

CRITERION 1 – CURRICULAR ASPECTS

1.4 FEEDBACK REPORT

1.4.2 FEEDBACK PROCESS OF THE INSTITUTION MAY BE CLASSIFIED AS:

OPTIONS (SELECT ANY ONE THAT IS APPLICABLE):

- A. FEEDBACK COLLECTED, ANALYSED AND ACTION TAKEN ON FEEDBACK AND RELEVANT DOCUMENTS ARE MADE AVAILABLE ON THE INSTITUTIONAL WEBSITE**
- B. FEEDBACK COLLECTED, ANALYSED AND ACTION HAS BEEN TAKEN**
- C. FEEDBACK COLLECTED AND ANALYSED**
- D. FEEDBACK COLLECTED**
- E. FEEDBACK NOT OBTAINED/COLLECTED**

Option A

Criterion Number	1
Metric	1.4.2
Details	Action taken report of the Institution on feedback report as minuted by the Governing Council, Syndicate, Board of Management/School of Pharmacy
Pages	1 to 48



VELS



INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)

(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)

PALLAVARAM - CHENNAI

ACCREDITED BY NAAC WITH 'A' GRADE

Marching Beyond 30 Years Successfully

INSTITUTION WITH UGC 12B STATUS

ACTION TAKEN REPORT

SCHOOL OF PHARMACY

2022-2023

SCHOOL	STAKE HOLDERS	CONSOLIDATED FEEDBACK	ACTION TAKEN
School of Pharmacy	Academic Peers	<ul style="list-style-type: none">Fast learners can be encouraged with paper publication and enrollment of NPTEL/SWAYAM courses.	<ul style="list-style-type: none">PG Students are asked to publish one research and review paper in peer reviewed journals.Students have enrolled in NPTEL/SWAYAM courses and completed the course.
	Professionals	<ul style="list-style-type: none">Regulatory aspect related skill enhancement courses can be introduced to the students.	<ul style="list-style-type: none">VAC "Regulatory aspects of pharma industry" for PG students which helps in filling the gaps between academics and industry.
	Parents	<ul style="list-style-type: none">Career opportunities for the students to be discussed.	<ul style="list-style-type: none">Placement training has been provided for all the UG and PG students for pre final year students. Students have been placed in core companies like Fourtis India Laboratories Pvt Ltd.
	Alumni	<ul style="list-style-type: none">Collaboration with industries and hospitals for student exchange programmes can be established.	<ul style="list-style-type: none">Various industries and hospitals have been made MoU. To name a few, with Chettinad hospitals, Microtherapeutics lab pvt ltd, to build students industry exposure and placement opportunity.

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	Employers	<ul style="list-style-type: none">• Employability and Entrepreneurship courses can be implemented in the curriculum.	<ul style="list-style-type: none">• All the courses in the Pharmacy curriculum are Employability based.
	Students	<ul style="list-style-type: none">• Hands-on training workshops and seminars are requested.	<ul style="list-style-type: none">• In-silico molecular docking workshops have been conducted and many technical seminars have been conducted for students skill development and knowledge building.



J. Anand

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SAMPLE PROOF OF ACTION TAKEN REPORT

RESEARCH ARTICLE



“Nanofibers: A Comprehensive Exploration Of Their Benefits, Roles, Applications, Types And Methodological Approaches”

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ABSTRACT

Nanofibers provide flexible surface functionalities, porosity, and a broad region of surface changing 3D topography. It treats wound healing, pain management, infectious diseases, diseases of the gastrointestinal tract, neurological diseases, and problems of the cardiovascular system. Electrospinning, is one of the method used to create the nanofibers. Different polymers are used in the production of nanofibers, depending on their intended application.. It examines the types, histories, benefits, drawbacks, and polymers employed in nanofiber technology. Additionally, a summary of the types of polymers employed in the creation of nanofibers was provided. The review article mostly discusses the types of electrospinning as a fabrication method and the applications of nanofibers.

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Keywords: Electerospinning, Nanofibers, Wound healing, polymers.

INTRODUCTION:

Nanofibers, a type of one-dimensional (1D) nanomaterial, are well-known for their numerous applications in both science and industry. Compared to other regularly used base materials, nanofibers possess superior mechanical properties and a diameter a thousand times smaller than human hair. They also have a lot of porosity, changing surface functions, and surface variable 3D topography[1]. Nanofibers can be produced using a variety of materials. The nanofibers are categorized based on the polymers[2]. The next goal is to improve control over the alignment of the nanofibers during deposition. It is feasible to use nanofibers in biomedical applications such as filters, in vivo models, scaffolds for tissue engineering, wound dressings, and nanomedicine.

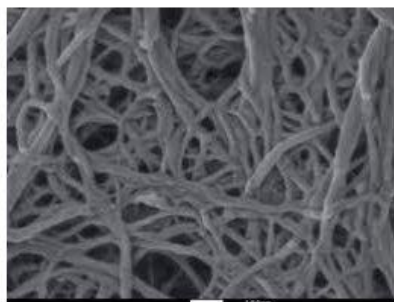


Fig 1: Nanofibers

Nanofibers lessen the toxicity and side effects, facilitate easier alternate administrations, because are used in tissue engineering. The physical properties must be taken into account in order to mimic the nanoscale properties of human tissues. There are numerous uses for nanofibers in drug delivery systems and medical equipment. They are used to prevent, diagnose, or cure disorders. Applications for nanofiber medical devices includes wound healing.

HISTORY:

The first nanofibers were made via electrospinning almost 400 years ago. William Gilbert invented the process of electrospinning approximately 1600. The ongoing electrospinning research has boosted competitiveness amongst laboratory-scale equipment. The market was reopened with a variety of spinning and collecting electrode accessories. Numerous companies have developed innovative production methods based on conventional electrospinning in an effort to overcome low productivity [4].

TYPES:

Nanoscience and nanotechnology have created several different types of nanoparticles during the last 20 years, including nanofibers, nanorods, nanowires, and nanosheet nanomaterials. According to this categorization, nanomaterials of 100 nm are called nanofibers. The size, shape, and content of the nanofibers and nanofibrils are classified [7].

Inorganic nanofibers:

Electrospinning has been used to manufacture a number of inorganic nanofibers, which are then calcined [8]. Inorganic nanofibers have been produced by photocatalysis. [9,10].

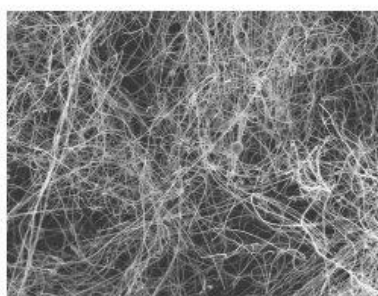


Fig 2: Inorganic nanofibers

Carbon nanofibers:

Carbon nanofibers (CNFs), a type of one-dimensional (1D) nanomaterial, are mostly carbon-based. [11,12]. Ideal cylindrical nanofibers coated with graphene layers are called carbon nanotubes. Cone, cup, or plate-shaped graphene layers are stacked to create cylindrical carbon nanofibers that are electrospun or vapor-grown [13].

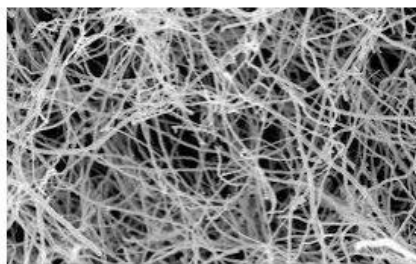


Fig3: carbon nanofibers

Polymer based nanofibers:

Numerous products and services, including clothing, fishing nets, surgical masks, heart valve replacements, air conditioner filters, cigarettes, and vascular grafts, use polymer-based fibers. The spinneret design and collecting mechanism were improved to generate nanofibers. Polymer melt electrospinning must be carried out in a vacuum [15]. Splintered nanofibers are only being investigated [16].

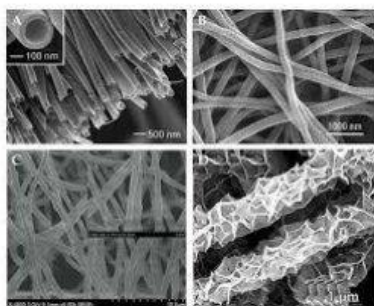


Fig 4: Polymer based nanofibers

Composite nanofibers:

Composite nanofibers are frequently made by fusing together several phases of various elements or chemical structures. This nanofibers have microscopic activity, amazing conductivity. This nanofibers has found applications in various industries due to its exceptional physical and chemical qualities. [27]. With the help of electrospun can produce these nanofibers. Composite nanofibers are done by several techniques. [24].

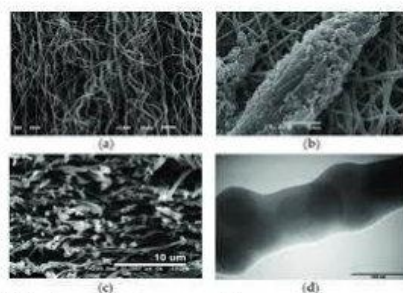


Fig 5: composite nanofibers

POLYMERS:

Natural polymers are mostly utilized in nanofiber technology; many other polymers, such as synthetic polymers, can only be synthesized. Elastomers are typically produced by polymers having high extension properties in ambient circumstances. Synthetic fibers, namely polyester and nylon, can efficiently be used. Plastic resins that are sold commercially. They improve mechanical qualities and processability [37].

ROLE OF POLYMERS:

Polymers, both natural and manmade, mixes of polymers, and other composite materials can be spun into nanofibers. Choosing the right polymer is essential to creating nanofibers with characteristics unique to a given use. For biomedical applications, the ideal polymer should have mild hydrophilicity, mechanical strength, biodegradability, and safety. The polymers used to fabricate nanofibers can come from either synthetic or natural sources, and each has its own advantages and disadvantages [17]. In regenerative medicine, the application of scaffolds for tissue engineering, dressings for wounds, and vascular grafts are produced. [18]

TYPES:**Natural:**

Transdermal medication delivery may be investigated with nanofibers manufactured from both natural and synthetic polymers. When it comes to nanofibers, natural polymers are chosen over synthetic polymers because of their superior qualities. The most popular method for electrospinning to make nanofibers are polysaccharides and proteins [19].

It is possible to create nanofibers from electrospun polysaccharides that contain cellulose, alginate, and chitosan derivatives and use them as a delivery system. Chitosan is made up of the linear co-polymers. To encapsulate the fungus, hybrid electrospun nanofibers were created by mixing cellulose acetate and polyvinyl alcohol [33].

Semi synthetic polymers:

They are processed to recover their useful forms. Semi-synthetic polymers originate from cellulose, a naturally occurring polymer. Semi-synthetic polymers are sometimes known as thermoplastic polymers [36].

The process of preparing cellulose is called acetylation; cellulose diacetate is made with sulfuric acid and acetic anhydride. Usually, this stuff is utilized to create film spectacles that resemble threads. Examples of semi-synthetic polymers are cellulose nitrate and gun cotton, among others [37,38].

Synthetic polymers:

The majority of materials are utilized in the production of nanofibers are polylactic acid, polyvinylpyrrolidone, PCL and its co-polymers, PEO, and PVA.

Polyethylene oxide is frequently utilized by drug delivery and tissue engineering applications. Most nanofiber compositions are made up of polycaprolactone, polylactic acid, and polyvinylpyrrolidone [43].

NANOFIBERS CHARACTERIZATION TECHNIQUES[44]:

Optical (Imaging) Probe Characterization Techniques

Acronym	Technique	Utility
CLSM	Confocal laser-scanning microscopy	Imaging/ultrafine morphology
SNOM	Scanning near-field optical microscopy	Rastered images
2PFM	Two-photon fluorescence microscopy	Fluorophores/biological systems
DLS	Dynamic light scattering	Particle sizing
BAM	Brewster angle microscopy	Gas-liquid interface Imaging

Electron Probe Characterization Techniques

Acronym	Technique	Utility
SEM	Scanning Electron Microscopy	Imaging/ topology morphology
EPMA	Electron Probe Microanalysis	Particle size/ local chemical analysis
TEM	Transmission Electron Microscopy	Imaging/ Particle size shape
HRTEM	High Resolution Transmission Electron Microscopy	Imaging structure chemical analysis
LEED	Low Energy Electron Diffraction	Surface/ adsorbate bonding
EELS	Electron Energy Loss Spectroscopy	Inelastic electron interaction
AES	Auger Electron Spectroscopy	Chemical surface analysis

Scanning Probe Characterization Techniques

Acronym	Technique	Utility
AFM	Atomic Force Microscopy	Imaging/ topology/ surface structure
CFM	Chemical Force Microscopy	Chemical/surface analysis
MFM	Magnetic Force Microscopy	Magnetic material analysis
STM	Scanning Tunnelling Microscopy	Topology/Imaging /surface
APM	Atomic Probe Microscopy	Three dimensional Imaging
FIM	Field Ion Microscopy	Chemical profiles/ atomic spacing
APT	Atomic probe tomography	Position sensitive lateral location of atoms

Photon(Spectroscopic) Probe Characterization Techniques

Acronym	Technique	Utility
UPS	Ultraviolet photoemission spectroscopy	Surface analysis
UVVS	UV Visible spectroscopy	Chemical analysis
AAS	Atomic absorption spectroscopy	Chemical analysis
ICP	Inductively coupled plasma spectroscopy	Elemental analysis
FS	Fluorescence spectroscopy	Elemental analysis
LSPR	Localized surface plasmon resonance	Nanosized particle analysis

Ion-particle probe Characterization Techniques

Acronym	Technique	Utility
RBS	Rutherford back scattering	Quantitative- Qualitative elemental analysis
SANS	Small angle neutron scattering	Surface characterization
NRA	Nuclear reaction analysis	Depth profiling of solid thin film
RS	Raman Spectroscopy	Vibration analysis
XRD	X-ray diffraction	Crystal structure
EDX	Energy dispersive X-ray spectroscopy	Elemental analysis
SAXS	Small angle X-ray scattering	Surface analysis/ particle sizing (1-100 nm)
CLS	Cathodoluminescence	Characteristics emission
NMR	Nuclear magnetic resonance spectroscopy	Analysis of odd no. of nuclear species

Thermodynamic Characterization Techniques

Acronym	Technique	Utility
TGA	Thermal gravimetric analysis	Mass loss Vs. Temperature
DTA	Differential thermal analysis	Reaction heat capacity
DSC	Differential scanning calorimetry	Reaction heat phase changes
NC	Nanocalorimetry	Latent heats of fusion
BET	Brunauer-Emmett-Teller method	Surface area analysis
Sears	Sears method	Colloid size, specific surface area

METHODS:

Electrospinning:

This technique is the most commonly employed to create nanofibers is electrospinning. The invention of electrospinning as a workable technique for producing nanofibers may be tracked back to a 1934 patent that was made in the process of generating artificial suits by applying a high electric field.



Fig 6: Electrospinning equipment

Available online at: <https://jozindia.com>

The study focused on the effects of electrostatic force on liquids. This evolves into an electrically charged cone when it approaches a liquid droplet in a microcapillary. The apex of the cone may emit small jets when the charge density rises significantly. The fibers were electrospun while they were placed on a receiver [45]. The electrospinning technology is divided into two categories: melt electrospinning and solution electrospinning, depending on how the polymer is made [46]. The study focused on the effects of electrostatic force on liquids. This evolves into an electrically charged cone when it approaches a liquid droplet in a microcapillary. The apex of the cone may emit small jets when the charge density rises significantly..

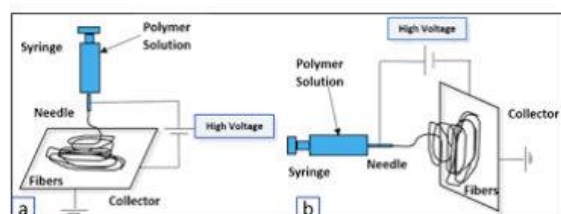


Fig 7: components of electrospinning equipment

The most popular technology is electrospinning since it is simple, scalable, affordable, and reproducible. Electrospun fibers form a vast, interconnected, porous network. Gene transfection has been effectively applied to both synthetic and natural polymers. [47].

Three categories of elements may be identified that influence the properties of nanofibers: parameters related to the process, parameters related to the material, and parameters related to the environment. [48, 49].

TYPES:

Co-axial electrospinning:

It is mostly used technique in the preparation of nanofibers. This creates the possible way of nanofibers. These nanofibers are three-dimensionally networked and have been successfully used to transport drugs in combination with growth hormones, proteins, antibiotics, and other biological agents [54]. This technique preserves the drugs' biological activity while protecting the loaded molecule's core-shell structure. During the electrospinning process, the biomolecule functions better when it is inside the jet and is protected from damage by the polymer solution outside the jet. [55].

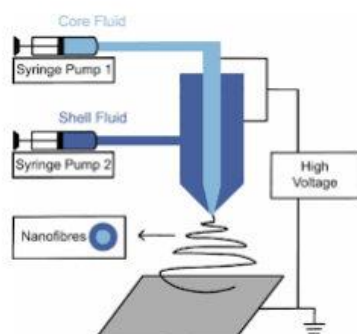


Fig 8: co-axial electrospinning

Multi jet electrospinning:

Large nanofibers were produced using multi-nozzle electrospinning systems, which increased output and coverage. Skin-core structures have purportedly been developed with the use of multi-needle electrospinning. Nanofiber filaments were made by two principles [56]. Electrospun nanofiber jets can be generated by an electrospinning device with many nozzles or fewer. Polymers can combine nanofiber mats with appropriate dispersibility and a uniform thickness using a multi Jet electrospinning device. This technique can also be used to produce mixed nanofiber mats made of many polymers [57].

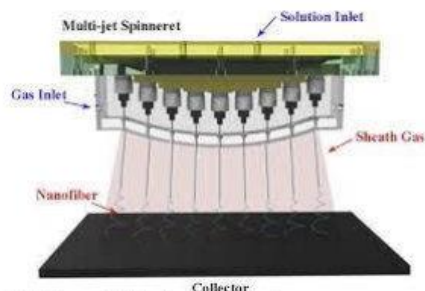


Fig 9: multijet electrospinning

Emulsion electrospinning:

A rapid, affordable, and promising technique for creating electrospun core-shell nanofibers is emulsion electrospinning. This method is adaptable and promising for the nanofiber encapsulation of many medications. Emulsion electrospinning was found to be a best technique, in terms of changing the rate at which medications are released. [58].

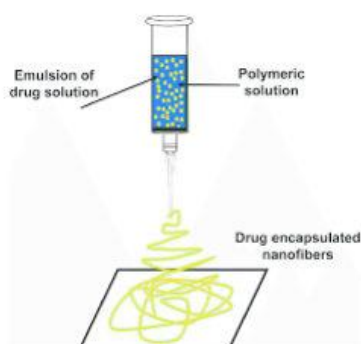


Fig 10: Emulsion electrospinning

Bubble electrospinning:

The family of extremely complex electrospinning techniques has recently expanded to include the ground-breaking method known as bubble electrospinning. Surface tension in the resulting bubbles is broken by electrospinning using electrical forces. The size and shape can affect surface tension. This method has several challenges. A bubble starts to appear on the fluid's surface. But this phenomenon is not very sensitive. The method of aqueous solvent bubble electrospinning is employed to create 100 nm-diameter nanofibers [60].

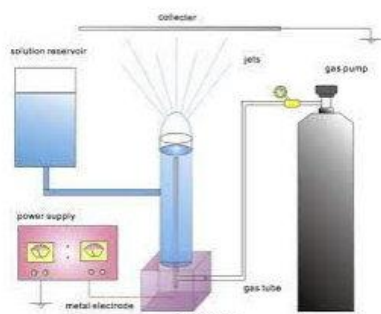


Fig 11: bubble electrospinning

APPLICATIONS:

Nanofibers have a lot to offer when it comes to the administration of pharmaceuticals with a wide range of biomedical applications. Recent advancements in nanotechnology may simplify the process of creating nanofibers with various forms and release properties. The most promising biological applications include tissue engineering, cardiovascular issues, viral disorders. [67].

Cardiovascular diseases:

A range of synthetic and natural biomaterials have been electrospun to create nanofiber scaffolds containing stem cells. [67]. To improve their effectiveness as stem cell transporters, nanofibers have undergone a number of alterations. It has also been shown that stem cell-containing nanofibers can treat cardiovascular conditions like atherosclerosis and cardiomyocyte regeneration [68].

Bone regeneration:

The adaptability of the electrospinning approach helps the scientists are also investigating alternative methods for creating scaffolds for bone healing and repair [70,71]. To promote osteogenesis and result in bone regeneration, the ideal material needs to be both bioactive and biocompatible. In order to expedite bone regeneration, a number of medical researchers have employed electrospun scaffolds to fabricate bone grafts. These scaffolds include bioactive compounds that promote osteoblast proliferation and mineralization. For bone tissue engineering, a scaffold that is biocompatible, biodegradable, and has the right mechanical properties for the environment of the bone should be utilized.

Wound healing:

A wound is the outcome of external laceration-induced skin trauma. Acute wounds heal faster than chronic wounds. The four phases of wound healing include proliferation, remodeling, inflammation, and hemostasis. It have recently piqued the tissue engineering because of their biocompatibility, flexibility, and efficient drug release, which enable the regeneration of injured tissue [71]. The prior approach to wound care was therapeutic. More effective medication release than with traditional therapy is made possible by combining drugs with polymers and spinning them into nanofibers [72]. Some even cause healing processes like vasodilation. Because collagen electrospun nanofiber scaffolds promote cell growth and penetration into the created matrix, they are the most biomimetic alternative to skin. In contrast to electrospun scaffolds made of single polymers. [71].

contraceptives:

They are now a practical choice for localized and systemic medication delivery. The majority of drugs intended for vaginal use have been used to address conditions that directly affect the sexual and reproductive health of women. The most common uses of hormonal contraception are for the management of bacterial vaginosis, luteal phase defect, cervical softening to promote labor, and vaginal infections [72].

RECENT ADVANCEMENTS IN NANOFIBER TECHNOLOGY:**Growth factor delivery:**

Because of the versatility of the electrospinning process, protein growth factors can be incorporated into polymer nanofibers, potentially leading to the production of a continuous and regulated release of the growth factor. By using two concentric needles instead of one, coaxial electrospinning has allowed proteins to be incorporated into the centers of these nanofibers [77]. This method provides protection against the organic solvent that dissolves the outer polymer layer. Growth factors have been attempted to be incorporated into nanofibers previously, despite the fact that coaxial electrospinning studies have primarily concentrated on proteins. [78].

CONCLUSION AND FUTURE PERSPECTIVES:

A few of the advanced properties that nanofibers displayed were the ambient characteristics are in addition to the nanofiber's shape-changing capability. Numerous healthcare-related applications, including as biosensors, tissue regeneration, wound healing, and medication delivery, can make use of it [75]. Similar challenges have been faced by applications utilizing energy devices based on electrospun nanofibers. These include higher energy densities, stability, repeatability, enhanced durability, longer shelf life, ineffective inhibition, and insufficient redox stimulation that is both effective and prolonged [74].

In addition to this, each field has flaws specific to its application. Despite their special qualities, nanofibers are not biodegradable and are persistently incompatible with the extracellular matrix of bone. Applications of electrospun nanofiber-based energy devices have run into similar issues. Higher energy densities, stability, repeatability are a few of these requirements [74].

REFERENCES:

1. A. Barhoum, et al., in: Nanofibers as new-generation materials: From spinning and nano-spinning fabrication techniques to emerging applications, 17, 2019.
2. V. Harish, et al., Review On Nanoparticles And Nanostructured Materials: Bioimaging, Biosensing, Drug Delivery, Tissue Engineering, Antimicrobial, And Agro-Food Applications, 12(3), 2022.
3. M. Fathi-Achache, et al., in: Use of nanoparticles in tissue engineering and regenerative medicine, 7, 2019.
4. S. Omer, et al., Scale-Up Of Electrospinning: Market Overview Of Products And Devices For Pharmaceutical And Biomedical Purposes, 13(2), 2021.
5. X.-X. Wang, et al., Conductive polymer ultrafine fibers via electrospinning: preparation, physical properties and applications, Prog. Mater. Sci. 115 (2021), 100704.
6. A. Ghajari, S. Habibi, A. Talebian, Biomedical applications of nanofibers, Russ. J. Appl. Chem. 94 (7) (2021).
7. N. Baig, I. Kammakam, W. Falath, Nanomaterials: a review of synthesis methods, properties, recent progress, and challenges, Mater. Adv. 2 (6) (2021).
8. A. An'zlovar, E.J.N. Zagar, Cellulose Structures as a Support or Template for Inorganic Nanostructures and Their Assemblies, 12(11), 2022.
9. K. Li, et al., Metal Oxide (ZnO And TiO₂) And Fe-Based Metal–Organic-Framework Nanoparticles On 3D-Printed Fractal Polymer Surfaces For Photocatalytic Degradation Of Organic Pollutants, 3(3), 2020.
10. V. Morales-Florez, A.J.P. i, M.S. Domínguez-Rodríguez, Mechanical Properties of Ceramics Reinforced with Allotropic Forms of Carbon, 2022.
11. B.J.P.R. Sundqvist, Carbon under Pressure, vol. 909, 2021.
12. A. Mohamed, Synthesis, characterization, and applications carbon nanofibers, in: Carbon-based Nanofillers and Their Rubber Nanocomposites, Elsevier, 2019.
13. R. Periakaruppan, et al., in: Agro-waste mediated biopolymer for production of biogenic nano iron oxide with superparamagnetic power and antioxidant strength.
14. S. Keshavarz, et al., in: Synthesis, surface modifications, and biomedical applications of carbon nanofibers: Electrospun vs vapor-grown carbon nanofibers.
15. T. Lim, et al., Human Sweat Monitoring Using Polymer-Based Fiber, 9(1), 2019.
16. A. Bachs-Herrera, et al., Melt Electrospinning Of Polymers: Blends, Nanocomposites, Additives And Applications, 11(4), 2021.
17. H.-S. Liao, et al., Self-Assembly Mechanisms Of Nanofibers From Peptide Amphiphiles In Solution And On Substrate Surfaces, 8(31), 2016.
18. J. Gunn, M.J.T.i.b. Zhang, Polyblend Nanofibers For Biomedical Applications: Perspectives And Challenges, 28(4), 2010.
19. N. Talebi, et al., Natural polymeric nanofibers in transdermal drug delivery, Appl. Mater. Today 30 (2023).
20. H. Li, et al., Fabrication of aqueous-based dual drug loaded silk fibroin electrospun nanofibers embedded with curcumin-loaded RSP nanospheres for drugs controlled release, RSC Adv. 7 (89) (2017).
21. O.L. Galkina, et al., Cellulose nanofiber–titania nanocomposites as potential drug delivery systems for dermal applications, J. Mater. Chem. B 3 (8) (2015).
22. N. Amiri, et al., Teicoplanin-loaded chitosan-PEO nanofibers for local antibiotic delivery and wound healing, Int. J. Biol. Macromol. 162 (2020).
23. A. Gençtürk, et al., Effects of polyvinylpyrrolidone and ethyl cellulose in polyurethane electrospun nanofibers on morphology and drug release characteristics, Turk. J. Pharm. Sci. 17 (6) (2020).
24. J. Hu, et al., Drug-loaded emulsion electrospun nanofibers: characterization, drug release and in vitro biocompatibility, RSC Adv. 5 (121) (2015).
25. M.H. El-Newehy, et al., Nanospider technology for the production of nylon-6 nanofibers for biomedical applications, J. Nanomater. 2011 (2011).
26. M.N. Sarwar, et al., Evaluating antibacterial efficacy and biocompatibility of PAN nanofibers loaded with diclofenac sodium salt, Polymers 13.

- 27.S. Mirzaeei, et al., Polyvinyl alcohol/chitosan single-layered and polyvinyl alcohol/chitosan/eudragit RL100 multi-layered electrospun nanofibers as an ocular matrix for the controlled release of ofloxacin: an in vitro and in vivo evaluation, *AAPS PharmSciTech* 22 (5) (2021).
- 28.B. Oktay, et al., Poly(lactic acid) nanofibers containing phosphorylcholine grafts for transdermal drug delivery systems, *Mater. Today Sustain.* 18 (2022).
- 29.L. Pan, J. Yang, L.J.M. Xu, Preparation and Characterization of Simvastatin-Loaded PCL/PEG Nanofiber Membranes for Drug Sustained Release, 27(21), 2022.
- 30.O. Mitxelena-Iribarren, et al., Drug-loaded PCL electrospun nanofibers as anti-pancreatic cancer drug delivery systems, *Polym. Bull.* 80 (2022).
- 31.R.O. Souza, et al., Amphotericin B-loaded poly(lactic-co-glycolic acid) nanofibers: an alternative therapy scheme for local treatment of vulvovaginal candidiasis, *J. Pharmaceut. Sci.* 107 (10) (2018).
- 32.C.T.J. Lim, P.i.p.s., *Nanofiber Technology: Current Status and Emerging Developments*, vol. 70, 2017.
- 33.S. Nemati, et al., Current Progress In Application Of Polymeric Nanofibers To Tissue Engineering, 6(1), 2019.
- 34.K.Y. Lee, et al., Electrospinning Of Polysaccharides For Regenerative Medicine, 61(12), 2009, pp.
- 35.B. Noorani, et al., Thin Natural Gelatin/Chitosan Nanofibrous Scaffolds For Retinal Pigment Epithelium Cells, 67(12), 2018.
- 36.C. Cunha, et al., Emerging Nanotechnology Approaches In Tissue Engineering For Peripheral Nerve Regeneration, 7(1), 2011.
- 37.J.-Y. Fang, et al., Enhancement Of The Transdermal Delivery Of Catechins By Liposomes Incorporating Anionic Surfactants And Ethanol, 310(1–2), 2006.
- 38.J. Xie, et al., Hyaluronic Acid-Containing Ethosomes As A Potential Carrier For Transdermal Drug Delivery, 172, 2018.
- 39.X.-Q. Niu, et al., Mechanism Investigation of Ethosomes Transdermal Permeation, vol. 1, 2019.
- 40.P. Sakdiset, et al., in: Formulation development of ethosomes containing indomethacin for transdermal delivery, 52, 2019.
- 41.G. El Fawal, et al., Polyvinyl Alcohol/hydroxyethylcellulose Containing Ethosomes as a Scaffold for Transdermal Drug Delivery Applications, vol. 191, 2020.
- 42.K. Halake, et al., Recent Application Developments Of Water-Soluble Synthetic Polymers, 20(6), 2014.
- 43.Y. Fu, et al., ECM Decorated Electrospun Nanofiber For Improving Bone Tissue Regeneration, 10(3), 2018.
- 44.Afshar S., Rashedi S., Nazockdast H., Ghazalian M. (2019). Preparation and characterization of electrospun poly (lactic acid)-chitosan core-shell nanofibers with a new solvent system. *Int. J. Biol. Macromol.* 138, 1130–1137.
- 45.J. Xue, et al., Electrospinning And Electrospun Nanofibers: Methods, Materials, And Applications, 119(8), 2019.
- 46.N. Aliheidari, et al., Electrospun Nanofibers For Label-Free Sensor Applications, 19(16), 2019.
- 47.J. Zhu, et al., Physical characterization of electrospun nanofibers, in: *Electrospun Nanofibers.*, Elsevier, 2017.
- 48.C. Mit-uppatham, et al., Ultrafine Electrospun Polyamide-6 Fibers: Effect Of Solution Conditions On Morphology And Average Fiber Diameter, 205(17), 2004.
- 49.L.E. Uhljar, R.J.P. Ambrus, Electrospinning of Potential Medical Devices (Wound Dressings, Tissue Engineering Scaffolds, Face Masks) and Their Regulatory Approach, 15(2), 2023.
- 50.N.Z. Al-Hazeem, A.J.N.N.-S.A., Nanofibers and Electrospinning Method, 2018.
- 51.A. Rianjanu, et al., Solvent Vapor Treatment Improves Mechanical Strength Of Electrospun Polyvinyl Alcohol Nanofibers, 4(4), 2018.
- 52.S. Agarwal, A. Greiner, J.H. J, A.f.m. Wendorff, Electrospinning Of Manmade And Biopolymer Nanofibers—Progress In Techniques, Materials, And Applications, 19(18), 2009.
- 53.J.-B. Donnet, et al., Carbon Fibers, 2003.
- 54.X. Qin, Coaxial electrospinning of nanofibers, in: *Electrospun Nanofibers*, Elsevier, 2017.
- 55.J.K. Park, O.-V. Pham-Nguyen, H.S.J.A.o. Yoo, Coaxial Electrospun Nanofibers With Different Shell Contents To Control Cell Adhesion And Viability, 5(43), 2020.
- 56.H.S. SalehHudin, et al., Multiple-Jet Electrospinning Methods For Nanofiber Processing: A Review, 33(5), 2018.
- 57.H. El-Sayed, et al., A Critique On Multi-Jet Electrospinning: State Of The Art And Future Outlook, 8(1), 2019.
- 58.J. Hu, et al., Drug-loaded emulsion electrospun nanofibers: Characterization, drug release and in vitro biocompatibility, 5(121), 2015.

59. B.P. Panda, et al., Design, Fabrication and Characterization of PVA/PLGA Electrospun Nanofibers Carriers for Improvement of Drug Delivery of Glucalazide in Type-2 Diabetes, 78(1), 2020.
60. R. Yang, et al., Bubble-Electrospinning For Fabricating Nanofibers, 50(24), 2009.
61. J. Erben, T. Kalous, J.J.A.o. Chvojka, Ac Bubble Electrospinning Technology For Preparation Of Nanofibrous Mats, 5(14), 2020.
62. Y. Liu, et al., The Principle Of Bubble Electrospinning And Its Experimental Verification, 28(1-2), 2008.
63. F. Yener, B. Yalcinkaya, O. Jirsak, Roller Electrospinning System: A Novel Method to Producing Nanofibers, 2013.
64. N. Sasithorn, L.J.J.o.N. Martinova, Fabrication of Silk Nanofibres with Needle and Roller Electrospinning Methods, 2014, 2014.
65. H. Niu, et al., Needleless Electrospinning: Developments and Performances, 2011.
66. F. Yener, O.J.J.N. Jirsak, Comparision of Needle and Roller Electrospinning Sytem of Polyvinylbutyral, 2012, 839317, 2012.
67. J. Varabhas, G.G. Chase, D.J.P. Reneker, Electrospun Nanofibers From A Porous Hollow Tube, 49(19), 2008.
68. Y.X. Gan, J.B.J.C. Gan, Porous Fiber Processing And Manufacturing For Energy Storage Applications, 4(4), 2020.
69. K. Koenig, et al., A New Prototype Melt-Electrospinning Device For The Production Of Biobased Thermoplastic Sub-Microfibers And Nanofibers, 23(1), 2019.
70. P.A. Pandey, et al., Physical Vapor Deposition Of Metal Nanoparticles On Chemically Modified Graphene: Observations On Metal-Graphene Interactions, 7 (22), 2011.
71. B. Bank-Srour, et al., Physical Vapor Deposition Of Peptide Nanostructures, 45(5), 2013.
72. K. Venkatakrishnan, D. Vipparthy, B.J.O.E. Tan, Nanofibre Fabrication By Femtosecond Laser Ablation Of Silica Glass, 19(17), 2011.
73. A.E. Deniz, et al., Gold Nanoparticle/Polymer Nanofibrous Composites By Laser Ablation And Electrospinning, 65(19-20), 2011.
74. J. Song, M. Kim, H.J.P. Lee, Recent Advances On Nanofiber Fabrications: Unconventional State-Of-The-Art Spinning Techniques, 12(6), 2020.
75. M.S. Islam, et al., A Review On Fabrication Of Nanofibers Via Electrospinning And Their Applications, 1(10), 2019.
76. G. Che, et al., Carbon Nanotubule Membranes For Electrochemical Energy Storage And Production, 393(6683), 1998.
77. S. Manafi, S.J.R.L. i, M.S. Badiie, Production of Carbon Nanofibers Using a CVD Method with Lithium Fluoride as a Supported Cobalt Catalyst, 2008, 2008.
78. J. Wang, et al., Chemical Vapor Deposition-Assisted Fabrication Of A Graphene-Wrapped MnO/Carbon Nanofibers Membrane As A High-Rate And Long-Life Anode For Lithium Ion Batteries, 7(80), 2017.
79. M. Perez-Page, et al., Template-based Syntheses for Shape Controlled Nanostructures, vol. 234, 2016.

NPTEL / SWAYAM COURSES



Elite

NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

BHAVANI SHREE M

for successfully completing the course

Computer Aided Drug Design

with a consolidated score of **61** %

Online Assignments	18.75/25	Proctored Exam	42.25/75
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Total number of candidates certified in this course: **210**

Devendra Jalihal

Prof. Devendra Jalihal
Chairperson,
Centre for Outreach and Digital Education, IITM

Jul-Sep 2023

(8 week course)

Prof. Andrew Thangaraj

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras



Indian Institute of Technology Madras



Roll No: NPTEL23BT41S45335129

To verify the certificate



No. of credits recommended: 2 or 3



Elite

NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

SHATHIKA J

for successfully completing the course

Psychology of Stress, Health and Well-Being

with a consolidated score of **69** %

Online Assignments	25/25	Proctored Exam	43.5/75
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Total number of candidates certified in this course: **6532**

Jan-Apr 2024

(12 week course)

T.V. Bharat

Prof. T. V. Bharat
Head, Centre for Educational Technology
NPTEL Coordinator, IIT Guwahati



Indian Institute of Technology Guwahati




Roll No: NPTEL24HS65S1253400584

To verify the certificate



No. of credits recommended: 3 or 4

VALUE ADDED COURSE

 <p>VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) (Approved by the Government of Tamil Nadu & Affiliated to VIT, Vellore) PALLAVARAM - CHENNAI ACCREDITED BY NAAC WITH 'A' GRADE <i>Marching Beyond 30 Years Successfully</i> INSTITUTION WITH UGC 12B STATUS</p>	DEPARTMENT RECORDS	DOC.NO.:VISTAS/PHARMA/VAC/PRO/06
	DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND ANALYSIS	DATE : 05.11.2022
		PAGE : 1 OF 1
		ACADEMIC YEAR : 2022-2023
VALUE ADDED COURSE – PROPOSAL		

Submitted to the Registrar

We are planning to conduct a value-added course titled “22VACPI12” – Regulatory Aspects of Pharma Industry” for M.Pharmacy students. The course will be benefiting the students for their career and placement activities. We kindly request you to grant permission for conducting the same.

COURSE DETAILS:

S. No.	Duration of the Course	Name of the Course	Conducting Department	Course Coordinator(s)	Assessment Type	Whether available in curriculum
1	33 Hrs.	22VACPI12– Regulatory Aspects of Pharma Industry	Pharmaceutical Chemistry and Analysis	Dr.M.Sumithra	Multiple Choice Questions	No

OUTCOMES:

Students will able to


- ❖ It emerges equipped with a comprehensive understanding of legal, administrative, and technical measures that governments take to ensure the safety, efficacy, and quality of medicines, as well as the relevance and accuracy of product information.
- ❖ Pharmaceutical regulations across the world play an important role in ensuring the safety and efficacy of approved drugs. They not only regulate the pricing of drugs but the quality as well. The regulations are required both for new innovations and already existing products, in order to improve health status.

M. S. M.

Course Coordinator

M. Vijay Chandrasekhar

HOD

 <p>INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) (Incorporated by University Endowment Fund Act, 1996) PILLOKHANE, CHENNAI</p> <p>ACCREDITED BY NAAC WITH 'A' GRADE <i>Marching Beyond 30 Years Successfully</i> INSTITUTION WITH UGC 12B STATUS</p>	DEPARTMENT RECORDS	DOC.NO.:VISTAS/PHARMA/VA C/CIRCULAR/006
	DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND ANALYSIS	DATE : 12.11.2022
		PAGE : 1 OF 1
<u>CIRCULAR</u>		

Ref. No.: VISTAS/AUTO/VAC/2022-23/006

Date: 12.11.2022

It is informed that the value added Course on “22VACP112” – Regulatory Aspects of Pharma Industry” will be conducted from 15.11.2022 to 21.11.2022. Registration will be on a First Come First Serve basis. Students are asked to enroll their name for the above mentioned course as early as possible.

HoDs and respective department staff members are instructed to follow-up the same. Your whole hearted cooperation is needed to conduct the sessions in a gentle manner.


Last date for Registration : 14.11.2022

Course Coordinator : Dr.M.Sumithra/ AP/Pharmacy

Mail id : sumithra.sps@velsuniv.ac.in

REGISTRAR

Note:
All Department Notice Board

 <p>VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) (Deemed to be University) Estd. as 1 of the UGC Act, 1986 PALLAVARAM - CHENNAI ACCREDITED BY NAAC WITH 'A' GRADE Marching Beyond 30 Years Successfully INSTITUTION WITH UGC 12B STATUS</p>	DEPARTMENT RECORDS	DOC.NO.:VISTAS/PHARMA/V AC/SYLLABUS/01
	DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND ANALYSIS	Year :2022-23
		PAGE : 1 OF 2
<u>SYLLABUS</u>		

22VACPII2 – Regulatory Aspects of Pharma Industry Course objectives:

- The course aims to provide an extensive education in the essential aspects of Regulatory compliance in the pharma industry. The course encourages qualified candidates to improve their knowledge of regulatory issues which can further help them with their future career.
- Completion of this course opens up the student to pursue different careers in the healthcare sector as well as drug development industries.

MODULE I: Pharmaceutical Dosage forms Various

Categories of drugs and its manufacturing operations 7

MODULE II: Regulatory Guidelines 6

Schedule M and other key regulatory agencies

Regulatory audits for a new facility and routine audits, License applications and product approvals.

MODULE III: Quality Control and Quality Assurance 7

Manufacturing of various dosage forms

Quality control of initial materials and in process materials and finished product.

Stability studies and expiry date evaluation

Quality Assurance procedures

MODULE IV: Validation and Documentation 7

Validation of product, Equipment, Instrument, Air Handling Units, Water system and compressed air system.

Engineering involved in support of Manufacturing and its documentation

Quality Management Documentation

MODULE V: Packing and Distribution guidelines

8

Product Release procedures, Annual product Quality review procedures


Market complaints handling, Labelling and artwork.

Total Hours: 33 Hours

OUTCOMES:

Students will able to

- ❖ It emerges equipped with a comprehensive understanding of legal, administrative, and technical measures that governments take to ensure the safety, efficacy, and quality of medicines, as well as the relevance and accuracy of product information.
- ❖ Pharmaceutical regulations across the world play an important role in ensuring the safety and efficacy of approved drugs. They not only regulate the pricing of drugs but the quality as well. The regulations are required both for new innovations and already existing products, in order to improve health status.

 VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) (Deemed to be University) Established in 1982 PILAYANDUR - CHENNAI ACCREDITED BY NAAC WITH 'A' GRADE <i>Marching Beyond 30 Years Successfully</i> INSTITUTION WITH UGC 12B STATUS	DEPARTMENT RECORDS	REC.:VISTAS/PHARMA/VAC/MS/ 01
	DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND ANALYSIS	Year :2022-23
		PAGE : 1 OF 3
22VACPII2 – Regulatory Aspects of Pharma Industry – Mark Statement		

S.No.	Register No.	Name of the Student	Year / Sem	Dept.	Mark (50)	%	Co1	Co2
1.	21150101	ABIRAMI K	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
2.	21150229	AJAIPRASANTH M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
3.	21150238	AKASH R	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
4.	21150142	ASEEL SAMI ABDELWAHAB MAKI	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
5.	21150214	ASHA KIRAN S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	26	22
6.	21150143	AYSWARYA P	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
7.	21150102	AZAR AHAMED S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
8.	21150215	BALAJI V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24

9.	21150202	BAVANI S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
10.	21150230	BELLAMK ONDA MUNI NIKESH	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	25	23
11.	21150234	BESTIYA BENEDICT A	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
12.	21150203	BHAGYAS HRI G V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
13.	21150103	BILGATES K	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
14.	21150216	B NITHYA SHREE	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
15.	21150144	BOSE V	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
16.	21150138	C ARIVALAG AN	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
17.	21150145	DEEPIKA GAYATHRI S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
18.	21150104	DEVENDR AN N	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
19.	21150217	DHANUSH M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
20.	21150105	DHANUSH V	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
21.	21150218	DIVAKARA N R	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
22.	21150106	FARHANA SHAJAHAN	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24

23.	21150146	GIRIDHAR AN R	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
24.	21150107	GNANASU RYA P	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
25.	21150109	GOKUL Y	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
26.	21150204	GOPIGHA M	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
27.	21150110	GOPIKA SRI N	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
28.	21150147	GOWSHIC K BHARATHI B	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	25	23
29.	21150219	GOWTHAM RAJ S	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
30.	21150151	HABEEB R	I/II	Pharmaceutical Chemistry and Analysis	47	94%	25	24
31.	21150111	HARINI PRIYA M	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
32.	20150501	HARISH J	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	26	22
33.	21150148	HARISH S	I/II	Pharmaceutical Chemistry and Analysis	48	96%	24	24
34.	21150235	HARRISH RAJ S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
35.	21150152	HEMANTH RAJ R	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
36.	21150153	ISTHIYAK AHAMED M	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24

37.	20150502	KEERTHIV ASAN G	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
38.	21150220	KESAVAN K	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	21	27
39.	21150112	KISHORE K	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
40.	21150113	KOKILA L	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
41.	21150114	KOMAL TIRU	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
42.	21150231	LESUKA K	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
43.	21150206	LOKESH MANIKAND AN R	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
44.	21150221	LOKESWA RAN B	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
45.	21150157	MANOJI G	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
46.	21150222	MILIND J	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
47.	21150115	MOHAMED APPAS M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
48.	21150140	MOHAMED ASLAM A	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
49.	21150232	MOHAMM ED KAIF M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
50.	21150233	MOHANAK RISHNAN M	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	26	22

37.	20150502	KEERTHIV ASAN G	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
38.	21150220	KESAVAN K	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	21	27
39.	21150112	KISHORE K	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
40.	21150113	KOKILA L	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
41.	21150114	KOMAL TIRU	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
42.	21150231	LESUKA K	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
43.	21150206	LOKESH MANIKAND AN R	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
44.	21150221	LOKESWA RAN B	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
45.	21150157	MANOJI G	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
46.	21150222	MILIND J	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
47.	21150115	MOHAMED APPAS M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
48.	21150140	MOHAMED ASLAM A	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
49.	21150232	MOHAMM ED KAIF M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
50.	21150233	MOHANAK RISHNAN M	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	26	22

51.	21150236	MOHAN V	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
52.	21150141	NAGARAJA N S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
53.	21150116	NANDHINI V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
54.	21150223	NATARAJA N S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
55.	21150117	NITHYA A	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	25	23
56.	21150149	NIVETHA R	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
57.	21150224	PADMA PRIYA S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
58.	21150118	POOVARAS AN S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
59.	21150225	PRABISHA P	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
60.	21150226	PRASANTH N	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
61.	21150208	PRAVEEN KUMAR K	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
62.	21150119	PREETHI V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
63.	21150209	RAGHAVA SUPREETA M V R	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
64.	21150210	RAGUL SRINIVASA N K	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23

65.	21150154	RANJINI R	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
66.	21150121	RISHIVAR K	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
67.	21150211	SAHANA V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
68.	21150122	SANDHIYA N	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
69.	21150150	SANDHIYA R	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
70.	21150123	SANYA	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
71.	21150239	SARANESH WAR M	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
72.	21150124	SARATHY U	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
73.	21150125	SHAJITH J	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	25	23
74.	21150126	SHANMUG A PRIYA S	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
75.	21150127	SHIERLY M S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
76.	21150139	SHRUTHI P K	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
77.	21150128	SIMON STANLEY S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
78.	21150129	SIVA A	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23

79.	21150212	SIVA GOWRI P	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	26	22
80.	21150130	SOWMYA SRI K	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
81.	21150227	SUCHITHR A R	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
82.	21150131	SUDARSH EN YAADAV B	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
83.	21150228	SUNIL KUMAR S	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
84.	21150213	SWETHA R	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	25	23
85.	21150156	THANIGAI VEL D	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
86.	21150132	THEETCH ANYA S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
87.	20150901	VAIRAMUT HU J	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
88.	21150133	VAISHALI J	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
89.	21150134	VAISHNAVI DUBEY	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
90.	21150155	VIGNESWA RAN V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
91.	21150135	VIJAY S B	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
92.	21150237	VINAYAGA M M	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23

93.	21150136	VISHAL SINGH	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
94.	21150137	VISHWA M	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
95.	21152101	ABDUL KADHAR A	I/II	Pharmaceutical Chemistry and Analysis	49	98%	25	24
96.	21152105	FAIZHUL RAHIMAN A	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
97.	21152106	KALIFULLA H S	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
98.	21152102	PALANIVEL RAJAN A	I/II	Pharmaceutical Chemistry and Analysis	47	94%	24	23
99.	21152103	SANDHAN AKRISHNA N V	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24
100.	21152104	SATHYA K	I/II	Pharmaceutical Chemistry and Analysis	48	96 %	24	24

Outcome Attainment Rubrics:

Attainment 1 : If 60% of students getting more than 60% of marks

Attainment 2 : If 70% of students getting more than 60% of marks

Attainment 3 : If 80% of students getting more than 60% of marks

Attainment Level:

Since, 80% of Students scored more than 60 % of marks - Attainment level 3 Achieved

M. S. M.

Course Coordinator

M. Vijay Chinnath

HoD

Registrar

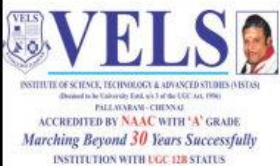
 <p>VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) <i>(Awarded to the University Endo-2013 by the UGC Act, 1956)</i> PALLAVARAM - CHENNAI ACCREDITED BY NAAC WITH 'A' GRADE <i>Marching Beyond 30 Years Successfully</i> INSTITUTION WITH UGC 12B STATUS</p>	DEPARTMENT RECORDS	REC.:VISTAS/PHARMA/VAC/PH OTO/01
	DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND ANALYSIS	Year :2022-23
		PAGE : 1 OF 1
PHOTOGRAPH		



Figure:1 M.Pharm Students Completed VAC

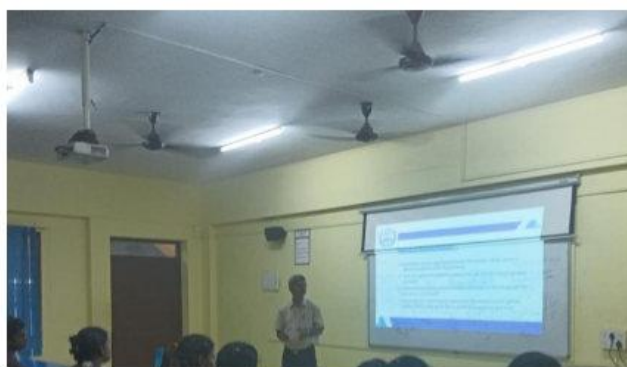



Figure:2 Lecture Devlivering in VAC

 <p>VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) (Approved to be University Equivalent by UGC Act, 1956) PILAYARAM - CHENNAI ACCREDITED BY NAAC WITH 'A' GRADE Marching Beyond 30 Years Successfully INSTITUTION WITH UGC 12B STATUS</p>	DEPARTMENT RECORDS	REC.:VISTAS/PHARMA/VAC/FB/01
	DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND ANALYSIS	Year :2022-23
		PAGE : 1 OF 1
STUDENT FEEDBACK FORM		

Code & Name of the Value Added Course	22VACP112 – Regulatory Aspects of Pharma Industry
Name of the Student	Selvakanmozhi M
Year & Semester	I/II

You are required to give your feedback on the following aspects.

S. No	Description	Ratings					TOTAL (50 Marks)
		Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Satisfactory (1)	
1	Course Content	5	5	5	5	5	25
2	Skill Development	5	4	4	4	4	21
3	Motivation	4	4	4	4	4	20
4	Regularity and Punctuality of Teacher	5	5	5	5	5	25
5	Coverage of Syllabus	4	5	4	4	5	22
6	Methodology	4	4	4	4	4	20

7	Clarity in delivering Concepts	4	5	5	5	5	24
8	Interaction	4	4	4	4	4	24
9	Individual Attention	4	4	4	4	4	24
10	Outcome	5	4	5	5	4	23
	Any other Suggestion	Nil					
TOTAL							22.8

Signature of the Student

Kanimozhi

TRAINING PROGRAMME

Pharm.Chemistry and Analysis /SPS/VISTAS/FEB/002 / 10.02.2023

From

Dr. M. Vijey Aanandhi

Professor and Head

Department of Pharmaceutical Chemistry and Analysis

School of Pharmaceutical Sciences

Vels Institute of Science, Technology and Advanced Studies (VISTAS)

Chennai-600 117.

To

The Registrar

Vels Institute of Science, Technology and Advanced Studies (VISTAS)

Chennai-600 117.

Through The Director, School of Pharmaceutical Sciences, VISTAS

Respected sir,

Sub: Requisition for permission to conduct training program on Therapeutic Drug Monitoring for one week to Pharm.D III Year students. Reg.

This is to bring to your kind notice that, we are planning to conduct a one week training program on Therapeutic Drug Monitoring from 15.2.2023 to 22.2.2023. The participants would be the students of the Pharm.D III Year . This program will help the students aware the Therapeutic Drug Monitoring, Safety Aspects.

The details of the Speaker are,

Name: Dr. Ashwin Dhar

Designation: President

Name of the Institute: Avenida Innovations

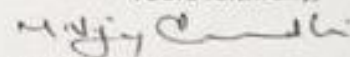
Location: Hyderabad

We look forward to receive your favorable response.

Program Coordinator: Mrs. M. Archana & Mrs. Afroz Patan , Assistant Professor, Department of Pharmaceutical Chemistry and Analysis

Thanking you

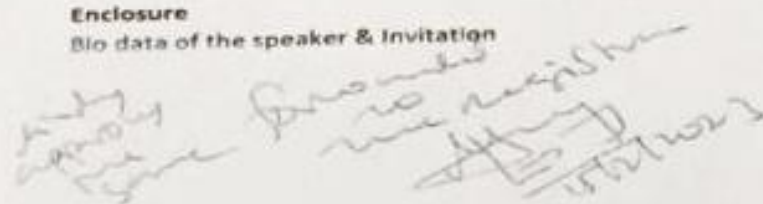
Yours faithfully,



Dr. M. VIJAY AANANDHI, M.Pharm., Ph.D., D.Litt.
Professor and Head
Department of Pharmaceutical Chemistry and
Analysis School of Pharmaceutical Sciences,
Vels Institute of Science, Technology and
Advanced Studies (VISTAS),
Pallavaram, Chennai -600 117.

Enclosure

Bio data of the speaker & Invitation



Invitation:



SCHOOL OF PHARMACEUTICAL SCIENCES **Department of Pharmaceutical Chemistry and Analysis**

Cordially invites you all for One week Training Program on

"Therapeutic Drug Monitoring"

Date: 15th February 2023, **Time:** 10:30 AM -4:00 PM

At Conference hall, SPS, VISTAS

Registration Link: <https://forms.gle/GvWvrC9AqrBvRSQUA>

RESOURCE PERSON

Mr. ASHWINI DHAR

President
Avenida Innovations
Hyderabad

Dr. Ishari K.Ganesh

Founder - Chancellor, VISTAS

Dr.A.Jothimurugan

Pro-Chancellor (P&D)
VISTAS

Dr.Arthi Ganesh

Pro-Chancellor
(Academics) VISTAS

Dr.Preethaa Ganesh

Vice-President
Vels Group of Institutions

Dr.S.Sriman Narayanan

Vice-Chancellor
VISTAS

Dr.M.Bhaskaran

Pro Vice-Chancellor
VISTAS

Dr.P.Saravanan

Registrar
VISTAS

Convenor : Dr.P.Shanmugasundaram Dean,
SPS, VISTAS

Co-Convenor : Dr.M.VijeyAanandhi, Head of the Department,
SPS, VISTAS

Event Photos :



Meeting with Registrar before the training program



Students attending the training program

ABSTARCT:

Name: Dr. Ashwin Dhar

Designation: President

Name of the Institute: Avenida Innovations

Location: Hyderabad

SUMMARY :

The event started by 15.02.2023 morning from 10:30AM with a welcome address from the Dr.R.Gandhimathi, Professor, Department of Pharmaceutical Chemistry and Analysis, SPS, VISTAS. The Introductory remarks of the chief guest by Mrs.P.Indumathy, Assistant Professor, Department of Pharmaceutical Chemistry and Analysis, SPS, VISTAS. The speaker has delivered the seminar on the topic "Therapeutic drug monitoring" and Interacted with students about the topics day wise for one week up to 22. 2.2023. The program was very beneficial to Pharm.D III Year students.



Certificates:





VELS



INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Incorporated as per University Order no. 3 of the UGC Act, 1956)
PALLAVARAM - CHENNAI
ACCREDITED BY NAAC WITH 'A' GRADE
INSTITUTION WITH UGC 12B STATUS
Marching Beyond 30 Years Successfully

Avenida
your path to success

CERTIFICATE OF TRAINING PROGRAM

IS CERTIFIED TO

S. SANJAY

PHARM.D III year

We are highly obliged to you in completing training program in
-Dispensing medications from 15.02.2023 to 22.02.2022 at our
organization.

Dr. P. Shanmugasundaram
Dean,
School of
Pharmaceutical
sciences, VISTAS

Ashwani Dhar
President,
Avenida
Innovations,
Hyderabad

MOU



தமிழ்நாடு தமிலநாடு TAMILNADU

08-11-2023

Chettinad Academy of Research
and Education
Kelambakkam

P. Porceddu
DD 122126

P. PORCUDU
LICENCE No. 13 / CGL / 08
No. 3/77, Pillaiyar Koil Street,
Sankuppam Village,
KELAMBAKKAM-603 103

Memorandum of Understanding (MoU)

between

Institution's Innovation Council
Chettinad Academy of Research and Education (IIC-CARE)

And

Institution's Innovation Council
[Vels Institute of Science, Technology and Advanced Studies]
(VISTAS)

This MOU is made and entered at Kelambakkam on this 7th February, 2024 by and between **Institution's Innovation Council (IIC)** of Chettinad Academy of Research and Education (CARE), Deemed to be University under Sec.3 of the UGC Act, 1956 having its Institution-cum-Hospital at Padur, Kelambakkam, Chengalpattu District-603 103, Tamil Nadu, hereinafter referred to as "IIC-CARE" (Which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors and assigns of "IIC-CARE") represented by its Registrar **Mrs. S. Jeyendrasaraswathi**,

Jayas



[Signature]

Registrar

Vels Institute of Science, Technology
& Advanced Studies (VISTAS)
Pallavaram, Chennai - 600 117.

AND

Vels Institute of Science, Technology and Advanced Studies has its office at Velan Nagar, P.V. Vaithiyalingam Road, Pallavaram, Chennai - 600 117. Hereafter referred to as **VISTAS** (Which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors and assigns of "**VISTAS**").

Whereas, IIC-CARE and **VISTAS** both operate Entrepreneurship Incubation Cells intending to foster entrepreneurship and support startups.

Whereas, both institutes recognize the importance of collaboration and exchange of knowledge, expertise, and resources in promoting entrepreneurship and innovation.

Whereas, IIC-CARE and **VISTAS** wish to establish a framework for cooperation and partnership to leverage their respective strengths and promote entrepreneurial activities.

The Parties thereof decided to have the terms and conditions in writing as below:
Now this Memorandum of Understanding witness as follows:

1. Purpose:

The purpose of this MOU is to establish a framework for cooperation and collaboration between IIC-CARE and **VISTAS** in the field of entrepreneurship and start-up incubation. The collaboration aims to foster innovation, exchange knowledge and resources, and support the growth of start-ups.

2. Scope of Cooperation:

a. Exchange of Information and Best Practices:

The institutes agree to share relevant information, best practices, and resources related to entrepreneurship, start-up incubation, and support programs.

Tugas



[Signature]

Registrar

Vels Institute of Science, Technology
& Advanced Studies (VISTAS)
Pallavaram, Chennai - 600 117.

b. Mentorship and Networking:

The institutes will facilitate mentorship opportunities for start-ups from both institutes, connecting them with experienced entrepreneurs, industry experts, and investors.

c. Joint Events and Workshops:

The institutes will collaborate in organizing joint events, workshops, and seminars to promote entrepreneurship, innovation, and start-up ecosystem development.

d. Research and Development:

The institutes may explore opportunities for joint research and development projects in areas of mutual interest, which can benefit start-ups and the entrepreneurship ecosystem.

e. Exchange Programs:

Both institutes may establish exchange programs for entrepreneurs, faculty, and staff to promote cross-learning, exposure, and collaboration between the institutes' entrepreneurship incubation cells

3. Roles and Responsibilities:

a. IIC-CARE shall:

- i. Provide access to its network of mentors, advisors, and industry partners for start-ups from **VISTAS**.
- ii. Share relevant information, resources, and expertise related to entrepreneurship and start-up incubation.
- iii. Support the organization of joint events and workshops.

b. **VISTAS** shall:

- i. Provide reciprocal access to its network of mentors, advisors, and industry partners for start-ups from IIC-CARE.
- ii. Share relevant information, resources, and expertise related to entrepreneurship and start-up incubation.
- iii. Support the organization of joint events and workshops.

4. Confidentiality:

The parties acknowledge that certain information exchanged under this MOU may be confidential or proprietary. Both institutes shall exercise reasonable care to maintain the confidentiality of such information and shall not disclose it to any third party without prior written consent.

Vistas



[Signature]
Registrar

Vels Institute of Science, Technology
& Advanced Studies (VISTAS)
Pallavaram, Chennai - 600 117.

5. Term and Termination:

The agreement is valid for a period of three years with effect from the date of signing the agreement and may be renewed after that period, incorporating mutually agreeable modifications if any thereafter. Each party may withdraw from the agreement by giving a written notice of three months in advance, subject to fulfilling prior obligations otherwise surviving.

6. Amendments:

Any amendments or modifications to this MOU shall be made in writing and duly signed by both parties.

IN WITNESS WHEREOF, the undersigned being duly authorized have signed this MOU.

This Agreement is made out in 2 (two) original copies, one for each of the Parties. All original copies hereof are identical and legally equal.

IN WITNESS WHEREOF, these duly authorized representatives of the parties hereby execute this Agreement, the day and year first before written.

For IIC-CARE

S. Jeyendrasaraswathi
Mrs. Jeyendrasaraswathi S

Registrar,
Chettinad Academy of Research and
Education (CARE)
Kelambakkam - 603103.



WITNESS

K.C. Gayathri
1. K.C. Gayathri

For VISTAS;

Dr. Saravanan.P

Dr. Saravanan.P
Registrar
Vels Institute of Science
Technology and Advanced Studies
(VISTAS)
Pallavaram, Chennai-600011

Registrar
Vels Institute of Science, Technology
& Advanced Studies (VISTAS)
Pallavaram, Chennai - 600 117.

1. Dr. P. Shanmugasundaram

2. Dr. Mohamed Zerein Fathima

Shanmugasundaram
Zerein Fathima
School of Pharmacy
Vels Institute of Science, Technology and Advanced Studies (VISTAS)
Pallavaram, Chennai - 600 117.