUALITIES



Reduce inequality within and among countries

SDG-10

Annual Report 2019-20

Report of VIT-Vellore Campus

In the view of global development, United Nations Sustainable Development Goals (SDGs) are proposed. The 17 Sustainable Development Goals are defined in a list of 169 SDG Targets. Progress towards these targets is agreed to be tracked by 232 unique Indicators. In connection to that the UN has defined 10 Targets and 11 Indicators for SDG 10 - Reduced inequalities. The inequalities are to be nullified in all aspects, be it income inequalities, be it based on age, sex, disability, race, ethnicity, origin, religion or economic or other status, be it based opportunities and end discrimination.

Vellore Institute of Technology (VIT) is taking care of this SDG-10 in all aspects and strenuous efforts are taken to reduce inequalities in all the aspects. Moreover these goals can be achieved collectively with collaboration of like- minded people, in that aspect the researchers are working hard to attain these goals and to reduce the inequalities. These endeavors will largely benefit the mankind.

Most of these SDGs are proposed with the noble notion to provide better future for all. Each and every step taken towards these SDG individually will collectively yield good results and therefore these can be implemented to the fullest core in the year 2030.

Vellore Institute of Technology strongly believes in their caption “A place to learn and chance to grow”. We are providing opportunities to all to learn and grow. We strongly believe that providing education to all, will bridge the gaps in all SDG implementation globally. As per our vision “Transforming life through excellence in education and research”, we consistently transform and provide equal opportunities to all to excel in their fields.

As we say that providing education will uplift their life style but as per 2011 census only 8.15% (68 million) of Indians are graduates [1], Vellore Institute of Technology contributes more to this number. Most of them are missing their school education and higher education because of their financial status, though government organization and NGO's are trying hard to find the deserving ones and providing opportunities to them to pursue their education. Vellore Institute of Technology lends their helping hands to such deserving students.

- An average of 35.74% of students benefited by scholarships and free-ships provided by institution in the last five years.
- 62.71% of students have benefited through various capability enhancement schemes offered by the institution. This ultimately leads to their placements too.
- About 12% of students of the 2018-19 passed out batch are pursuing higher studies.
- An average of 50.87% of students got campus placements during the last five years.

a) Free Education for Deprived Students:

The STARS (Support The Advancement of Rural Students) Scheme - fully funded education for economically challenged students program which provides free education for the top ranking students from all districts of Tamil Nadu, ensures free education to one top ranking male and female student of every district. So far, 659 students have benefited through the STARS programme since the inception of the scheme, of which 533 students are first generation graduates (<https://vit.ac.in/stars-support-advancement-rural-students-0>). All the benefited students have been successfully placed and have been reciprocating to the society in return. Several of them have secured covetable positions abroad.

b) Extending Campus Facilities to Local Educational Institutes/Schools:

VIT possesses the rich facilities of sports for the students and faculty. VIT is kind enough to extend all these facilities to the various institutes/schools nearby. Besides, VIT also renders free service by training the deprived students from rural areas.

c) Agriexpo for Farmers:

Apart from this, VIT hosts several agricultural expos in support of local farmers. In 2019, and offers its sports facilities for tournaments among local schools. Two-day expo and workshop on farming and related activities was inaugurated with special focus on water conservation (<https://vit.ac.in/general/vit-agri-expo-2019>). Modern agricultural equipment, fertilizers and

pesticides, tractors, horticulture crops and seeds were displayed and workshops on water management, soil-less agriculture, poultry farming, bee-keeping, drip irrigation, solar technology and food processing were held (<https://www.thehindu.com/news/national/tamil-nadu/agri-expo-and-workshop-gets-underway-at-vit/article29858604.ece>).



Agro-expo in 2019 at VIT

d) Outreach Activities: Public Health:

Apart from these socioeconomic programmes conducted by the Institute, the Institute also supports a large number of student-based Non-Governmental Organizations like Juvenile Care, Helphen, Anokha, Youth Red Cross and Fepsi who do a vast body of public work in areas like education of children and raising awareness on public health.



Special medical camp is arranged at Pennathur in coordination with Sri Narayani Hospitals on 22/2/2020, a total number of beneficiaries – 154

e) **SDG10 in Academics**

VIT also aims to address the reduced inequality among all the students by offering the following course in various branches of Science and Engineering Programs.

- **HUM1021 – Ethics and Values**

f) **Students from Developing Countries:**

VIT also extends helping hand in admitting the students from various developing countries. A total of 175 students got admitted in AY2019-2020 in various branches of Engineering and Science courses

(<https://vit.ac.in/admissions/international/overview>).

This can also be vouched by looking at the feedback given by foreign alumni

(<https://vit.ac.in/admissions/international/testimonials>).

g) **Publications Addressing Reduced Inequalities:**

Analysis and Optimization of Queueing Systems in Airports—Discrete Event Simulation

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85079633257&doi=10.1007%2f978-981-15-1201-8_125&partnerID=40&md5=f9041ba3bbbb4118c5096c137090d34d

Energy-Aware Fault-Tolerant Dynamic Task Scheduling Scheme for Virtualized Cloud Data Centers

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048520522&doi=10.1007%2fs11036-018-1062-7&partnerID=40&md5=9cf4c45776bb7b87ab08f65c615d2b89>

The association between foreign direct investment (FDI), economic growth (EG) and government expenses on infrastructure (GI) in India <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067888147&partnerID=40&md5=de667747cfca322c6b5ab1d9f67292f7>

Multi-objective economic emission dispatch using interior search algorithm

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052473483&doi=10.1002%2fetep.2683&partnerID=40&md5=74a1c18ac87d946b38d21e31afe89a8c>

Representation of the women's financial stability portrayed in selected post-feminist Tamil films

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85073741978&partnerID=40&md5=1fd9deb0bf705a0d790d45eba1ee1484>

Crime data clustering using neighbourhood rough set <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85078346322&doi=10.5373%2fJARDCS%2fV11SP11%2f20193056&partnerID=40&md5=68abe1d09a5205c370db75c33aa8100e>

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Report of VIT-Chennai Campus

Preamble

The following is a comprehensive report on 'SDG 10 – Reduced Inequality' for Vellore Institute of Technology Chennai (VIT Chennai). SDG10 deals with employees who are given equal opportunities, services and a chance for a better life. VIT Chennai promotes a very high standard work environment and eradicates substandard and biased work practices.

Policies/Major decisions regarding SDG 10

The policies or major decisions regarding SDG 10 are elucidated as follows.

1. Equal Opportunity Cell

The objective of 'Equal Opportunity Cell' is to ensure any discrimination against any employee or job applicant because of race, colour, religion, national origin, sex, physical or mental disability, or age. The following are the members of the team:

1. Dr. Peer Fathima. A – Convener
2. Dr. S. Geetha – Member
3. Dr. K. Chitra – Member
4. Mrs. Mary Joseph – Member

The members meet periodically to formulate guidelines and policies regarding discriminations, inequalities, and other related practices. The members also provide solutions and take necessary corrective actions on the reported issues to them on a case-by-case basis within a shorter duration.

2. Prevention of Harassments

If any woman faculty, staff or girl student has any grievance, including any kind of sexual harassment, the same can be brought to the notice of the Convenor or any of the Committee Members of Internal Complaints Committee for necessary action and redressal. What constitutes sexual harassment, as defined by the Hon'ble Supreme Court of India is given below: For this purpose, sexual harassment includes any unwelcome sexually determined behaviour (whether directly or by implication) as:

- physical contact and advances
- a demand or request for sexual favours

- sexually coloured remarks
- showing pornography
- any other unwelcome physical, verbal or non-verbal conduct of sexual nature

where any of these acts is committed in circumstances in relation to the victim's employment or work or course of study, whether he/she is drawing salary, or honorarium or voluntary or a Student pursuing Education, when the Employee/Student has reasonable grounds to believe that his/her objection would disadvantage his/her in connection with his/her employment or work or disrupt the course of study in the University including when it creates a hostile environment, adverse consequences might be visited if the victim does not consent to the conduct in question or raises any objection thereto – such conducts amount to sexual harassment.

Any physical/mental harassment towards fellow students including ragging, quarrelling, using abusive language and violent behaviour is strictly prohibited.

3. Recruitment/Promotion Norms

High standard and well-established norms are set for the recruitment of the employees and the promotion of the existing employees. There is absolutely no bias in the recruitment and promotion process of the employees.

4. Internal Quality Assurance Cell (IQAC)

The Internal Quality Assurance Cell (IQAC) at VIT Chennai is a post-accreditation quality sustenance measure. The IQAC has been constituted as per the recommendations of the National Assessment and Accreditation Council (NAAC). The IQAC ensures the effective implementation of quality initiatives through continuous reviews and periodic meetings. The IQAC works towards attaining excellence in all academic and administrative endeavours of the institution. The IQAC works in coordination with Ranking and Accreditation (RAAC) and Institutional Information Services (IIS) team of VIT. The primary aims of IQAC are as follows:

- To develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution.
- To promote measures for institutional functioning towards quality enhancement through internalization of quality culture and institutionalization of best practices.

5. Support The Advancement of Rural Students (STARS) Scheme

For children in rural villages of Tamil Nadu who grow up in difficult circumstances, VIT has become more than a place of academic instruction. It is a home away from home where they feel safe and happy, surrounded by caring Professors/Proctors who not only give them the education and skills to face the future but also become their emotional pillar.

The rural students of Tamil Nadu have been admitted through the STARS scheme. Each student's story is an inspiring story of change. Daily wage labourers and domestic helpers find it difficult to educate their children due to their unstable income and difficult living conditions. Their children who are academically brilliant, continue to live their lives in poverty like their families or settle down to basic jobs which satisfies neither their basic needs nor their intellectual hunger. While many people in our society ignore these hard facts and go ahead with their lives, VIT Management stands tall as it takes these children in its fold through the STARS scheme. Financially disadvantaged children do not have to stop dreaming of becoming an Engineer. VIT STARS Scheme helps these students from underprivileged backgrounds to achieve what they deserve by giving them **100% fee waiver for their academic and hostel facilities including basic medical expenses.**

The transition to higher education, which is particularly difficult and expensive for rural youth, requires support. To meet this concept in reality, VIT launched this social innovation as STARS Scheme. Based on their 12th std. marks, one boy and a girl from rural Government Higher Secondary schools in the different districts of Tamil Nadu are chosen under this STARS scheme. Most of the selected meritorious students are first generation graduates from below poverty line families. The selected Students (STARS) are given admission to a B.Tech course in VIT with 100 percent Scholarship covering free accommodation, food, healthcare and other academic facilities.

Academic details regarding SDG 10

The following courses are offered as part of B.Tech and B.A. LL.B programs at VIT Chennai.

- **HUM1021 – Ethics and Values**
- **LAW8004 – Gender, Caste and Law**

1. Activities

S. No.	Name of Faculty Members	Title of the professional development program	From	To	No. of days
1.	Dr. Syed Ibrahim S P	Short Term course on Advanced Data Analytics by Vellore Institute of Technology Chennai.	04-11-2019	13-12-2019	40
2.	Ms. Jayasudha M	One Day Basic Training Programme on "Human Rights for WOMEN" by Vellore Institute of Technology Chennai, sponsored by Human Rights Commission (NHRC), New Delhi.	13-09-2019	13-09-2019	1
3.	Dr. Malathi G	Prevention of Sexual Harassment (POSH) by Vellore Institute of Technology Chennai.	20-08-2019	20-08-2019	1
4.	Dr. Vydeki D	Women Empowerment Programme by St. Joseph's College of Engineering	05-08-2019	05-08-2019	1
5.	Dr. Gnana Swathika O V	7 th Power Conference on "Future of Power in Tamil Nadu – Theme: Challenges, Innovation & Emerging Technologies in Power Sector" by Madras Chamber, in association with India Energy Forum.	06-09-2019	06-09-2019	1
6	Dr. Prema E	World Space Forum 2019, Vienna	18-11-2019	22-11-2019	5
7.	Dr. Saju B	Brand Summit 2019: Building Brands Across Generations, Confederation of Indian Industry (CII)	20-09-2019	21-09-2019	2

2. Extension activities relevant to SDG 10

VIT Chennai organizes a mega event on 'International Women's Day' every year to honour the girls and women. Many events are conducted exclusively for the students and faculty members.

The following are some of the events:

- Fashion Competition: Traditional Dressing, and Retro Fashion
- Rangoli Competition
- Mehndi Design & Nail Painting Competition
- Cooking Competition: Sprouts to Jalfrezi
- Lecture on Women Health Issues related to Gynaecology and Cancer related issues
- Lecture, Debate, and Open Mic on the theme, 'Women in Technology'
- Screening and Awareness on Women Health
- Self Defence workshop for Women

During the event, all the students, staff and faculty members take a pledge to prevent Gender violence in the campus.



Photographs taken during the 'International Women's Day' signifying Gender Equality



Digital Posters of some of the events in 'International Women's Day' signifying Equality

Publications:

1. Adalarasu K, Jagannath M and Oliver James, "Assessment of techniques for teaching school children with autism", IRBM, Vol.41, Issue 2, pp. 88-93, April 2020.
2. Jayanthi, V.E., Sudhanthira, G., Sutha, P., Usha, S., Hariedha, S. and Jagannath, M., Design of hand task assist device for perceptual disabilities, International Journal of Advanced Science and Technology, Vol. 29, No. 5, pp. 414-420, 2020.
3. S. Kowshik, V. R. Gautam and K. Suganthi, "Assistance For Visually Impaired Using Finger-Tip Text Reader Using Machine Learning," 2019 11th International Conference on Advanced Computing (ICoAC), Chennai, India, 2019, pp. 7-12.

- - -



Make cities and human settlements inclusive, safe, resilient and sustainable

SDG-11

Annual Report 2019-20

Report of VIT-Vellore Campus

I. Clean River Palar:

The River Palar is the prime water resource for the Vellore City and nearby villages, which covers nearly about 4 kms in Vellore limit. The river Palar has been left unattended due to many unknown reasons and this provided opportunities for other ways of exploiting the water resource by dumping of solid and liquid wastes and growth of *Prosopis Juliflora*, a shrub which depletes the water table of river and water bodies etc., The Vellore Institute of Technology has initiated the Clean River Palar Project to restore the livelihood of the river, in collaboration with the Civil Society Organizations, Community Based NGOs, Merchant associations and Philanthropists in and around Vellore District.

The project implemented under the guidance of the District Collector and VIT, collaboration with District Public Works Department and Water Resource Department to clean and restore the habitat of the **River Palar**. Nearly around **1,14,00,000, Sq. feet** of **Prosopis Juliflora shrub** has been successfully removed from the riverbed and the restoration work nearly took 15 days which has been split into three phases, each phase has five days to cover the allotted area for removing and restore the river bed.



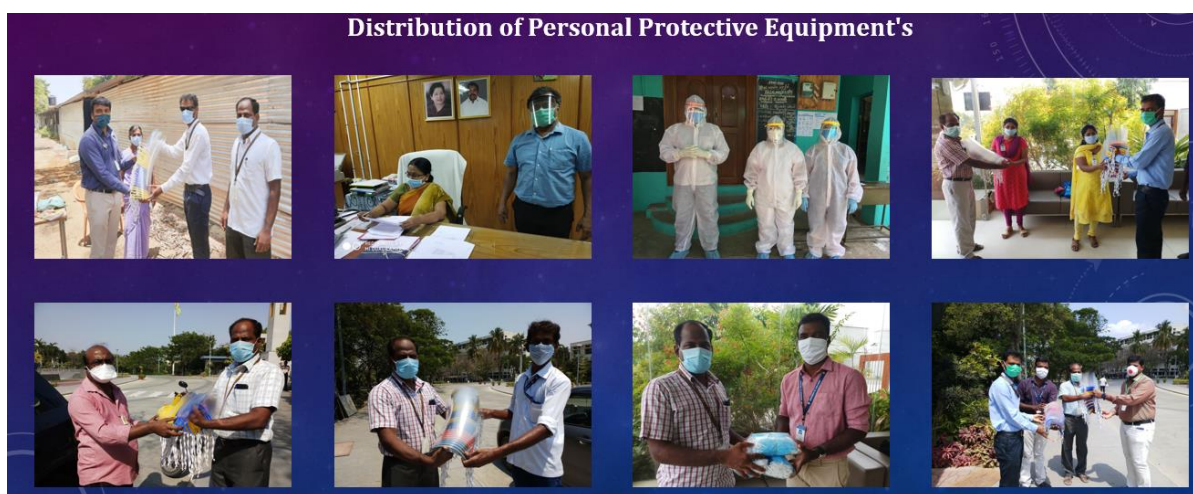


II. COVID RELIEF MEASURES: March 2020

During the COVID-19 outbreak, VIT had successfully extended helping to many needy people by providing the following essential items

Materials/Product Distributed

- 2550 numbers of face shields
- 50 surgical masks
- 809 litres of sanitizer
- 3 sets of ventilators (which contain 32 numbers of splitters and limiters)
- 150 numbers of safety touch keys
- 2375 Kgs of rice
- 550 Kgs of wheat flour and
- 550 bags groceries were distributed to needy people



Distribution of PPE to frontline workers

Financial contribution towards Covid-19 relief fund:

- VIT Management and Faculty donated INR 1.25 Crore to Tamil Nadu Chief Minister's Public Relief Fund.
- Free Food Distribution Scheme (TN Govt. Amma Unvagangal - Budget canteens)
- VIT Management provided financial support for INR 3,96,000.
- VIT Management funded INR 50,400 for 500 bottles of Sanitizer to Vellore District Police Office

(<https://www.thehindu.com/news/national/tamil-nadu/vit-donates-125-crore-to-cmprf/article31192722.ece>)



Distribution of face shields/ Ventilators/ Safety door openers/ Hand sanitizers



Financial contribution towards relief fund

தமிழகத்தில் கொரோனா தடுப்பு நடவடிக்கைகளுக்கு

வேலூர் விஜய சார்பில் ₹1.25 கோடி நிதியுதவி

கலெக்டரிடம் வழங்கப்பட்டது

வேலூர், மார்ச் 22: தமிழகத்தில் கொரோனா தடுப்பு நடவடிக்கைகளுக்காக வேலூர் விஜய பங்கு வசூலிக்கும் சார்பில் ₹1.25 கோடி நிதியுதவி முதல்வர் பொது நிவாரண திணைக்கு வழங்கப்பட்டது.



தொழிலதிபர்கள், பொது மக்கள் தங்காலுயிர் தரும் நிதியுதவி வழங்குவதில் திட்டமிட்டிருக்கிறார்கள். அந்த நிதியை வேலூர் விஜய பங்கு வசூலிக்கும் சார்பில் ₹1.25 கோடி நிதியுதவி முதல்வர் பொது நிவாரண திணைக்கு வழங்கப்பட்டது.

தமிழகத்தில் கொரோனா வைரஸ் பரவியதைத் தடுப்பதற்காக வேலூர் விஜய பங்கு வசூலிக்கும் சார்பில் ₹1.25 கோடி நிதியுதவி முதல்வர் பொது நிவாரண திணைக்கு வழங்கப்பட்டது.

வேலூர் விஜய பங்கு வசூலிக்கும் சார்பில் ₹1.25 கோடி நிதியுதவி முதல்வர் பொது நிவாரண திணைக்கு வழங்கப்பட்டது.



VIT donates ₹1.25 crore to CMPRF

The Vellore Institute of Technology (VIT) on Saturday contributed ₹1.25 crore to the Tamil Nadu Chief Minister's Public Relief Fund. The demand draft for ₹1.25 crore was handed over to the Vellore District Collector A. Shanmuga Sundram on Saturday.

VIT founder and chancellor G. Viswanathan said the amount was one day salary donated by faculty and staff of Vellore Institute of Technology (Vellore and Chennai campuses) and the contribution made by the management of VIT. Mr. Viswanathan said that VIT would extend all necessary help to the government in its fight against COVID-19.

அம்மா உணவகங்களில் விஜய சார்பில் இலவச உணவு

வேலூர், மார்ச் 22: வேலூர் மாவட்டம் அம்மா உணவகங்களில் விஜய பங்கு வசூலிக்கும் சார்பில் இலவச உணவு வழங்கப்படும் என்று வேலூர் விஜய பங்கு வசூலிக்கும் சார்பில் ₹1.25 கோடி நிதியுதவி முதல்வர் பொது நிவாரண திணைக்கு வழங்கப்பட்டது.

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<https://www.thehindu.com/news/national/tamil-nadu/vit-donates-125-cr-to-cms-fund/article34546877.ece>

The essential medical help especially for the frontline workers and to the public are vouched by a team of DOCTORS and other higher medical authorities

FEEDBACK

Prof. R. RAJAVELU M.S.PCL, SSB, FRCS, FRCR
PROFESSOR OF SURGERY
GOVT VELLORE MEDICAL COLLEGE,
VELLORE - 11

MEDICAL SUPERINTENDENT

Date: 15-05-2020

From,
The Medical Superintendent,
Govt Vellore Medical College Hospital,
Vellore-11.

To,
The Chancellor,
Vellore Institute of Technology,
Vellore-14.

Respected Sir,

Sub: Acknowledgement - mg

We received the below mentioned list of items from 3D printing lab, Vellore Institute of Technology, Vellore-14, towards the safety of our Doctors and other workers during the covid ward management at GVMCH. We sincerely appreciate your willingness to take part in this community activity and also encourage us to be on the safe side during this pandemic.

Our special thanks to Mr. Solomon and team

1. Face Shields - 175 Nos
2. Ventilators Splitters and Limiters - 3 Sets

Thanking You,


Medical Superintendent
Govt Vellore Medical College & Hospital,
Vellore-11.

5/20/2020

Mail: ssdrambobby@vit.ac.in

Thank you for the Face Shields

CMC Director <director@cmcvellore.ac.in>

Sat 20/05/2020 12:10 p.m.

%Solomon Bobby <ssdrambobby@vit.ac.in>; Chancellor VIT <chancellor@vit.ac.in>;

%VIT Peer Contact <peercontact@vit.ac.in>; Chandra Singh <chandra.singh@vit.ac.in>; HCC <hcc@vit.ac.in>;

Prof. G. Viswanathan, Chancellor VIT University

Dr. S. Solomon Bobby, in-charge - Foundry Lab & Digilab (3D Printing)
Lab, VIT University

Dear Sirs,

Thank you very much for sending us 180 nos. Face Shields for use in CMC hospital with Covid-19 affected patients. We are extremely grateful to you for this generous gift, and glad to be able to use this equipment in our isolation wards and Covid-ICUs, and also in community and other settings where our staff are collecting samples for testing.

It is vital that we protect our staff who are working in the front line, and your donation of face shields will help us to this, while reducing the risk of cross infection between patients and other visitors to the hospital.

Our Masks and Supplies team have been working hard under the Hospital Infection Control Committee to procure enough protective equipment. Supplies worldwide have been sometimes difficult to come by and the prices have shot up in many cases. So gifts like yours help us a lot, and are a great encouragement to us.

Kind regards,

Dr. J.V. Peter
Director



SCHIEFFELIN INSTITUTE OF HEALTH RESEARCH AND LEPROSY CENTRE
SARS Unit
Karigiri - 621 104
Vellore District
Tamil Nadu, India

Dr. Jerry Joseph, M.B., M.C.S. (Public Health)
Director

29th May 2020

To:

The Registrar
Vellore Institute of Technology
Vellore - 14.

Dear Sir,

This is to acknowledge that we received 50 face shields and 100 masks from Dr. Solomon Bobby, in-charge, 3D Printing Lab, from Vellore Institute of Technology.

The shields and masks were distributed to every department in need of them. We are extremely grateful for the kindness shown to our Institution.

Thank you

Yours sincerely,


Dr. JERRY JOSEPH
Director

Schieffelin Institute of Health Research and Leprosy Centre
Karigiri - 621 104
Vellore District, Tamil Nadu, India

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Medical Superintendent
Govt. Vellore Medical College

Director – Christian Medical College
Vellore

Director – Schieffelin Institute of
Health – Research & Leprosy Centre,
Karigiri

III. SUSTAINABILITY

VIT adopts eco-friendly and green initiatives to promote sustainable practices in its lush and verdant campus. A few remarkable efforts include energy conservation, water conservation and waste water recycling. The in-house transportation policy and the extensive research programmes are other sustainable initiatives to uphold green values.

As a part of the energy awareness and conservation programme, VIT hosts numerous workshops and training sessions on a regular basis.



VIT observed an entire week as “water conservation week” (conducted from 31st of August to 4th September). General awareness for conserving every drop of water was demonstrated to the students through seminars, poster and competitive events. Mr. Ayyappa Masagi (founder of Water literacy foundation) was the chief guest for the programme.

<https://vit.ac.in/about/Sustainability/RecyclingProgramme>

Rain water harvesting

Roof top rain water harvesting and water recharge pits have become a part and parcel of VIT . The ‘VIT lake’ has become a major place of attraction for the visitors. At the nearby locales (Katpadi and nearby villages), there are several ongoing rain water harvesting projects / research activities, all initiated and fully funded by the VIT, to create awareness among the residents.

Design of Rooftop Rainwater Harvesting Tank for Katpadi Region, Tamil Nadu

Shubham Jain^{#1}, Pankaj Thakur^{#2}, Siddharth Singh^{#3}, Mehul Srivastava^{#4}

[#]School of Mechanical and Building Sciences
VIT University, Vellore-632014, India

Abstract — Rainwater harvesting introduced in Tamil Nadu in 2001, by the State Govt., has had substantial influence on the availability of drinking water for the people. It has been implemented on more than 95% of the households and other commercial buildings in the state. In this study an attempt has been made to study the design of roof top rainwater harvesting tank for Katpadi region Vellore district of Tamil Nadu. Based on the rainfall and population density data of the year 2014, the design parameters for the rain water harvesting system have been developed and thus an optimum tank size has been determined. Study reveals that an optimum tank size of 100 m³ is sufficient for the maximum population of 1000 people.

adequate rainwater conservation using traditional & eco-friendly Rooftop harvesting system (RTHS).

The rain water harvesting movement launched in 2001 by Tamil Nadu government is a foundation of prosperous Tamil Nadu that will be free from water scarcity problems. It has had a prodigious impact on recharging the groundwater.

Amendments

Water and Environment Journal
Promoting Sustainable Solutions

Water and Environment Journal, Print ISSN 1747-6565

Optimizing rainwater collection from droplets falling through crosswinds during the north-east monsoons

Vishnu Teja Damala^{1,2}, Satyajit Ghosh^{1,3}, Rohit Roy¹ & Balasubramanian Veluchamy¹

¹VIT University, Vellore, Tamil Nadu, India; ²Purdue University, West Lafayette, IN, USA; and ³School of Earth and Environment, University of Leeds, Leeds, UK

Keywords

crosswind, driving rain, rainwater collection, water resources.

Correspondence

Satyajit Ghosh, School of Mechanical and Building Sciences, VIT University, Vellore, India.
Email: satyajit@vit.ac.in

doi:10.1111/1747-6565.2012.00359.x

Abstract

The quantity of precipitation received by the monsoons is enormous. The south-west monsoons, unlike the north-east monsoons, have been studied in great detail. This study deals with rainwater collection during the NE monsoons and involves an examination of the stochastic nature of a turbulent boundary layer and the effect of crosswinds on rain droplet trajectories and thence their collection. It must be borne in mind that whilst mid latitude precipitations typically range from 1 mm/s to 10 mm/s per hour, the north-east monsoon shows higher than this value at



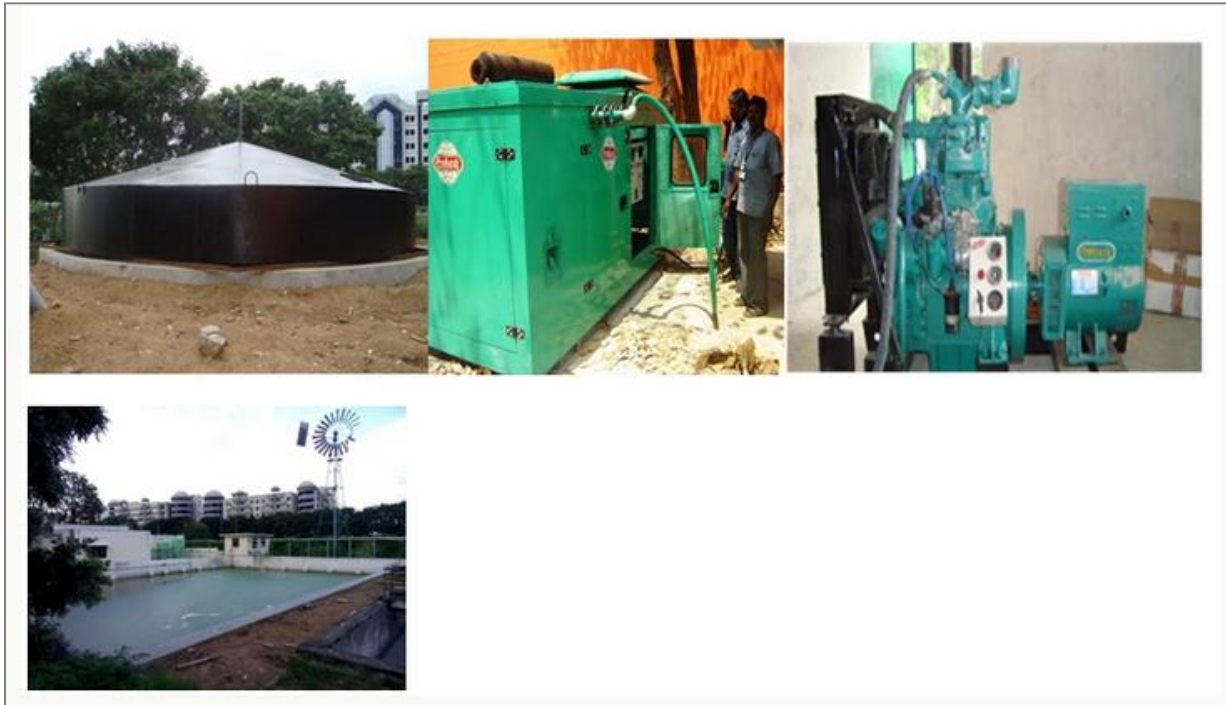
Rain Water Harvesting



Rainwater Harvesting Facilities at VIT

Recycling Programme

A 300 m³ biogas plant using the sludge from the waste water treatment plant has been fully functional since December 2012. This initiative, funded by MNRE, provides the power required to run a 40 kVA biogas engine. The evacuated power is supplied to the waste water treatment plant. Additionally 15 kVA producer gas engine has been installed for research purpose.



Water Efficient Toilets



Garbage In Campus , Hostel Areas , Frequency & Procedures Of Disposal



Institution Responsibility Activity:

VIT has adopted few villages for sustainable development and ensures all round of help for the public

S.No	District	Block	Name of the village
1	Vellore	Anaicut	Peenjamandai
2	Vellore	K.V.Kuppam	Melmoil
3	Vellore	Sholingur	Valli malai
4	Vellore	Pernampattu	Melpatti
5	Vellore	Kandhili	Perampattu

Empowering Tribal Community

The National Bank for Agriculture and Rural Development (NABARD) has launched a Joint Liability Group (JLG) scheme to provide access to institutional credit for small, marginal, tenant farmers, and oral leases and share croppers. JLGs are essentially credit groups of small/marginal/tenant farmers/asset less poor who do not have proper title of their farmland. These informal groups of 4-10 members are engaged in similar economic activities and are willing to jointly undertake to repay the loans taken by them from the Banks on individual basis through group mechanism against mutual guarantee.

CSR&RS is an endorsed JLG Promoting Institutions associated with NABARD Tiruvannmalai and extends his supports via financial support for awareness creation and capacity building of all stakeholders under the JLG Scheme In Jawadhu Hills, Tiruvannmalai District consists of 11 Village Panchayats.

From the year 2013-14 to 2019-20, CSR&RS linked 147 JLGs and 19 farmers group for credit linkage for an amount of Rs.4.42 crores with support of NABARD and Indian Bank, Jamunamarthur . Every year the Mega Loan mela will be organized and disbursement of loans to JLGs for livelihood development activities with subsidy (<https://vit.ac.in/about/community-outreach/projectsandprograms>).

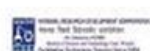


Entrepreneurship Development Programme

The CSRD&RS and National Research Development Corporation (NRDC), Government of India, with the objective to promote, develop and commercialize the technologies got the approval for conducting EDP training programs for rural areas of Vellore under the administrative control of the Dept. of Scientific & Industrial Research, Ministry of Science & Technology (<https://vit.ac.in/about/community-outreach/projectsandprograms>).

Jack Fruit Value Addition EDP Training Programme

Date: 09.03.2020 to 12.03.2020 / Venue: VIT –VRC, Jawadhu Hills



Mini Millets Value Addition EDP Training Programme

Date : 04.12.2019 to 07.12.2019 / Venue : VIT, Vellore



Report of VIT-Chennai Campus

Preamble

The following is a comprehensive report on 'SDG 11 – Sustainable Cities and Communities' for Vellore Institute of Technology Chennai (VIT Chennai). SDG 11 deals with how universities act as custodians of heritage and environment in their communities. VIT Chennai adopts eco-friendly and green initiatives to promote sustainable practices in its lush and verdant campus. A few remarkable efforts include energy conservation, water conservation and wastewater recycling. The extensive research programs are other sustainable initiatives to uphold green values.

Policies/Major decisions regarding SDG 11

VIT is involved in various practices adopting the green policy. The green initiatives promote sustainability in the institute. The energy conservation facilities, water conservation and water recycling facility contribute to the development and maintenance of the campus as a green campus. The policies or major decisions regarding SDG 11 are elucidated as follows.

1. Water Efficient Toilets

Conservation of water is a very important task of any organization and society. One of the key factors aligning to the conservation of water is the 'Water Efficient Toilets'. The salient feature of the Water Efficient Toilets includes:

- Availability of grey water (Recycled Water) for flushing in Toilets
- Availability of well-connected pipe network
- Availability of running Water – 24 Hours a day
- Exhaust and Air Vents in Toilets

2. Rainwater Harvesting & Solid Waste Management

Rainwater harvesting and water recharge pits have become a part and parcel of VIT Chennai.

Rainwater Collection Pit



Solid Waste Management Unit



3. Solar & Wind Powered Systems



Solar Panels installed at the Roof-tops of the building



Solar panels powered exterior (pathway) lightings



Wind-powered exterior (pathway) lightings

4. Digital Library

VIT Chennai, Central Library has a Digital library, Video Conferencing facility and also provides classroom teaching through NPTEL video courses in the different fields of education. The subscribed e-resources are ProQuest-ABI/Inform Complete, ProQuest-Dissertation & Theses (ETD) Part A & B, Bentham Science, Heinonline, JSTOR, Lexis Nexis, Manupatra, Westlaw India SAE Tech. Papers, Springer Link, bibliographical databases Scifinder Scholar, and Scopus, e-books.

Academic details regarding SDG 11

The following courses are offered as part of B.Tech programs at VIT Chennai.

- CHY1002 – Environmental Sciences
- CLE1006 – Environmental Engineering
- CLE1016 – Urban Planning
- CLE2018 – Industrial Wastes Treatment and Disposal
- CLE2019 – Pollution Control and Monitoring
- CLE2020 - Solid Waste Management
- MGT1006 - Environmental and Sustainability Assessment

Major events organised

1. Lectures organized relevant to SDG 11

A guest lecture on '**Biodiversity Protection**' by **Dr. Jesica Balnig Chin**, Central Philippine University was organized by VIT School of Law. Lecture on '**Building careers in the smart energy world and journey into the future technology**' is delivered by Mr. Ganesh Kumar, General Manager (L&D) – Indian Oil, Chennai. Indian Oil's 'Vision with Values' encompasses the Corporation's new aspirations – to broaden its horizons, to expand across new vistas, and to infuse new-age dynamism among its employees. Automation in their sector was presented to students as enumerated as follows:

- Auto fuels as a measure towards environmental protection.
- BS-VI projects involve revamp of existing plants & installation of new plants to reduce the sulphur content in both MS & HSD to 10 PPM (max).



Photograph taken during the lecture 'Building careers in the smart energy world and journey into the future technology'

A guest lecture was offered for the students of M.Tech. Software Engineering (5 year Integrated) & M.Tech (BigData) on Career Opportunities in Department of Atomic Energy by Dr. Meenachi N. M, Head, Training Division, Indira Gandhi Centre for Atomic Research, Chennai. Dr. Meenachi briefed about the importance of nuclear energy and explained the growing demand for electricity. She insisted on the role of Indians to contribute to the nation's growth by joining as scientists in the Department of Atomic Energy and to apply their engineering skills. She also explained the recruitment procedures and the benefits for the employees. She briefed about the current projects and the career / academic growth that are possible in that Central Govt. job. The students interacted with her to know about the future careers and internship opportunities in the company.



Photograph taken during the lecture 'Career Opportunities in Department of Atomic Energy'

The School of Mechanical Engineering organized a Guest Lecture on 'Alternative Fuels for IC Engines and Hybrid Electrical Vehicles' by Dr. Anand Gurupatham, Deputy General Manager Renault Nissan Technology & Business Centre India, Chennai on 02-08-2019.

School of Electrical Engineering (SELECT) organized, one day national seminar on 'Grid integration of renewable energy sources - Challenges and Possible Solutions' on 27/07/2019. The seminar started with Shri. S Selvakumar's talk. He talked about the renewable energy penetration and its contribution in islanded and grid connected systems. The next session was handled by Dr. S.Hemamalini. The topic of discussion was power quality analysis of grid integrated solar PV systems. After lunch, the talk was given by Dr. Binu Ben Jose. He discussed various topologies used for grid connected PV systems and its performance. The last session of the day was on the various topologies of grid connected wind driven induction generators. The session was handled by Dr. Vijayakumar Krishnasamy of IIITDM.

School of Electrical Engineering (SELECT) organized a guest lecture on 'Recent research and development in wind energy technologies' by Dr.K. Boopathi, Director & Division Head, Research & Development and Resource data Analytics & Forecasting and Solar Radiation Resource Assessment, National Institute of Wind Energy (NIWE), Chennai. The guest speaker elaborated the basics and necessity of wind energy generation, global and Indian scenario of wind power generation. He also explained the various types of wind farms, construction, working principle and salient features of different wind turbines. Forces acting on wind blades with practical examples and comparison of different windmill structures is also demonstrated.



Photograph taken during the lecture on 'Recent research and development in wind energy technologies'

Publications

1. Naik, S.S., Harshitha, T.G., Spoorthy, H.D., Taj, G.S.S., Vetrivelan, P., "IOT Based School Bus Monitoring System With Child Security", Lecture Notes on Data Engineering and Communications Technologies, pp.1-6, January 2020.
2. Kalimuthu M, Ponraj A S, and Christy Jackson, "Water management and metering system for smart cities", International Journal of Scientific and Technology Research, Vol.9, Issue 4, pp.1367 - 1372, April 2020.

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12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Ensure sustainable consumption and production patterns

SDG-12

Annual Report 2019-20

Report of VIT-Vellore Campus

Ensure sustainable consumption and production

Use of the natural environment and resources in a way that continues will yield destructive impacts on the earth. Humans have unlimited needs, but the resources are limited and it can't satisfy the human needs for a long time to come. To ensure sustainable production and consumption, VIT inculcate the following measures

VIT School of Agricultural Innovations and Advanced Learning (VAIAL) (<https://vit.ac.in/school/course/vaial/ug>) offers an under graduate programme B.Sc. Agriculture and offers following courses

- Soil and Water Conservation Engineering
- Crop Production Technology – I (Kharif Crops)
- Crop Production Technology – II (Rabi Crops)
- Farming System & Sustainable Agriculture
- Production Technology for Fruit and Plantation Crops
- Production Technology for Vegetables and Spices
- Rainfed Agriculture & Watershed Management
- Environmental Studies & Disaster Management
- Farm Management Production and Resource Economics

The following compulsory course has been offered to all the students to inculcate the important of natural sources and their sustainable utilization

1. Environmental Sciences – to all engineering students
2. Environmental Studies - to all non-engineering students

Use of Renewable energy

Management of Solar power

To obtain energy from renewable sources, the university has installed 2MWp of solar PV, that can supply electricity to 5 hostels and other office buildings. A 500-litre solar water heater built on the academic campus satisfies the university's pre-heated water needs. Solar water heaters are installed in the majority of hostel buildings. In addition, University utilizes 90,00,000 units from wind power.

To reduce the power consumption and for effective utilization of electricity all the conventional lamps are replaced with LED lamps. LED desktop monitors and LED TVs are fixed in new buildings. Centralised chiller plant has been installed for cooling which consumes only 40% electricity than the conventional AC.



Value added food production

The centre for sustainable rural development & research studies–VIT (CSR&RS) (<https://vit.ac.in/about/community-outreach>) participated in Gram Sabha in five adopted-village panchayats, where they addressed sustainable development initiatives with the villagers and promoted cleanliness and the prohibition on single-use plastics. With the goal of promoting, developing, and commercialising technologies, the CSR&RS and the National Research Development Corporation (NRDC) of the Government of India received approval to conduct EDP training programmes for rural areas of Vellore under the administrative control of the Ministry of Science and Technology's Department of Scientific and Industrial Research.

Through this EDP training program, we have succeeded in training the rural public, in processing and adding values to the food products like jackfruit, mini millets and honey for enhancing their sustainability.

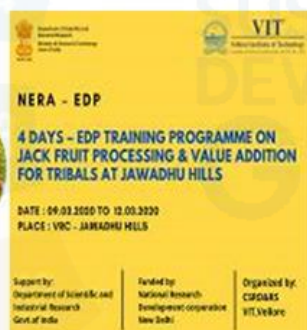
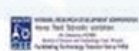
Honey Value addition EDP training

Date: 29.11.2019 to 02.12.2019 / Venue: VIT –VRC, Jawadhu Hills



Jack Fruit Value Addition EDP Training Programme

Date: 09.03.2020 to 12.03.2020 / Venue: VIT –VRC, Jawadhu Hills



Waste disposal

Hazardous material

The Strong acids and bases used in the laboratories are neutralised before being disposed of at a water treatment facility. Along with the acids the 0.01N Cr (IV) from the laboratories is converted to Cr (III) and released into the water treatment plant along with the acids. Although Silica gel is commonly used in TLC columns, it is non-toxic and chemically inactive, so it is recycled. Overall, laboratories that use chemicals and solvents take the necessary precautions when utilising and disposing of hazardous compounds. All radioactive-element- using equipment is meticulously salvaged in accordance with the instructions in the relevant user manuals. Even in the studies/research carried out in the institution the radioactive materials are not used overtly.

Non-Hazardous medical waste

Extended care centers and ambulatory health care services are the most common sources of undesirable non-hazardous medical waste. Individuals involved in the handling and disposal of this type of waste are properly protected by good personal hygiene and meticulous sanitation practices. "Ken Bio Connections Pvt. Ltd." disposes of biological waste with care at VIT. VIT employs a waste management plan that is both sustainable and healthy, with the objective of making the campus green and eco-friendly.

Physical E-Waste

E-waste is collected from source sites on a regular basis and sent to an e-waste storage facility. On campus, about 2-tonnes of e-waste are generated each year. Laptops, desktops, servers, projectors, biometric devices, condemned electronic equipment, printers, scanners, and cartridges are among the most common types of electronic trash. The approved vendor presently collecting e-waste from us is M/s Veltech Systems, Chennai.

Disposable Items

Different coloured bins gather organic and green garbage, recyclable general waste, and sanitary waste. Composting is done with segregated food waste, vegetable peels, and other kitchen trash gathered from campus canteens and food outlets. Garden trash and dry leaves are composted in the same way. Waste that can be recycled is collected and sold to merchants for the purpose of recycling. On alternate days, sanitary trash is sent to a certified agency for incineration. Our objective of reducing the quantity of garbage entering the waste stream is supported by the institute's waste management and recycling strategy.

Minimization of plastic and paper use

The University has taken the required efforts to involve staff and students in discussions regarding excessive energy, water, and paper usage. A variety of paper-saving strategies have been proposed to reduce paper use. Digital submissions were used for all assignments. The usage of single use plastic is prohibited on the University's campus. The University is attempting to make glass water bottles available on all of its campuses in an effort to minimise the use of plastic water bottles.

Food waste management

The University is attempting to eliminate food waste. To keep trash out of landfills, food merchants must reduce food waste and segregate garbage for composting. Since its inception in 2015, this programme has saved 300 tonnes of food waste from being disposed of in landfills. Faculty members and students are also striving to divert garbage from landfills by utilising on-campus composting facilities.

Management of waste water treatment facility

A total of 5412 KLD of water is required during operation. The project generates about 3379 KLD of wastewater, which is processed in eight sewage treatment facilities with a total handling capacity of 3920 KLD. This is then recycled and utilised to flush toilets or irrigate the campus's plants and lawns. The sludge that has accumulated in the STPs is collected and composted four times a month. The compost is utilised in the gardens as manure. As an outcome, all liquid waste generated on campus is treated and used appropriately.



Notable Publications on responsible consumption and production

- Hierarchical porous carbon derived from tea waste for energy storage applications: Waste to worth. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85092466084&doi=10.1016%2fj.diamond.2020.108100&partnerID=40&md5=21f5bdd3bdcf0a8270633c2332cf468a>
- A feasibility study on optimization of combined advanced oxidation processes for municipal solid waste leachate treatment <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85087663449&doi=10.1016%2fj.psep.2020.06.040&partnerID=40&md5=121261048f2d354c9a97388e46cb4b65>
- An integrated green management model to improve environmental performance of textile industry towards sustainability <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85086900470&doi=10.1016%2fj.jclepro.2020.122656&partnerID=40&md5=13cca538028b8905e5a1b321bac151f7>
- Biodegradable and non-biodegradable fraction of municipal solid waste for multifaceted applications through a closed loop integrated refinery platform: Paving a path towards circular economy. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85084311871&doi=10.1016%2fj.scitotenv.2020.138049&partnerID=40&md5=093bca23a8987114df9062e15be400a9>
- Treatment of dairy industry wastewater by combined aerated electrocoagulation and phytoremediation process. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85082651278&doi=10.1016%2fj.chemosphere.2020.126652&partnerID=40&md5=9daeb6b5b756d0c5d9f4090043ce3fc1>
- Waste to wealth: A solution to textile dyes related pollution. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85081957157&doi=10.1088%2f2053-1591%2fab6c22&partnerID=40&md5=1186e06394ef19749d70da41b6c02140>
- Bio oil production from Agro waste residue: Thermochemical conversion to improve oil quality. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85074700960&doi=10.1088%2f1755-1315%2f312%2f1%2f012031&partnerID=40&md5=4ca9876772a4360522b6047a27b9c179>
- Phytocapping: an alternate cover option for municipal solid waste landfills. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038403904&doi=10.1080%2f09593330.2017.1414314&partnerID=40&md5=14933dc9c4da18b8a1d6b52b9dcb8328>

Report of VIT-Chennai Campus

PREAMBLE

Responsible consumption and production is all about improving the standard of living by providing access to basic facilities, decent job, sustainable infrastructure, energy efficiency, usage of resource in any form, etc. Our Mother Earth has finite resources whereas Global Consumption pattern reveals that the growth is exponential with people around the world exerting pressure on the Earth for leading luxury life which is far above their basic needs. On the other hand, there are billions still living in extreme poverty without proper food, cloth and shelter. Sustainable living can be achieved only through sustainable practices such as reducing food waste, energy conservation and practice simple sustainable habits such as using Earth's resources judiciously and preserve it for future generations.

SUSTAINABLE PRACTICES

VIT Chennai's focus is to develop a Sustainable Green Campus. The Green initiatives promote sustainability within the institute as well as in the locality. The energy conservation facilities, water conservation and water recycling facility contribute to the development and maintenance of the campus as a green and eco-friendly campus.

Water Conservation and Recycling

Appropriate rainwater harvesting methods are practiced on the campus to save water. An artificial lake is constructed in the campus to collect the water from storm water drains. The overflow from the lake is connected to the other ponds on the campus so that the entire rainwater is harvested and conserved. The roof top water during the rain is collected in the underground storage tanks and is used as stored water for firefighting purposes. Also, landscaping of the campus was with few depressions and small mounds and by cultivating grass / small trees and plants over the ground to reduce the run-off and ultimately re-charge the ground water. Also sensor based water taps are installed in the campus for water conservation. All the wastewater generated on the campus is collected and conveyed to a modern wastewater treatment plant and treated to a satisfactory level to recycle the water for gardening/landscaping and flushing of toilets. This helps in conserving water to a great extent and helps in recharging the groundwater, which is the main source of water supply on the campus. Also, the nutrient and water value of recycled water is of great help in maintaining the campus green. The

recycled water is sprinkled for irrigation to make the supply of water optimal and thereby avoid water logging on the campus.



An artificial lake for Rainwater harvesting and Recycled Water used for Lawns

Energy Conservation and Efficiency

Solar Power plant is installed on the campus for conserving energy. All pathway lights are powered by Solar Energy. LED bulbs are used predominantly on the campus for energy efficiency and savings. Fans, LED Monitors, centralised chiller plants and VFD based lifts and pumps also help in energy savings.

Apart from solar plants biodiesel, clean biomass and wind power (Wheeling) are also used as renewable energy source for power generation. More than 25% of the energy consumed by the University is drawn from renewable energy which makes the campus a sustainable one.

Green Campus Award

Green programmes are initiated by several clubs including NSS, NCC, Biosphere Club, Energy and Environment Club, etc., which involves over 400 students and 7 faculty members. The programmes are conducted on campus and nearby village adopted by VIT Chennai and Government Schools around the campus.

VIT Chennai was awarded the prestigious **IGBC Gold rated Green Campus Award**. Indian Green Building Council had presented the award during 4th Green Building Congress held at Mumbai on the theme “**Sustainable Built Environment for All**”.

Ban on Usage of Plastics in campus

VIT Chennai has banned the usage of disposable plastics / paper cups and plates inside the campus. Reusable Stainless steel plates and cups are used in cafeteria, food court and hostel mess. Treated water is available in all blocks for refilling rather than using disposable water bottles.

Go Digital

As part of “Go Digital” policy, usage of paper is reduced on the campus. Submission of assignments and lab records are completely Digital. This reduces the amount of paper handled by the students, faculty and staff inside the premises helping us to maintain a sustainable environment.

Solid Waste Management

VIT Chennai has excellent solid waste management system. Recyclable waste is sold and Trash is disposed. Food waste, garden and lawn waste are processed in bio-composting plant. The matured compost is used as manure for the garden and lawns, thus avoiding the use of chemical fertilizers.



Composting Machine



Bio-Composting Process

COURSES ORIENTED TOWARDS SUSTAINABILITY

University offers various programme specific courses on Sustainability. Apparel Logistics and Supply Chain, Energy Management in Apparel Industry, International Social Compliance, Recycling of Textile and Apparel products, Renewable Energy sources, Urban Planning and Sustainability , Energy efficient Buildings are some of the courses offered by the University that focuses on Sustainability.

RESEARCH PUBLICATIONS

Faculty, research scholars and students are actively involved in research oriented towards sustainable development. A few are listed below:

- Rishabh Kala, Dhruvanka Dutta,Vignesh Sasikumar,Umamaheswari S,Bhuvaneswari R, "Cost of Living in Metropolitan Cities: Statistical Analysis using R Studio", International Journal of Innovative Technology and Exploring Engineering (IJITEE), 2019, ISSN: 2278-3075.
- Chiranjeevi Muppala and Velmathi Guruviah, "Machine vision detection of pests, diseases, and weeds: A review", Journal of Phytology, Vol.12, Issue 1, pp.2075-6240, April 2020.
- S. Ramesh, D. Vydeki, "Rice Disease Detection and Classification Using Deep Neural Network Algorithm", Springer Lecture Notes in Networks and Systems, Vol.no. 106, pp. 555-566, April 2020.
- Malathi D., Logesh R.,Subramaniaswamy V.,Vijayakumar V.,Sangaiah A.K., "Hybrid Reasoning-based PrivacyAware Disease Prediction Support System", Springer-Computers and Electrical Engineering, ISSN: 0045-7906, 2019.
- Karthik R., Hariharan M., Sundar Anand, Priyanka Mathikshara , Annie Johnson, Menaka R., "Attention embedded residual CNN for disease detection in tomato leaves",Applied Soft Computing. 86(2020), pp. 1-11.
- M Edwin, M Saranya Nair, S Joseph sekhar. "Hybrid Energy based Chilling System for Food Preservation in Remote Areas", IntechOpen, ISSN/ISBN : 978-1-78985-591-3

OUTREACH ACTIVITIES

Nutrition Day was organized by NSS club on 12th September 2019 in association with Chettinad Health City, as part of “Poshan Abhiyaan” scheme initiated by Government of India to attain malnutrition free India by 2022. Mrs.Subhashini, Nutritionist stressed on the importance of nutrition and its impact in the longer run as well as the consequences of unhealthy diet habits.

Ozone Day was observed by NSS to spread knowledge among school children by conducting essay and drawing competition on the theme “Ozone layer depletion and Green house effects” to ensure healthy people and healthy planet.



Nutrition Day



Ozone Day

Energy and Environmental club members prepared digital posters and a short video on “Water Conservation” and “Environmental Protection” to create awareness among students.



Take urgent action to combat climate change and its impacts

SDG-13

Annual Report 2019-20



Report of VIT-Vellore Campus



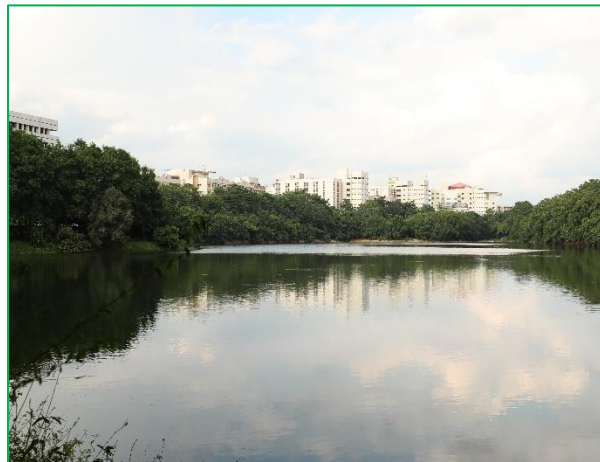
A. Preamble

Climate change is affecting national economies, People are experiencing changing weather patterns, rising sea levels, and extreme weather events. These include all the elements that we usually associate with the weather, such as temperature, wind and precipitation. The speed and scope of climate-related changes can have various consequences on ecosystems and human activities.

At Vellore Institute of Technology, efforts are made to save mother earth for future generations through sustainability initiatives for conservation and scrupulous use of water, soil, air and other natural resources

B. Rainwater harvesting:

VIT maintains a huge lake that is used for storing water during the rainy seasons.



There are more than 100 rainwater harvesting units throughout the academic as well as hostel premises. Rainwater from the terrace of buildings is collected and connected through pipelines to the water recharging pits near borewells.



C. Transportation Facilities and Carbon Footprint Reduction

Air pollution is a matter of serious concern on the campus owing to its urban location. VIT, Vellore as a responsible institution understands the importance of its carbon footprint and has developed a plan to reduce greenhouse gas emissions. The endeavour is to take a leadership role in environmental stewardship and become one of the nation's first institutions of higher education to accept the goal of climate neutrality by undertaking a Carbon Neutrality commitment.

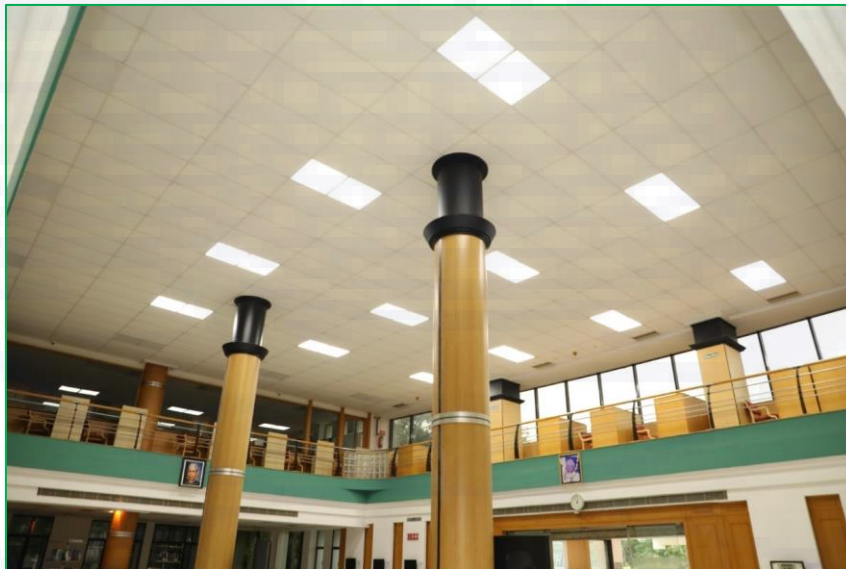
The following are the initiatives or practices implemented :



Sheltered walkways are installed to connect all the hostel blocks and academic buildings. The majority of the students on the campus rely on public transport, indicating a lesser carbon footprint of the student community. Also, shuttle cabs services are provided within the campus to minimize the carbon footprint.



To promote advancement in building thermal comfort, district energy system by following India cooling action plan (ICAP). Innovative Centralised chiller plant for cooling in Mahathma Gandhi block which reduces power consumption for conventional ACs by 60%. This will be extended to all academic buildings in near future.



Installed around 70% LED lamps for lighting in all new buildings and renovated buildings, corridors, restrooms of old buildings, street lights and focussed lights. This has provided energy saving of around 910 kWh during the year 2020.



The majority of the terrace in VIT Vellore buildings are covered with solar PV panels. The total installed peak capacity of these panels are around 2 MWp.

Also, all the new hostels are installed with solar water heaters and heat pumps. This provides the highest energy efficiency in the water heating needs of the inmates. Therefore, VIT Vellore can reduce the Social cost of carbon to around 89 Lakhs per year.

To improve energy efficiency, all the pumps installed on the campus are 5-star rated and all our lifts are employed with improved VFD technology-based drives. New buildings are with star rated Fans, LED Desktop monitors and LED TVs.

VIT Vellore is buying electrical energy of 90 Lakh units per year through wind power-wheeling.

D. Green Belt Development and Landscape

A well-designed green belt helps in intercepting particulate matter and gaseous pollutants and helps in purifying the air. Trees act as effective barriers and absorbers of noise. There are different types of 105 trees, 91 herbal plants and 127 ornamental plants are planted and maintained all along with the campus, along roadways and available open spaces.



The green belt around the campus acts as an indicator in the event of release of gaseous emission by visible morphological changes in the leaves, stem etc. To accrue the benefits of greenbelt and to maximize its potential in environmental management around the campus, choice of the green belt tree and shrub species plays a vital role.

The major aim of greenbelt development plan is to attenuate air pollutants released into the environment but it can also help in overall improvement in the environmental conditions of the campus. The plan will address the following issues such as attenuation of air pollution, noise reduction, improving the biodiversity of the region, adding aesthetics and combating soil erosion and prevention of land degradation.



E. Promoting awareness among the inmates of the campus:

The E2PC (Energy and Environment Protection Club) strives to create awareness among the student community about the importance of a green and clean campus. The club celebrates every year, Earth Day, by switching off lights for two minutes. The institute promotes sound environmental management policies and practices by following the guidelines legislated by State and Central Government bodies.

Workshops conducted on topics: Water resource management, Significance of Hydrological intervention in Groundwater Studies, Coconut based integrated farming system and Soil Health Water Quality and Remediation.

Observing Water week to promote awareness among the inmates and general public about saving water for the future.

The Faculty members and students have contributed around 81 research papers during academic year 2019-2020.





Report of VIT-Chennai Campus

PREAMBLE

With increasing global surface temperatures, the possibility of more catastrophes are likely to occur. Indian monsoon is the most prominent monsoon system in the world; hence our country faces numerous climate change calamities like flood, cyclones, droughts, cloudburst, etc. The Intergovernmental Panel on Climate Change (IPCC) report projects that in the coming decade's climate changes will increase globally. Now, we have a much clearer of the past, present and future climate changes, which are essential for understanding where we are headed, and how we can prepare for present scenario.

CLIMATE CHANGE ADAPTION

Research on Paleoclimatology, Paleoceanography, and climate change has been carried out at VIT. Research and studies have been carried out on high-resolution multi-proxy record of Neogene and paleoceanographic evolution of Southern Ocean link to Global Climate Change to target expanded sections of Neogene sediments, which can be used to resolve the timing of Southern Hemisphere climatic events on orbital and suborbital time scales. Also various research project ongoing related to climate like "Impact of Climatic Factors on the Transmission Dynamics of Vector-borne Diseases: a Mathematical Study" and "Design a Model for Rainfall Prediction in Real Time using Machine learning for the Optical DisdroMeter in a Distributed Environment". A various workshops and conferences have been attended by the faculties. As a part of this, Atmospheric Process and climate change, Energy environment and climate change, and Engineering Geology have been included in the curriculum. Industrial visits were organised for students to IMD Chennai.

VIT School of Law (VITSOL) offers various field of research including Law of Treaties – Settlement of Disputes, Law of the sea, International Environmental Law including Global warming – Air and Space Law, International Liability law: oil pollution, Nuclear and contamination of every kind- Trans boundary water disputes, legal and regulatory framework for renewable energy, negotiations and diplomacy.

PLANTATION AND ENERGY CONSUMPTION

Energy And Environmental Protection Club and National Service Scheme of VIT engaged in the activities like plantation of trees on the campus and nearby villages. Several awareness programmes have been organised for the environmental preservation and climate change and



also for adopting the green policy. The green initiatives promote sustainability in the institute. The energy conservation facilities, water conservation and water recycling facility contribute to the development and maintenance of the campus as a green campus.

ENERGY CONSERVATION- SOLAR POWER PLANT

A solar water heater system of each 15,000 L capacity was installed, thereby saving a lot of power. Single panel solar street lights (41 numbers), each having 95 W capacities are placed on the main streets. Hybrid type solar and wind based street lights (21 numbers), each having 2x45 w capacities is placed on the campus.



Solar water heater in Academic and Hostels building



Hybrid type (solar & wind) street lighting

GREEN BELT DEVELOPMENT

The lead role to green the campus is succeeded through a dedicated horticulture section of the campus and nearby areas. The NCC and NSS volunteers also participated in planting more trees. Water filling from the rainwater harvesting pond to a tanker to irrigate plants in the road median of the Vandalur-Kelambakkam road of 18 km length (Maintained by VIT Chennai)



NCC and NSS volunteers also participated in planting more trees near by area



Planting more trees at VIT Chennai campus

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Conserve and sustainably use the oceans, sea and marine resources for sustainable development

SDG-14

Annual Report 2019-20

Report of VIT-Vellore Campus

Report of VIT-Vellore Campus GOAL 14: Life Below Water...

The ecosystem of our planet Earth majorly depends on the oceans. The oceans provide and regulate our rainwater, the Oxygen we breathe, drinking water, weather, and climate. Saving our ocean must remain a priority. Marine biodiversity is critical to the health of people and our planet. Marine protected areas need to be effectively managed and well-resourced. Regulations need to be put in place to reduce overfishing, marine pollution and ocean acidification.

Vellore Institute of Technology (VIT) is working hard to prepare the student community and to make them understand and appreciate the importance of marine diversity. The faculty community is also being continuously encouraged to work in areas that contribute to the uplift of marine biodiversity. VIT also periodically conducts technical conferences, workshops and seminars on water conservation and management techniques. VIT encourages faculty and student to reduce the usage of plastics which often gets dumped into the aquatic systems affecting biodiversity. As a part of this initiative and to set an example to society, VIT has declared the campus as a plastic-free campus and prohibits the usage of plastics inside the campus. Vellore Institute of Technology is also maintaining a big lake inside the campus where the rainwater collected from various parts of the campus are filtered and channelised into the lake. VIT is maintaining a lake of 1,28,811 cubic metres and different types of fish types like Jilabi, Kendai, Katla and other water species are living in the lake

Vellore Institute of Technology as a part of its outreach activities has conducted a Public awareness rally on Afforestation and Conservation of Native Plants & Water Bodies through the students of the National Service Scheme (NSS). NSS is a Central Sector Scheme of the Government of India, Ministry of Youth Affairs & Sports. VIT has taken a great initiative in cleaning the River Palar, which is one the primary river flowing through Vellore, has a part of its social responsibility in preserving the water bodies.

The faculty of VIT has involved itself in various sponsored research projects related to marine diversity over the previous years. Some of the projects are:

- Image processing techniques for extracting ocean features from satellite imagery, a project sanctioned by DRDO, Government of India
- Bye-carbonate: Engineering Prochlorococcus to tackle ocean Acidification, a project sanctioned under DBT, Government of India

Prediction of extremely severe cyclonic storms over North Indian Ocean using high-resolution numerical modelling system for disaster preparedness, a project sanctioned under DST, Government of India

- Formulation, Characterisation of Biobased Oil Nanoemulsion Towards Controlling Bacterial Infection in Aquaculture (Special Reference to Fish and Shrimp), a project sanctioned under DST, Government of India
- Antioxidant and antibacterial activity of seaweeds against fish bacterial pathogens, a project sanctioned under DST, Government of India.
- In vitro and in vivo Antimicrobial efficacy of polymer and semiconductor nanoparticles and its based nanocomposites against and fish pathogens, a project sanctioned under DST, Government of India
- A marine analogue and its membrane damage mechanism on fish pathogens-design and Chemical transformations of penipanoid C and Luotonin F, a project sanctioned by Vellore Institute of Technology.
- Probiotics as a feed for enhancing growth and diseases resistance in freshwater prawns *Macrobrachium rosenbergii*, a project sanctioned by Vellore Institute of Technology.
- Destruction of Recalcitrant Amoxicillin by an Integrated Clean Chemical and Biological Treatment of Wastewater, a project sanctioned by Vellore Institute of Technology.
- Destruction of Recalcitrant Amoxicillin by an Integrated Clean Chemical and Biological Treatment of Wastewater, a project sanctioned by Vellore Institute of Technology.
- Synthesis of Novel Graphitic Carbon Nitride Nanostructures for Degradation of Pharmaceuticals in Water and Waste Water, a project sanctioned by Vellore Institute of Technology.
- Impounding of River floodwaters along Dakshina Kannada Coast A sustainable strategy for water resource development, a project sanctioned under DST, Government of India
- Spatial distribution of water quantity parameter in Dakshina Kannada, Hassan and Tumkuru region, a project sanctioned under BRNS, Government of India.
- Feasibility of riverbank filtration for rural water supply around check dam in non-perennial rivers, a project sanctioned under DST, Government of India.
- Preparation of biogenic bimetallic core-shell PdFe nanoparticles for wastewater bioremediation applications, a project sanctioned under DST, Government of India.
- Marine Nutraceuticals for controlling bacterial infection in aquaculture, a project sanctioned by Vellore Institute of Technology.

Construction of Polyketide Synthase, Non-Ribosomal synthetase gene library and natural product library from cultivable and uncultivable marine actinomycetes for Bioprospecting, a project sanctioned under DBT, Government of India.

- VIT has committed itself and has always encouraged faculty, student and other stakeholders in protecting the biodiversity of the water bodies in all possible ways.

VIT faculty, research scholars, students and their collaborators are pursuing research in sustainable use of the oceans, sea and marine resources. As a result, during 2019 – 2020 there are 105 publications. Some of the notable collaborative publications are:

1. Antibacterial potential of neem nanoemulsion against *Vibrio anguillarum* infection in sea bass (*Lates calcarifer*). (In collaboration with Centre for Ocean Research, Sathyabama Institute of Science and Technology).
<http://nopr.niscair.res.in/handle/123456789/49709>
2. Growth performance, intestinal histomorphology and growth-related gene expression in response to dietary *Ziziphus mauritiana* in Nile tilapia (*Oreochromis niloticus*). (In collaboration with Benha University, Egypt).
<https://www.sciencedirect.com/science/article/abs/pii/S0044848619308142>
3. A simple filter paper-based method for transporting and storing *Enterocytozoon hepatopenaei* DNA from infected *Litopenaeus vannamei* tissues. (In collaboration with Prof. Toshiaki ITAMI, Fukuyama University, Japan).
<https://www.sciencedirect.com/science/article/abs/pii/S0022201119301995>
4. Effect of a peptide complex on the defense mechanism of shrimp, *Marsupenaeus japonicus* against pathogens and changes in environmental parameters. (In collaboration with Dr. Nguyen TH Linh, Vietnam).
<https://onlinelibrary.wiley.com/doi/epdf/10.1111/jwas.12658>
5. Biosynthesis of silver nanoparticles using red algae *Portieria hornemannii* and its antibacterial activity against fish pathogens.
<https://www.sciencedirect.com/science/article/abs/pii/S0882401018315821>
6. Efficacy studies on commercially available probiotics to induce immune response and resistance in tilapia fish (*Oreochromis mossambicus*), against *Vibrio* infection. (In collaboration with Organica Biotech, Mumbai).
<http://nopr.niscair.res.in/handle/123456789/55101>

Received Rs.522,885.00 as a second-year grant from the Department of Biotechnology, Govt of India for the project titled “Development of electrochemical immuno sensor based detection method for white spot syndrome virus (WSSV) of penaeid shrimp”.

MSc Integrated students, Ms Vernita Priya (15MSI0070) and Ms Pratyasha Dash (15MSI0074) went to the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), Porto for pursuing their Semester abroad project on Cyanobacteria isolated from Marine ecosystems. (CIIMAR, University of Porto is MOU partner Institute of VIT).



Report of VIT-Chennai Campus

PREAMBLE

Oceans play a crucial role in making Earth habitable. The Ocean provides sustainable life on Earth by providing billions of people with food for their livelihoods, more than half of the oxygen that humans need to breathe, and it regulates our planet's climate and weather. Yet Oceans' health is deteriorating due to increasing levels of garbage. This affects the marine biodiversity and has a huge impact on the environment and economy. Much needs to be done to preserve this crucial resource for a sustainable future.

BIO-DIVERSITY EDUCATION AND ECOLOGICAL ACTIVITIES

When pollution contaminates and kills aquatic plant and animal life, it also destroys feeding habitats for sea turtles. To spread awareness on the effect of water pollution caused by humans which affects sea turtles in India and more specifically in Chennai, a bio-diversity talk was delivered by Ms. Shalini Kumar of TREE (Trust for Environment Education, Conservation and Community development) Foundation who emphasized the importance of sea turtles in our eco system. During turtle walk? observation, students were made aware of turtle hatching, identifying and protecting nesting turtle. This programme was organized as a conservational measure for biodiversity loss. Inspired by the talk on Bio-diversity, NSS club in collaboration with TREE foundation has developed a pond ecosystem on our campus.



Talk by Ms.ShaliniKumar – Tree Foundation

COURSES ORIENTED TOWARDS SUSTAINABILITY

University offers various programme specific courses focusing on water conservation such as, Soil and Water Conservation Engineering, Ground water Engineering, Design of Water and Wastewater Treatment Systems etc.

RESEARCH PUBLICATIONS

- Dinagarapandi. P, Saravanan. K and Mohan. K, “Delineation of potential groundwater zones based on multicriteria decision making”, Journal of Groundwater Science and Engineering, June 2020, ISSN/ISBN: 2305-7068.
- Kalimuthu M, Ponraj A S, and Christy Jackson, “Water management and metering system for smart cities “, International Journal of Scientific and Technology Research, June 2020, ISSN 2277-8616.

COASTAL CLEAN-UP

As an initiative towards sustainable development, the “Plucking while jogging” was organised by National Service Scheme, VIT Chennai in association with Indian Coast Guard. The student volunteers of NSS cleaned the Eliot’s beach and segregated the material collected as biodegradable and non-biodegradable. This clean-up process is a step towards mitigating pollutants especially non-biodegradable materials such as plastic which pollute Ocean / Sea and affects marine life. The event also aimed at creating awareness for maintaining clean environment in public places and to follow the principles of Swachh Bharat Abhyaan.



Coastal Clean-Up



Indian Coast Guard- Ship Visit

OUTREACH ACTIVITY

In order to create awareness among students on environmental pollution and the role of Indian Coast guard towards pollution control measures, a visit to Indian Coast Guard ship was arranged by NSS in collaboration with Indian Coastal Guard. Officials of ICG explained the functioning of the ship and their response to emergency situations like oil spill and demonstrated them as well.





Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.

SDG-15

Annual Report 2019-20

Report of VIT-Vellore Campus

GOAL 15: Life on Land...

Protection, restoration and promotion of sustainable use of terrestrial ecosystems, is one of the prime sustainability goals across the world. The second focal area is sustainable management of forests, fighting desertification, reversal of land degradation and stopping biodiversity loss. In these directions following concrete actions have been taken by the Vellore Institute of Technology (VIT) in the recent past namely,

- Species Environmental Niche Distribution Modeling for Panthera Tigris and Royal Bengal Tiger, India, using machine learning algorithms was conducted.
- In VIT's neighbouring state Telangana, the VIT faculty has conducted spatial distribution of land use/ land cover analysis in Hanamkonda taluk as well as in the Chennai region.
- Landscape changes and sustainable development policy in a developing area using the chirrakunta rurban cluster data was studied.
- An Urban land cover mapping and change detection analysis using high-resolution Sentinel-2A data is another research project undertaken by VIT. In another work, remote sensing and GIS techniques were used to assess and predict land-use changes in the local Vellore district, Tamil Nadu, India.
- Estimation of land use and land cover change relationship with Normalized Difference Vegetation Index (NDVI) different method and Land Surface Temperature (LST) was studied. Additionally, a comparative study of NDVI and SAVI vegetation indices in neighbouring Anantapur district semi-arid areas was conducted.
- Another work aims to Identify runoff harvesting sites over the Pennar Basin, Andhra Pradesh using the SCS-CN method.
- Another project focuses on seismic hazard assessment and land use analysis of Mangalore City, Karnataka, India.
- Morphometric analysis for identification of groundwater recharge zones: A case study of the Neyyar river basin was designed.
- Relationship between surface temperature and land cover types using the thermal infrared band and NDVI for local Vellore District, Tamil Nadu, India was extensively studied. Another NDVI based study to assess agriculture biomass and vegetation damage due to the Hudhud cyclone, using Landsat-8 satellite imagery, was conducted to support the local community affected by the cyclone and better manage the damages due to natural disasters.

- An evaluation study of microclimates and assessment of thermal comfort of *Panthera leo* in the Masai Mara National Reserve, Kenya was conducted.
- Flood forecasting model: A Semi-distributed Flood Forecasting Model for the Nagavali River using space inputs was developed. In another project, a novel coastal reservoir strategy to enhance India's freshwater storage by impounding river floodwaters was conducted.
- Analysis of Ocean colour monitor data: Distributed computing model of multispectral time series data analysis for chlorophyll concentration determination using ocean colour monitor-2 data.
- As coconut is a high volume local produce in the southern India region, techno-economic assessment of coconut biodiesel as a potential alternative fuel for compression ignition engines is one of the innovative projects undertaken by VIT faculty.
- A study of Crop phenology and soil moisture applications of SCATSAT-1 was conducted.
- Identification of dengue risk zone using a geo-medical study on Madurai city was designed and executed.
- Investment in agro photovoltaics: Efficient solutions from Switzerland is currently being studied.
- Another case study involved the Impact assessment of watershed management on land use/land cover change using RS and GIS.
- Advanced computational techniques like Genetic algorithm-based feature selection, for classification of land cover changes using combined LANDSAT and ENVISAT images, was conducted. We also developed a soft computation model for the identification of landslide factors.
- Trophic transfer potential of two different crystalline phases of TiO_2 NPs from *Chlorella* sp. to *Ceriodaphnia dubia*.
- Gene-centric metagenome analysis reveals the diversity of *Pseudomonas aeruginosa* biofilm gene orthologs in the freshwater ecosystem.
- Several computational models were developed namely a) for assessment of carbon storage and erosion using invest model in Visakhapatnam district, Andhra Pradesh b) for comparison and extraction of a watershed using Arcswat and Arc hydro from high-resolution digital elevation model c) for trajectory study of urban growth and its socioeconomic impact on a rapidly emerging megacity.

- One of the projects was focused on the fusion of thermal and RGB images for border security surveillance.
- Study and evaluation of carbon sequestration using remote sensing and GIS: A review on various techniques.
- Antibiotic potency of extract from *Streptomyces* isolated from terrestrial soil of Amirthi forest, India.
- Toxicity, accumulation, and trophic transfer of chemically and biologically synthesized nano zero-valent iron in a two-species freshwater food chain was conducted.
- No effort can be complete if we do not support and increase awareness in the local community. As we are located in a region where silk weaving is one of the major industries. A study was directed towards studying the silk weavers' problems linking to water, air pollution and soil conservation. The major objectives of the study were to understand the demographic profile and silk related factors of the respondents from the study area and to know about their environmental awareness and responsibilities among silk weavers in the study area.

The following specific initiatives are executed during 2019 -2020:

Farmers Attachment Programme (FAP)

Faculty from the School of Agriculture organising Farmers Attachment Programme (FAP)

The objective of the programme: (1) To inculcate the real-life experience of farming from the farmers among the students. (2) To provide a platform for farmers to share their field problems with the experts in VAIAL to avail timely solutions.

Practice: Every 123 students from the third year B.Sc. Agri is attached to a farmer. The student will interact with the farmer and learn farming-related issues. The student in the field or from the farmer's interaction identifies the farmer's problem which is reported to the expert in VAIAL. The subject matter expert provides the solution back to the students, who in turn deliver the solution to the farmer within 72 hrs of reporting the problem.

Context: The students act as a link between farmers and subject matter experts, to deliver field-level solutions for farmers' problems



Training programs & Workshops

Workshops in the fields such as Drones in Agriculture, 2D Resistivity Imaging A Plausible solution for Engineering and geological problems, Serological and PCR based detection of Plant viruses, Precision Agriculture Technologies and Challenges and, Quality assurance and testing of tissue culture plants were conducted to

Training programs such as Coconut based integrated farming system, Agripreneurship, AgriExpo, 3738 farmers were benefitted through these events.

Funded Projects

Balaji Poly Packs funded 26,00,000INR for the project titled "Mulching sheet application for crop improvement and water conservation in arecanut".

MANAGE funded 12,25,000 INR for the project titled "Agri-Clinics and Agri-Business Centres (AC&ABC) Scheme".

Organic Farming:

To maintain soil health, VIT - VAIAL farms use organic inputs rather than applying any inorganic fertilizers like urea for growing plants.

The following organic farm inputs for the cultivation of Paddy, Millets, Pulses, Oilseeds, Vegetables and Bananas are used.

Manures & Fertilizers:

(1) Deoiled cakes: Neem cake, Pungal cake, Castor cake; (2) Vermicompost; (3) Farm Yard Manure; (4) Humic acid & Seaweed extract

Bioinputs:

(1) Biofertilizers (Liquid & Carrier formulation): Azospirillum, Azotobacter, Rhizobium, Phosphorous solubilizing bacteria, Potash Mobilizer, VAM, Azolla; (2) BioControl Agents (Liquid & Carrier formulation): Pseudomonas fluorescens, Trichoderma viride, Bacillus subtilis
Plant-based pesticide: Azadirachtin - 0.03% (VIJAY NEEM)

Notable Publications:

1. Assessing groundwater quality for drinking water supply using hybrid fuzzy-GIS-based water quality index
<https://www.sciencedirect.com/science/article/pii/S0043135420304048>
2. Eco-corona formation lessens the toxic effects of polystyrene nanoplastics towards marine microalgae chlorella sp.,
<https://www.sciencedirect.com/science/article/abs/pii/S0013935120307374>
3. Comparative physiological and proteomic analysis deciphering tolerance and homeostatic signaling pathways in Chrysanthemum under drought stress,
<https://onlinelibrary.wiley.com/doi/abs/10.1111/ppl.13142>
4. Ethylene regulates sulfur acquisition by regulating the expression of sulfate transporter genes in oilseed rape, <https://onlinelibrary.wiley.com/doi/abs/10.1111/ppl.13157>
5. Enhanced bioleaching of copper from circuit boards of computer waste by Acidithiobacillus ferrooxidans, <https://link.springer.com/article/10.1007%2Fs10311-019-00911-y>
6. Silicon and salinity: cross-talk in crop mediated stress tolerance mechanisms,
<https://www.frontiersin.org/articles/10.3389/fpls.2019.01429/full>
7. Gene network mediated by WRKY13 to regulate resistance against sheath infecting fungi in rice (Oryza sativa L.),
<https://www.sciencedirect.com/science/article/abs/pii/S0168945218307507?via%3Dihub>

VIT mission is to work extensively in the current SDG and is ever looking for making a difference and devise ways for judicious use of natural resources.

Report of VIT-Chennai Campus

PREAMBLE

Polluting environment by emission of harmful substances in air, chemical waste and sewages in water, bio and medical waste, usage and improper disposal of masks and gloves due to pandemic etc. exert tremendous effects on lives on land which leads to degradation of environment. These human activities disturb the balance of ecosystem. It's our responsibility to maintain the equilibrium of nature and to promote peaceful life to all living organisms in the earth, and also to provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

CONSERVATION OF ENVIRONMENT

VIT made a self-inquiry on environmental quality of the campus with the following objectives

- To establish a baseline of existing environmental conditions with focus on natural and physical environment
- To understand the current practices of sustainability with regard to the use of water and energy, generation of wastes, purchase of goods, transportation, etc.
- To promote environmental awareness through participatory auditing process
- To create document of baseline data of good practices and provide future strategies and action plans towards improving environmental quality for future.

Environmental law has been included in the curriculum of B Tech programme. They understand and appreciate the changes and reforms take place at international level towards environment protection and also practical understanding on how pollution control board, National Bio diversity authority and other environmental related authorities work. Water pollution & Marine Environment, Air Pollution, Noise Pollution & Climate Change, Environmental Protection, Forests and Wild Life, Biodiversity & Wetlands, Contemporary environmental concerns, Environment and Good Governance has been included in the curriculum under Environmental law. Various lectures, seminars, symposiums have been organised for the awareness of protecting environment.

SUSTAINABLE USE OF NATURAL RESOURCES

The Institute has controls to reduce the absolute amount of waste that it produces from staff offices. The recyclable such as papers, plastics, glasses and metals are segregated from source itself. Separate bins with different colour coding are provided for collection of these. The segregated wastes are being sent to the recyclers. All organic waste; green wastes are composted in the campus and the unrecycled cardboard send to the recyclers. The food waste collected from the kitchen are sent to the nearby villages for cattle feed. The bio medical waste collected from the campus is being collected and disposed through the authorized Bio medical waste vendor as per the Bio-Medical Waste Management Rules, 2016. The hazardous waste such as used oil collected from the DG sets, Discarded cotton waste, filters are collected and segregated and disposed through the authorized vendor as per the Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules, 2016. Through these activities, the environment pollutions are minimised to protect the land and ecosystem. The students, faculty and staff will produce the best outcomes to raise awareness and help push the environmentally friendly agenda ahead of the campus.



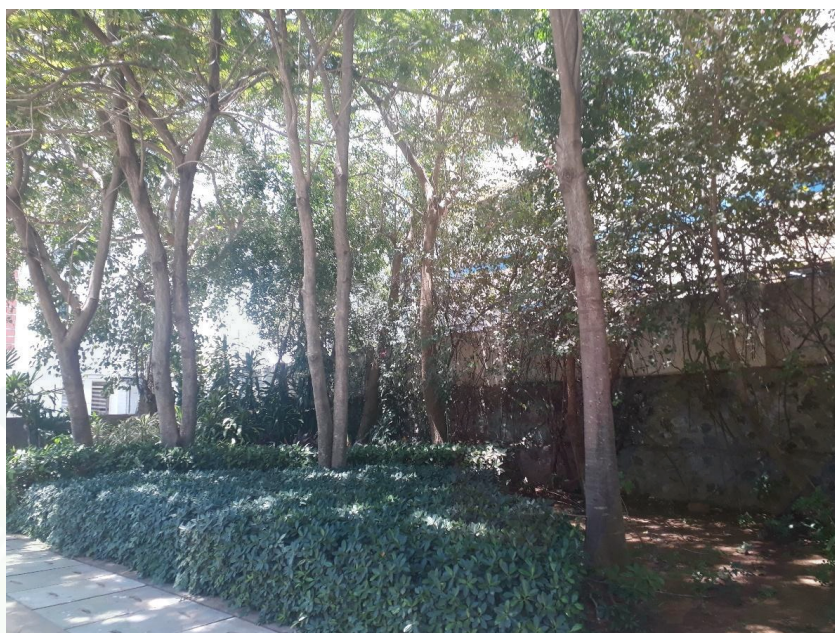
Sewage Treatment Facility (STP) at VIT Chennai

RESEARCH ON SUSTAINABLE DEVELOPMENT

Various national and international conferences on Energy and Environment: Global Challenges, International Conference on Multidisciplinary Approaches to Island Studies, and International Conference on Urban agriculture land, food, people agriculture and city were conducted. To understand and study about the biodiversity and ecosystems, various guest lectures were arranged. Field visits in Arignar Anna Zoological Park, Chennai, Guindy National Park, Chennai, Vedanthangal Bird Sanctuary Kanchipuram were arranged. “A fuzzy inference system-an estimation of the quality of river water in Tamil Nadu” has been carried out by the researchers and published. As a part of the programme, Landscape changes and sustainable development was studied in Pallikaranai wetland area in Chennai. Faculty attended various national webinar including “Effectiveness of Environmental Laws and Implementations in Celebrating Biodiversity”.



Rain Water harvesting pond



Green belt development at campus



VIT NSS volunteers cleaned the village pond in and around Kayar village in Thiruporur Taluk, Kanchipuram District, Tamilnadu State, India on 16/10/2019 by removing plastic and polythene wastes, dead plants and weeds

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VIT Legal Aid Camps



Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

SDG-16

Annual Report 2019-20

Report of VIT-Vellore Campus

Goal 16: Promote just, peaceful and inclusive societies

Vellore Institute of Technology (VIT) is a strong institution promoting peace and justice. 157 research papers are published in Scopus indexed journals by faculty members along with Research scholars of this University. Some of the papers are listed in the table below:

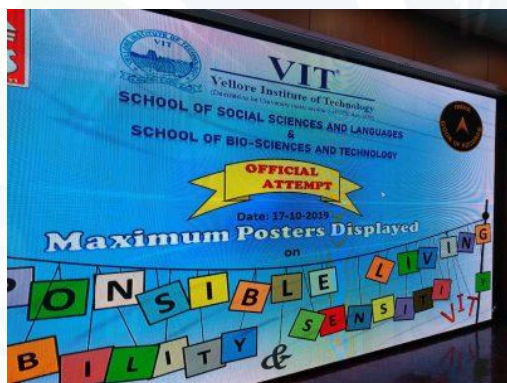
Sl. No.	Title
1.	On-road crime detection using artificial intelligence
2.	Analysis of crime data using neighbourhood rough sets
3.	Vehicle Theft Identification and Intimation Using GSM & IOT
4.	Crime and Fraud Detection Using Clustering Techniques
5.	Crime rate detection using social media of different crime locations and Twitter part-of-speech tagger with Brown clustering
6.	Credit Card Fraud Detection using Machine Learning Algorithms

Significantly reduce all forms of violence everywhere

People in Vellore Institute of Technology (VIT) are taught the techniques of non-violence even when they are young. They learn to be patient and handle stressful situations without harming others. VIT instils values in young minds so that when they grow up they are able to understand misconceptions and be able to handle anger. The Institution frames policies, strategies, committees to provide avenues for the stake holders to bring any issue to senior employees so that they help younger people to solve problems and live peacefully with fellow employees and fellow students. The society around VIT is trained to have values and ethics so that violence leading to death is avoided completely.

Vellore Institute of Technology (VIT) is taking the maximum effort to fulfil this objective, which revolves around the creation of awareness among the stake holders and public. For this purpose, a subject named 'Values and Ethics' is taught to all students. Students are exposed to

the non-violence movement initiated by the Father of India, Sri. Mahatma Gandhi. About 7500 students are trained every year to handle criticisms, harassments social problems and to act ethically. VIT has an anti-ragging committee, grievance redressal committee, internal complaints committee, sexual harassment prevention committee and counselling cell. All these committees are functioning very effectively and solve problems even when the problems are small. Trained counsellors help students to manage stress and lead a calm and peaceful life. Student welfare department arranges many programs through which students serve the society around the campus.



The number of posters displayed on *sensible living* was 5,723 during a poster exhibition organized by Vellore Institute of Technology (VIT), Vellore, Tamil Nadu, on October 17, 2019. This exhibition created awareness among students as well as faculty members for leading a service oriented life.

End abuse, exploitation, trafficking and all forms of violence against and torture of children

VIT takes an undertaking from students that they will not indulge in ragging or in any form of misbehaviour. Students also sign an affidavit that they agree to have their admission cancelled if they are found indulging in ragging. VIT is able to combat ragging and provide a peaceful environment to freshers and seniors.

Violence against children is a phenomenon happening worldwide, in forms of physical, psychological violence. A poster exhibition to create awareness to prevent sexual abuse of girl children was held at Vellore Institute of Technology. The posters which had slogans calling for putting an end to sexual abuse and other forms of violence on girl children were created by women and men students of VIT. The event was organized at a time when incidents of violence,

especially sexual abuse on women, particularly girl children are on the rise in the country. Beautifully designed posters carrying the messages were displayed in the exhibition. Amidst numerous contests and games, students give voice to social issues such as child labour and female foeticide through a walkathon and portray the country's cultural diversity in a parade at VIT University's cultural event "Riviera". During the international sports and cultural festival, about 100 to 150 students walk the roads of the university to spread the message to stop child labour, female foeticide and child trafficking. This is a protest march against child labour, female foeticide and child trafficking.



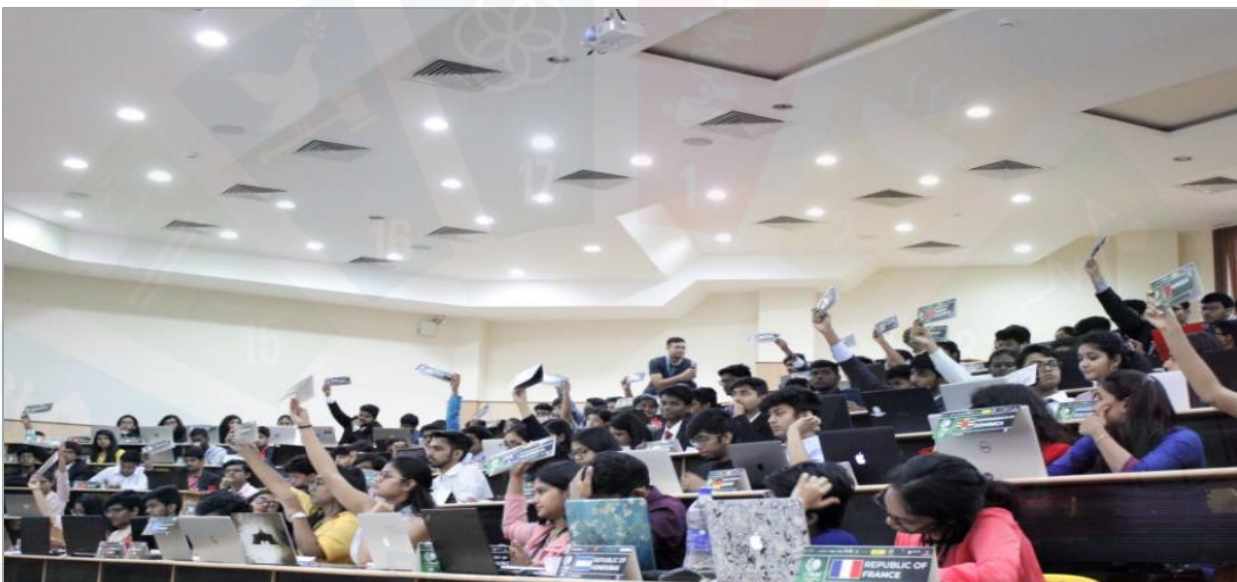
An International day in support of victims of torture was conducted by the Society of Petroleum Engineers, VIT on 26-6-2021. This day was celebrated in support of all those who undergo any kind of torture. Torture seeks to annihilate the victim's personality and denies the inherent dignity of the human being. Despite the absolute prohibition of torture under International law, torture persists in all regions of the World. Dr. Rita Bhattacharjee was the guest speaker and she spoke about many forms of torture and ways of coming out of it. Students interacted well with the speaker and learnt many methods to combat torture of human beings.

Promote and ensure equal access to justice for all

Access to justice is a key component of fair, humane, effective, inclusive and efficient justice, so all groups in society can equally enjoy their rights. VIT provides redressal committees for various problems. Students are encouraged to make complaints to respective committees whenever they are affected. The committees work earnestly and bring justice to the affected persons. Students are permitted to apply for revaluation of answer scripts if they feel that they did not receive the marks that they deserve. If they are not happy with the outcome of the second valuation, they are permitted to appeal to an appellate committee. Systems are in place for safeguarding the rights of students. During this year, the total number of complaints or grievances about evaluation was 74; the total number of students appeared in the examination was 34585. The percentage of complaints or grievances is 0.21%.

MODEL UNITED NATIONS SOCIETY, VIT (VITMUN)

Through The Millennial Glass, an event was conducted on 28th July 2019 in which 200 students participated. This event discussed the unconventional teaching and learning methods with an emphasis on out-of-textbook education. There was a panel discussion by speakers from the MUN Society of VIT and Teach for India on how students nowadays are exposed to a multi-



dimensional array of learning methods, followed by a discussion on the emphasis of learning from extra-curricular activities, conferences and by financing researches as well. Next the speakers from 'Young Leaders' Consortium gave a speech on the importance of leadership, identifying traits of leaders, how to develop those traits in real life and consequences of bad leadership. Lastly speakers from Lonepack shed light on the importance of mental health which is as important as physical health and often compromised and not well acknowledged. The need for venting out mechanisms and emotional assistance to deal with the hectic and competitive college environment, possible solutions to deal with mental health and how to make college a safe place for one and all were also discussed.



VITMun conducted a conference on 6 September 2019, which is primarily a student simulation of various United Nation councils (e.g. The General Assembly) and specialized agencies (e.g. World Health Organisation) of the United Nations. The councils comprise of students who represent the member nations of these councils and specialized agencies and deliberate on pre-decided agendas for three days. The proceeding of the council is presided over by an Executive Board consisting of 3

experienced MUNers (Chair, Vice-Chair and Director) who are chosen after a rigorous selection procedure.



Substantially reduce corruption and bribery in all their forms

Corruption has a disproportionate impact on the poor and most vulnerable, increasing costs and reducing access to services, including health, education and justice. 5th Pillar, a non-profit organization that aims to encourage, enable, and empower every citizen of India to eliminate corruption at all levels of society. The main objective of 5th Pillar is to strengthen democracy by way of preparing the next generation youth to be dutiful and patriotic citizens in all aspects- following traffic rules, adhering to better environment friendly practices, helping fellow citizens to live a bribe-free life by educating them on the procedures they learn. In order to sensitize the young generation to become socially responsible individuals, to be informed about the various laws governing their functioning as part of the society, 5th Pillar organizes awareness programs. 5th Pillar has acquired a special consultative status from the United Nations' Economic and Social Council in New York and has taken part in the UN's Global compact program in India.



Develop effective, accountable and transparent institutions at all levels

Several aspects are referred to transparency as a crucial principle of administrative procedure and administrative law as well as how transparency and accountability impact the value of democracy. Transparency is a fundamental requirement for the reliability and integrity of institutions in order to promote public trust and public support. Transparency guarantees legal assurance and increases the level of legitimacy in decision making process. The principle of transparency has a direct impact on the accountability of administration toward the stake

holders, while stake holders are able to get all the information regarding the administration and also are allowed to get involved in the process of decision-making. The transparency in administration has a great impact on the reforms and promotes the level of efficiency, effectiveness and responsiveness. VIT practices a transparent administration. Counselling during the admission process is transparent. Academic progress can be monitored by parents through transparent systems. Students are able to get all the information through e-mails sent by heads of various Divisions, Schools and Departments. Students are allowed to get involved in the process of decision making through student council and by getting involved with various technical club activities. Transparent systems make VIT an efficient, effective and responsible Institution.

Ensure responsive, inclusive, participatory and representative decision-making at all levels

VIT has a robust structure for administration. The Board of Management make decisions and the Vice Chancellor implements the decisions through the Registrar of the University. Faculty members participate in the Academic council and in various committees like Finance committee, Planning and monitoring board, Board of studies, Faculty recruitment committee and so on. Students take active part in student council and in core committees of technical club activities. VIT ensures responsive, inclusive, participatory and representative decision making at all levels.



Broaden and strengthen the participation of developing countries in the institutions

VIT provides quality higher education on par with international standards. The campus has a cosmopolitan atmosphere with students from all corners of the globe. Experienced and learned teachers are strongly encouraged to nurture the students. The global standards are set at VIT in the field of teaching and research. The highly motivated youngsters on the campus are a constant source of pride. The Memoranda of Understanding with various international universities make the University a strong Institution. They provide for an exchange of students and faculty and encourage joint research projects for the mutual benefit of these universities.



VIT is offering international education at Indian costs. The cost of education is an important factor because of which many students come to VIT. If we look at the top foreign universities, they are

multicultural in nature. We at VIT have a large number of programs to expose international students to Indian culture as well as to other cultures in the world. So, once a student passes out of VIT, he is ready to work in any part of the world. Out of 1400 international students in the campus, majority of them are coming from countries like Zambia, Ghana, Nigeria, Ethiopia, Zimbabwe, Tanzania, Ivory Coast, Sri Lanka, Bangladesh, Nepal, Bhutan, Myanmar, Malaysia, Indonesia and Maldives

Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

Access to information is critical for enabling stake holders to exercise their voice, to effectively monitor and hold Institutions to account, and to enter into informed dialogue about decisions which affect their lives. It is seen as vital for empowering all citizens, including vulnerable and excluded people, to claim their broader rights and entitlements. But the potential contribution to good governance of access to information lies in both the willingness of Institution to be transparent, as well as the ability of stake holders to demand and use information – both of

which may be constrained in low capacity settings. VIT practices transparency. Information is available to stake holders in VIT home page. The self-study report submitted to the National Assessment and Accreditation Council is open to public. Parents can monitor the academic progress of their wards. Policies related to academics, research, code of conduct and Human Resources are available in the home page. Placement details, information related to International collaboration with foreign universities, details of events conducted by VIT are open to public through the home page (<https://vit.ac.in/>)

Strengthen relevant national institutions, for building capacity at all levels, in particular in developing countries

In the social sector, it has become almost a formula to say that no organization can go it alone. The issues that Institutions are tackling are too big for any one Institution or funder. And the scale of the impact these organizations hope to achieve—to change systems, not just symptoms—can be just as overwhelming.

Vellore Institute of Technology has a strong international presence abroad with more than 300 MoUs with International reputed Universities. These collaborations help the students to explore diverse environments and various cultures across the world. International Relations team connect students and faculty with peers of many foreign institutions abroad. The international partner universities are spread in various countries throughout the world – USA, Canada, UK, Australia, Asia-Pacific, Europe, Middle East, Africa, and South America. VIT provides education to students not only from India but also from abroad. There are about 150 foreign faculty members working in VIT; some of them are full-time faculty and the rest of them are adjunct faculty. The growing number of foreign students on campus to pursue their education and research stands as a testimony to VIT's contribution to include society for sustainable development. The students get a chance to visit other international partner universities in their final semester under the [Semester Abroad Programme \(SAP\)](#). The [Semester Abroad Programme \(SAP\)](#) is pursued by both undergraduate and postgraduate students. Many of our students, who pursue their research projects in foreign universities, bring high quality to their work and esteem to the sustainable development of the World.

Promote and enforce non-discriminatory laws and policies for sustainable development

VIT practices a fair system during the recruitment of faculty members and staff. The diversity of faculty members and staff makes VIT a strong Institution. Faculty members from all over India as well as from different parts of the World are recruited by VIT. The University Grants

Commission (UGC) of India brought in force the UGC (Grievance Redressal) Regulations, 2019 *inter alia* mandates monitoring and prevention of all forms of discrimination and Grievance Redressal including and not limited to caste based discrimination in Higher Educational Institution. Vellore Institute of Technology has imbibed policies against all forms of discrimination and ensured necessary systems in place. For the purpose of such monitoring and preventing discriminations and grievance redressal, this COMMITTEE is FOR PREVENTION OF DISCRIMINATION AND GRIEVANCE REDRESSAL constituted. The Committee is responsible for monitoring and advising the Institute in prevention of Harassment. As part of this responsibility the Committee conducts enquiries and suggest remedial measures. The Committee ensures action against discrimination in relation to gender, race, caste, marital or civil partnership status, religion or belief, age, or disability amongst Employees as well as Students of the Institute. The Committee is guided by the UGC Regulations.



Report of VIT-Chennai Campus

PREAMBLE

The environment has been harmed over the decades, with its impact felt not just for the present but also the future generations. This is where the concept of sustainable development is of utmost importance, for the contemporary world's ideas of politics and law, ecology and business. Aided by the typical goal of any constitution, it inculcates the conception of a model of development that converges environmental and other variables forcefully to fully protect human rights of the present and future generations. Sustainable development is addressed through the constitution to encounter global and local threats to the environment, during an epoch characterized by exponential growth with constant resources.

CONTRIBUTION TO SOCIETY

VIT School of Law (VITSOL), over the years, have strived to support the specific targets that India has aimed under SDG 16: Peace, Justice and Strong Institutions. VIT School of law has organised events, guest lectures and designed curriculum in such a way that it integrates the ideologies of this Goal. Conferences with national and international level participation, guest lectures by professors, academicians, administrators were organised to have quality discussions on issues and ideas on various topics including reduction of all forms of violence, protection of human rights and prevention of all forms of exploitation, promotion of Rule of Law and access to justice to all. Some of these programmes were open to all interested people.

Probono Project: Project was assigned by the Madras Chamber of Commerce and Industries (MCCI) to VITSOL to review the existing arbitration centre rules of MCCI and to draft a new rule. Eight students and one faculty member was involved in this project, which ended in December, 2019.

PARTICIPATORY DEVELOPMENT ACTIVITIES

The Legal Awareness Camp, Legal Aid Programmes, and mediation centre not only inform the students about the law in action but also providing a chance to uphold rule of law by participating in the process of identifying possible access to places of dispute resolution through free Legal Aid Programme of the state. Through these activities, the students and the Law

School get engaged in a participatory development activity that ensures public access to information, protects fundamental freedoms, promote and enforce non-discriminatory laws and policies for sustainable development.

Women and Law: A Legal Awareness Programme (LAP) in collaboration with National Commission for Women was conducted on 03/01/2020 at VITSOL premises in Chennai. The programme was conducted to create awareness among college students, women and men, about women related basic legal rights, remedies and challenges under various criminal, civil and labour laws. The LAP witnessed participation from students and the unorganized sector workers from in and around Chennai.



Legal Awareness Programme Jointly Organised By National Commission For Women: 2020

CAPACITY BUILDING THROUGH ACADEMICS

SDG 16 targets have been progressively achieved in VIT School of Law by an innovative curriculum design with relevant and updated course outcomes which requires students to demonstrate knowledge and in the understanding of substantive and procedural laws including their interplay with contemporary international relations and politics, modern government, economics, environment, sociology, and technology that enables every student in addressing traditional and contemporary legal issues, promotion of rule of law and enhancing access to justice through analytical, negotiating, interpretative skill, legal reasoning, and problem-solving. The activities of the Law School are fully transparent and whatever information is requested by stakeholders are supplied with. Feedbacks from students, parents, teachers, legal industry and legal institutions do help to ensure responsive, inclusive and representative decision-making at the school level.



Capacity Building Through Intra Moot Court Training



Qualified India Round - 5th N.R Madhava Menon SAARC Law Mooting Competition- 3 Students (2020)

PROMOTION OF SUSTAINABILITY LAW, GOVERNANCE AND JUSTICE THROUGH ACADEMICS

Involving the students in Legal Literacy Training for the villagers, Project Based Learning involving law and society, Legal Aid Clinic promotes equal justice, access to justice for the most vulnerable groups in the society. A group of six students has completed a project to draft rules

of Arbitration for Madras Chamber of Commerce on pro bono basis. The faculty and student publications on Journals, Books and websites show their commitment and interest over various areas of legal research including Constitutional Law, Human rights, IPR, Technology Law, International Law, Criminal Law etc.

World Health Organization (WHO) consultancy project: This consultancy project is coordinated by the University of Trento (Faculty of Law) within an International Network of judges and legal scholars (INJS) with part financial contribution from WHO. The consultancy project aims to provide a comprehensive view on current litigation stemming all over the world as a result of challenges brought against governments in relation to public health measures adopted within the pandemic. The focal point of research on these cases from India is VIT School of Law from July 2020.

SUSTAINABLE
DEVELOPMENT
GOALS



Strengthen the means of implementation and revitalize the global partnership for sustainable development

SDG-17

Annual Report 2019-20

Report of VIT-Vellore Campus

Partnerships for the Goals

Sustainable development goals require a partnership between institutes, government, NGOs and Private sectors. These 17 goals have complex challenges that seek multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and resources. VIT establishes collaboration with Universities, Institutes, Government bodies, non-government organizations to achieve the goals.

International partnership

VIT partnered with the following international institutes for joint research in various disciplines, faculty exchange, student exchange, Semester abroad program, organizing joint conference etc.

Newly established Partnership with International Universities and Institutes

S.No	Organisation	Activity date	Purpose and Activities
1	City University of London	11.06.2019	Joint research
2	Monash University	19.06.2019	Offering joint online courses
3	Yangon Technological University	20.06.2019	Joint conference
4	Duke University	28.06.2019	Student Exchange/ Partner in EU-Asia Link Project to design the Curriculum for B.Tech Energy Engineering Program
5	Mindanao State University-Iligan Institute of Technology.	29.07.2019	Semester Abroad Program (SAP)
6	George Mason University	30.07.2019	Faculty and Student Exchange Programme/ Joint Research/ Twinning Programme
7	Kielce University of Technology	30.07.2019	Faculty and Student Exchange Program/ Joint Research
8	Gazi University	19.07.2019	Faculty and Student Exchange Program/ Joint Research/
9	Kathmandu University (The Department of Civil Engineering)	04.08.2019	Faculty and Student Exchange Program/ Joint Research
10	Kaunas University of Technology (KUT)	19.08.2019	Student Exchange Specific agreement
11	Northern Arizona University	19.08.2019	SAP students/ Faculty and Student exchange
12	Institut Francais en Inde	20.08.2019	French Tutor Nomination
13	Shenzhen Institutes of Advanced Technology, Chinese Academy of Science	02.09.2019	International Cooperation Agreement

14	Swinburne University of Technology, Sarawak Campus, Malaysia	20.09.2019	Faculty and Student Exchange Programme/ Joint Research/ Twinning Programme
15	Waterford Institute of Technology, Waterford	21.09.2020	Faculty and Student Exchange Programme/ Joint Research/ Twinning Programme
16	University of Evansville, Indiana	24.09.2019	Student exchange
17	University of Nottingham	25.09.2019	Participation in VIT's 4th International Higher Education Fair, September 2019
18	Georgia State University	25.09.2019	Faculty and Student Exchange Program/ Joint Research
19	Georgia state university, Atlanta, USA	25.09.2019	Joint Research and Conference
20	Joanneum Research Forschungsgesellschaft mbH	01.10.2019	Faculty and Student Exchange Program/ Joint Research
21	George Washington University	08.10.2019	Faculty and Student Exchange Program
22	Dankook University	12.10.2019	Faculty and Student Exchange Program/ Joint Research
23	University of the Philippines Los Banos	01.11.2019	Faculty and Student Exchange Program/ Joint Research
24	University of Kentucky	18.11.2019	Faculty and Student Exchange Program/ Joint Research
25	Institute of Technology PETRONAS Sdn. Bhd	20.11.2019	Faculty and Student Exchange Program/ Joint Research
26	Northern University Bangladesh	24.11.2019	Faculty and Student Exchange Program/ Joint Research
27	Independent University of Bangladesh	24.11.2019	Faculty and Student Exchange Program/ Joint Research
28	Gongqing College of Gnanhang University	24.11.2019	Faculty and Student Exchange Program/ Joint Research
29	Tamkang University	25.11.2019	Faculty and Student Exchange Program/ Joint Research
30	University of Liverpool	26.11.2019	Faculty and Student Exchange
31	Xiamen University (Letter of Intent)	29.11.2019	Faculty and Student Exchange Program/ Joint Research
32	University of Lincoln (Letter of Intent)	29.11.2019	Faculty and Student Exchange Program/ Joint Research
33	Universidade Luterana Do Brasil	02.12.2019	Faculty and Student Exchange Program/ Joint Research

34	Arba Minch University, Ethiopia	11.02.2020	Faculty and Student Exchange Program/ Joint Research
35	National Cheng Kung University (NCKU), Tainan	12.02.2020	Faculty and Student Exchange Program/ Joint Research
36	Athens University of Economics and Business	12.02.2020	Faculty and Student Exchange Program/ Joint Research
37	Universitas Negeri Yogyakarta	20.02.2020	Faculty and Student Exchange Programme/ Joint Research
38	Victoria University of Wellington	21.02.2020	Faculty and Student Exchange Program/ Joint Research
39	Pentecost University College (PUC)	05.03.2020	Faculty and Student Exchange Program/ Joint Research
40	Kyung Hee University	04.06.2020	Faculty and Student Exchange Program/ Joint Research

Semester Abroad program aims to encourage students from all streams to pursue their final semester in one of the partner Universities abroad. This will help the institute to collaborate with the partner Universities for performing the joint research in niche area and also this will provide a platform to the students to explore the international facilities SDG10.

No. of students visited to the partner Universities in the academic year 2019-20

Sl.No	University	Country	No. of students
1	Arizona State University	USA	4
2	City University	UK	1
3	Colorado State University	USA	2
4	Deakin University	Australia	3
5	EMBL Heidelberg	Germany	1
6	Evansville	USA	2
7	IUPUI	USA	1
8	Karlsruhe Institute of Technology	Germany	2

9	Koc University	Turkey	1
10	Massachusetts Institute of Technology	USA	1
11	Miyazaki University	Japan	1
12	Nanyang Technological University	Singapore	10
13	National Institute of Genetics	Japan	1
14	National Taiwan University of Science and Technology	Taiwan	1
15	National University of Singapore	Singapore	5
16	Northern Illinois University	USA	3
17	Plymouth University	UK	3
18	Rochester Institute of Technology	USA	14
19	Saskatchewan University	Canada	1
20	Stockholm University	Sweden	1
21	Taipei Medical University	Taiwan	2
22	The University of British Columbia	Canada	2
23	Tsinghua University	China	1
24	Ulsan National Institute of Science & Technology	South Korea	1
25	Umea University	Sweden	1
26	Universidade de santiago de compostela	Spain	1
27	University of Alberta	Canada	1
28	University of California, San Diego	USA	1
29	University of Guelph	Canada	1
30	University of Illinois -Urbana	USA	1
31	University of Melbourne	Australia	1

32	University of Michigan	USA	1
33	University of Porto	Portugal	3
34	University of Texas Arlington	USA	1
35	University of Waikato	New Zealand	2
36	University of Wolverhampton	UK	3
37	University west	Sweden	1
38	UPC Barcelona Tech	Spain	1

Fund generated for the collaborative research

Along with the partner institutes, VIT secured funding from various agencies for research on various SDGs

Collaborating institute	Agency	SDGs
CDMM, VIT and Vladikavkaz Scientific Center of the Russian Academy of sciences, Vladikavkaz, Russia	DST (Indo-Russia)	Landslide monitoring – SDG 13, SDG15
SELECT, VIT and St Petersburg State University, St. Petersburg, Russia	DST (Indo-Russia)	Child health care – SDG 3
SELECT, VIT and Elsaryat St. Abbasis, Cairo, Egypt	DST (Indo-Egypt)	Energy -SDG13
CBCT, VIT and Amthera Life Sciences Pvt. Ltd, Bengaluru, Karnataka	BIRAC	Biosimilar development - SDG 3
SCE, VIT and Institut Fur, Geologische Wissenschaften, Fachbereich Geowissenschaften, Freie Universitaet, Berlin	DST-DAAD	Water resources – SDG6
SBST, VIT and Ton Duc Thang University, Vietnam	FOSTECT	Cancer therapy - SDG 3
SCOPE, VIT - University of Peradeniya, Galaha Rd, Sri lanka	Erasmus programme of the European Union	Technology-enabled active learning – SDG9

Partnership with NGOs and Government

Center for Sustainable Rural Development and Research Studies (CSR&RS) collaborates with NGOs and Government bodies to develop rural areas through various innovative initiatives. The center acts as a bond between VIT and society to provide better and effective services

CSR&RS organised numerous programme for the upliftment of rural people

Programme	Partner agency	SDG
Academic Innovation and Entrepreneurship Development Program	Entrepreneurship Development and innovation institute, Govt. of Tamil Nadu	SDG4
Tribal Development - Mega Loan Mela	National Bank for Agriculture and Rural Development and Indian Bank	SDG10
Unnat Bharat Abhiyan 2.0 /Grama sabha / Health Camp / TB screening	MHRD, Govt. of India	SDG3
GV School Development Capacity Development	Directorate of Education, Govt. of Tamil Nadu	SDG9
Entrepreneurship Development Programme- EAC Awareness Camp / NEEDS Training	National Science & Technology Entrepreneurship Development Board (NSTEDB), Dept. of Science & Technology, and Govt. of India	SDG10
Skill Development	National Research Development Corporation (NRDC), Government of India	SDG10
Life Skill Development for Govt. Schools in Vellore District.	Directorate of Education, Govt. of Tamil Nadu	SDG4, SDG10
Micro Entrepreneurship Development Programme for promoting self-employment opportunities for Tribal communities	National Bank for Agriculture and Rural Development	SDG4, SDG10



Mini Millets Value Addition EDP Training Programme - Date: 04.12.2019 to 07.12.2019



TB SCREENING AWARENESS CAMP & HEALTH CAMP IN PEENJAMANDHAI VILLAGE



GV SCHOOL DEVELOPMENT - PROVIDED 100 DUAL BENCH & DESK FOR GOVT. HR. SEC. SCHOOL – PERANPATTU VILLAGE – GUDIYATHAM BLOCK-VELLORE DATE : 07.01.2020



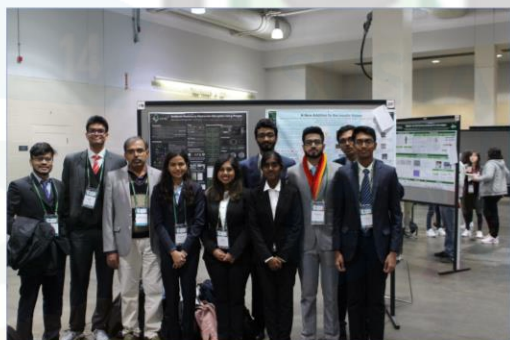
NEEDS – EDP – From 13.02.2020 to 13.03.2020

International competitions

VIT encourages young minds to participate in various competitions held across the country and the globe. Our students actively participate and provide innovative ideas and solutions for the issues. One such competition is iGEM; VIT students participated and secured the Silver medal for the project compacting the Antibiotic resistance in bacteria (SDG-03).

International Genetically Engineered Machine (iGEM 2019)

Description: Vellore Institute of Technology (VIT) participated in the International Genetically Engineered Machine (iGEM-2019) competition organized by Massachusetts Institute of Technology, Boston. With the theme **ARMED'UP** (Antibiotic Resistance Mechanism Disruption Using Phages) the team was successfully able to develop a biosensor that can remotely identify and destroy the resistant bacteria. Among more than 350 participating teams from various institutes around the world, VIT-Vellore-2019 team triumphantly bagged **silver medal**.



Name	Registration Number	Name	Registration Number
Amatullah Nakara	17BBT0080	Sahana Lakshmi Venkatesh	16BBT0084
Abhinav Kumar	17BIT0030	Shraman Dhar	17BBT0170
Anisha Thite	16BBT0284	Siddarth H	17BBT0019
Neha Balasundaram	16BIT0040	Simanta Ghosh	17BBT0171
Velmurugan Pravin	17BBT0210	Soundaram Veerappan	16BBT0041
Raghav Mehta	17BBT0055	Srestha Mitra	17BBT0115
Rahul Sharan	17BBT0109	Tanmay Talwalkar	17BBT0034
RM Rajeeva Lokshanan	16BBT0145	B Krithi Vishnu	16BBT0175
Rudra Shekhar Bose	16BBT0003		

Report of VIT-Chennai Campus

PREAMBLE

Every individual, such as Institutions, Corporate, Government and Society at large have a role to play in implementing sustainable development goals. This can be achieved only if everyone works together. Strong commitment towards National and Global partnership and cooperation is vital for sustainable development.

INTERNATIONAL PARTNERSHIP PROGRAMMES

VIT University has signed MoUs with University of Nottingham, UK, Binghamton University, Georgia State University-USA, RIT-USA, Universiti Teknologi Petranos(UTP), Malaysia, A Star Research entities, Singapore and so on., for academic cooperation to promote the advancement of learning through research, exchange and cooperation in teaching with focus on Faculty and Student exchange programmes, host lectures, seminars / webinars, organize joint research projects with specific focus on inter-disciplinary and trans-disciplinary domains, set up Centre of Excellence and assist in other academic activities that will be of joint interest to both the Universities.



MoU with UTP -2019



INDIANA SUMMIT -2019

INTERNATIONAL RESEARCH COLLABORATIONS

Several international collaborative projects are carried out by our faculty members in collaboration with researchers across the globe. To name a few:

- DST-DAAD (Indo - German) collaborative research on " Optimization of Wave Energy system – A Primitive Model for Indian Coastal Lines"
- DST – KNRF (Indo Korean) collaborative research on "Development of a strategy for optimal power production from a 100 kW class Horizontal Axis Tidal Stream Turbines System"
- A Joint Indo-UK research project on "Novel Air Filter to Suppress Viral Load in Confined Space", in collaboration with Royal Academy of Engineering (RAENG), UK.

INDIANA SUMMIT 2019

Vellore Institute of Technology organized the 2nd World Summit on "Advances in Science Engineering and Technology" at Indiana University-Purdue University, Indianapolis (IUPUI), USA during October-2019. In this summit, 24 Keynote speakers, 40 invited speakers and 200 delegates from 22 countries met in IUPUI, USA to discuss challenges of Interdisciplinary, multidisciplinary and trans-disciplinary research. The Chief Guest of the summit, Mr. Gregory Alan Ballard, delivered the inaugural address where he emphasized the necessity of women involvement in technology and research for social causes.

WEEF 2019

Disruptive Engineering Education is an innovative process with a paradigm leap from the existing practices that lead to simplicity, convenience, accessibility and affordability for sustainable development. The 9th World Engineering Education Forum – WEEF 2019 was organized by VIT Chennai during November-2019 with an aim to exploring the adoption of disruptive technologies for engineering education. The largest engineering education gathering in the world, WEEF brings together a large number of stakeholders, including engineering educators, leaders, students, industry, government and non-governmental institutions to learn, share & build fruitful and long-term collaborations focusing on the Conference Theme "Disruptive Engineering Education for Sustainable Development." This prestigious event was held in India for the first time.



A GLIMPSE OF WEEF -2019

PECCON-2019

The second International Conference on Power Engineering, Computing and CONTROL, PECCON 2019 was organized during December 2019 by VIT Chennai in collaboration with Binghamton University, USA. The main theme of PECCON 2019 is “Smart technology for smart grid”. The conference provided a forum for practicing professionals, academicians, research scholars and students to exchange their innovative ideas, inferences and knowledge gathered through rigorous experiments. The major sessions of the conference are, Sustainable Energy Technologies, Power Electronics, Power Engineering, Electric Vehicles, ICT technologies, Data Science and Analytics, Smart Eco Structures and Systems and Allied Technologies. The

conference provided a platform for researchers across the globe to share their innovative ideas and inventions and to discuss the pros, cons and sustainability of their ideas.



A GLIMPSE OF PECCON-2019

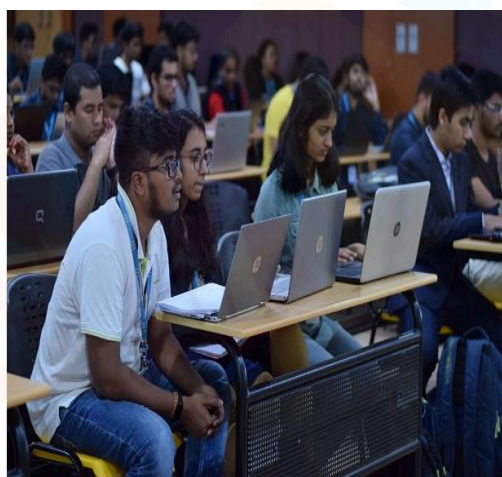
INDUSTRY CONCLAVE

VIT Chennai has organized an “Industry conclave on Artificial Intelligence” in October-2019 bringing together participants from different sectors like IT, Medicine, Academicians, Researchers, Students etc. to discuss on the scope and opportunities of AI in various fields through keynote address, panel discussion and hands on training on machine learning. Participants benefitted from the keynote sessions on:

Image and Voice recognition, Video and Game streaming, Content and video based image recommendation for prediction of chronic diseases, Reinforcement Learning, Influence of AI/ML in financial operations. Panel discussion on “Key challenges in adoption of AI in India” was a brain-storming session with lots of takeaway for the participants.



Keynote Address- AI Conclave



Students participating in AI Conclave



INDUSTRY COLLABORATION

VIT Chennai partners with Paterson Energy Private India Limited to work together towards formulating strategies for sustainable municipal solid waste management, hazardous, plastic and industrial waste solutions, waste to energy and circular economy solutions, development of capacity building programs and joint research and development of product or process.

OUTREACH PROGRAMMES

A guest lecture on “Introduction of recent researches on tidal stream turbines in Korea” was delivered by Dr. Jin Hwan Ko, Jeju National University, South Korea. Dr. Jin imparted his unparalleled and in depth knowledge about renewable power sources, focusing specially on Tidal Power Turbines as an efficient energy source.

Dr. Shin Hyung Rhee of Seoul National University gave a lecture on “Tidal Energy generation and the experimental method of designing the blade dynamics with the real time facility available at Seoul National University.

SMEC-VIT Chennai has organized a one-day online workshop on “Towards achieving carbon neutrality (TACN 2020)” which focussed on sustainable energy.



Dr. Jin Hwan Ko receiving memento



Lecture by Dr. Shin Hyung Rhee

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