SDG-3 Annual Report 2019-20

3 GOOD HEALTH AND WELL-BEING

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

Vellore Institute of Technology

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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

- o Infectious disease diagnosis: Immunodiagnosis of malaria, tuberculosis, *Salmonella typhimurium* infections, Brucellosis, COVID-19

- o Early diagnosis of cardiovascular disease

- o Development of therapeutic proteins to treat obesity, cardiovascular diseases, autoimmune diseases such as RA, SLE, etc blood clotting disorder such as haemophilia A.

- o Development of alternate pathways and tools to overcome antibiotic resistance

- o Understanding the mechanism of diabetes, cardiovascular diseases, obesity, Alzheimer's disease and autoimmune diseases.

- o Development of natural products to treat cancer (breast, colon, liver etc.), diabetes, cardiovascular diseases and obesity.

- o Development of microfluidic platforms to detect important analytes of blood for clinical settings.

- o Improvement of conventional metallic implants in order to increase their bioactivity and service period.

- o 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.

o Group Insurance Scheme for all VITians

o 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; Yuvaa 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-rotract/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, atheletics, cricket, throwball, gymansium, swmming etc. **(https://vit.ac.in/campuslife/sports)**.

...dition 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.

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

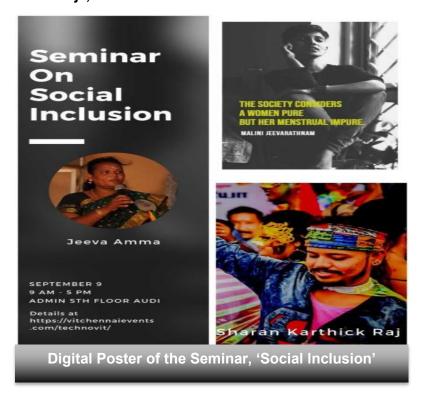| S.No.	Details of the Program	From	To	No. of Days
1	**Investor Awareness Program** by Mr. Dinesan Kallidil, Regional Head, South Region, Emkay Global Financial Services Limited.	15-11-2019	15-11-2019	1
2	**Research Methodology for Faculty Members and Research Scholars**, Dr. T. Subbulakshmi, Professor, 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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