

**DEPARTMENT OF
BIOTECHNOLOGY**

NEWSLETTER

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BIOGAZETTE

Echoing multidisciplinary perspectives



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STUDENT EDITORIAL TEAM



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IV Year Student
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Vision

To produce higher caliber Biotechnologists to attain new heights in bioinformatics and bioprocess technology as per industrial needs and to provide leaders in the field of Biotechnology.

Mission

- To progress the department to attain center of excellence in bioinformatics and bioprocess technologies by providing best Undergraduate, Postgraduate, Doctoral programs and R&D activities within a decade.
- To develop special skilled training programs for graduates to meet the personality characters stipulated by the industries within a period of five years.
- To build potential biotechnologists capable of dealing with new challenges and socio-ethical implications.

B. Tech. Biotechnology

Program Educational Objectives

PEO-1. To produce Biotechnology graduates who will be employable in core Biotech/Pharma industries and domain-based software services.

PEO-2. To produce research-oriented Biotechnology graduates who will be employable in academic/Industry sponsored research and also who will be pursuing higher studies.

PEO-3. To produce bioentrepreneurs.

Program Outcomes

PO-1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3. Design / Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO-6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO-7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO-8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9. Individual and team work: Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO-11. Project management and finance: Demonstrate knowledge and understanding of the engineering management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO-12. Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO-1: To make the students understand and apply the knowledge of computational systems biotechnology to design and develop biologics to meet societal needs.

PSO-2: To train the students to meet the requirement of bioprocess industries for developing techno-economical processes.

PSO-3: To empower the students with competent skill sets for bridging the gap between academia and the requirements of the healthcare industry.

M. Tech. Biotechnology

Program Educational Objectives

PEO-1: To prepare the students to excel and succeed in biotechnology research or industry through the latest state-of-art postgraduate education.

PEO-2: To train students with good scientific and technical knowledge so as to comprehend, analyze, design and adopt innovative and new technology that provides solutions for developing novel biotechnological products.

PEO-3: To create bioentrepreneurs with good communication and leadership skills, respect for authority and the life-long learning needed for a successful professional career.

Program Outcomes

PO-1: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO-2: An ability to write and present a substantial technical report/document.

PO-3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO-4: Ability to examine the technological problems in various domains of Biotechnology apply modern engineering tools for the prediction and modeling of complex engineering problems with a focus on sustainable development.

PO-5: Students should be able to acquire self-management and teamwork skills to collaborate with multidisciplinary teams from academic, industry and research institutes of national or international repute, with a commitment to lifelong learning.

PO-6: Potential to apply biotechnological solutions by adhering to the standards of bioethics with social responsibilities.

Program Specific Outcomes (PSOs)

After the successful completion of M.Tech. Biotechnology program, the students will be able to:

PSO-1: Demonstrate the biotechnology concepts and research approach and apply them for healthcare and industrial applications.

PSO-2: Possess scientific and technological skills to design and develop novel bioproducts for addressing biological and healthcare challenges.

PSO-3: Analyze the socio-economical needs and possess the necessary expertise to become a bioentrepreneur.

Events Organized

Pathways 2023

The webinar on “SVCE Pathways - Biotechnology: Explore the Technology that Transforms Lives” was organized on 22nd June 2023 by the Department of Biotechnology at Sri Venkateswara College of Engineering, Sriperumbudur through Google Meet platform for higher secondary school children and parents. This webinar included a series of talks from scientific industry experts, academicians, and alumni from the Department of Biotechnology, SVCE. Nearly 8 participants (school children and parents) had registered and actively participated in the webinar.

The inaugural function for the webinar started at 09.30 AM followed by the welcome address given by Prof. E. Nakkeeran, Head of the Biotechnology Department, SVCE. Prof. E. Nakkeeran welcomed the students with a warm note of congratulation for their success in their board exams. He also welcomed the parents, invited speakers and alumni present in the meeting. This was followed by the interactive session from our expert speakers:

1. Dr. K.H. Vishwanathan, Principal Scientist, Himalaya Wellness Company, Bengaluru briefly talked about the various career opportunities and importance of a Biotechnologist in multidisciplinary perspectives. He also briefed about the opportunities and expectations from the industrial point of view.
2. Dr. P A Balakumaran, Scientist, CSIR-NIIST, Trivandrum briefed about the passion, life-long learning and collaborative aspects that are crucial for high level research.

This was followed by the interactive session by our alumni members:

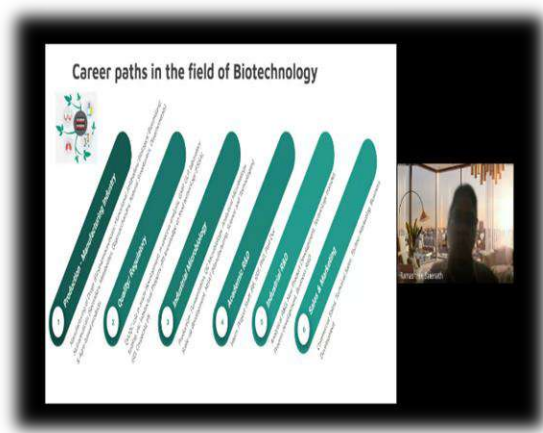
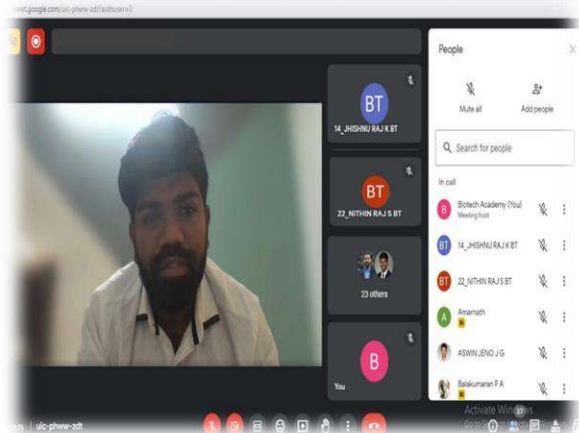
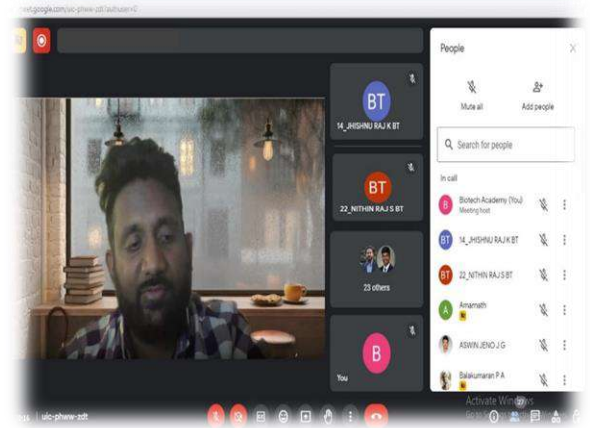
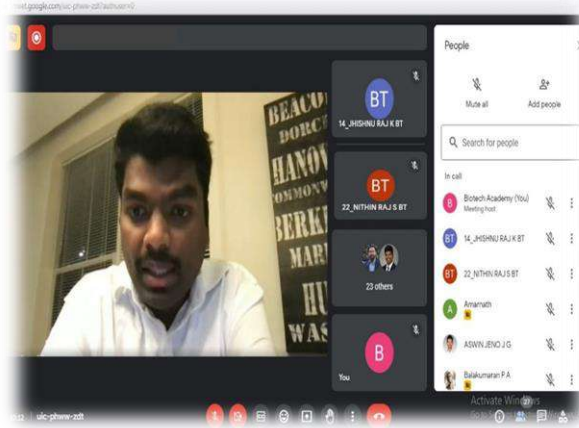
1. Mr. Prasanna Kumar (2014-2018 Batch), who is currently employed at Sana Biotechnology, USA after pursuing his MS in Medical Biotechnology from the University of Illinois, USA.
2. Dr. Rajeshwar Nitiyanandan (2007–2011 Batch), who is currently employed at Cancer Research Scientist, SageMedic Corporation, USA.
3. Ms. T. Ramashree (2011- 2015 Batch), who is currently employed at Research Engineer, Saint-Gobain India Pvt. Ltd, Chennai
4. Mr. S. Nithin Raj (Class of 2019 - 2023), Admitted for MS Biotechnology, University of Illinois, USA.
5. Mr. K. Jhishnuraj (Class of 2019– 2023), Admitted for MS in Biotechnology, Texas A&M University, USA.

The alumni members shared their interesting stories about their life at Biotechnology department, SVCE during the 4-year period of study. They also expressed their views on the inclined prospects of Biotechnology industry on post- pandemic scenario. The alumni also shared their stories of how they got their admission into premier institutes around the globe.

At the end of the session, Prof. E. Nakkeeran gave a presentation about the Biotechnology Department, SVCE. He talked about the milestone, vision, and mission of the department. He also talked about the various project grants received from external funding agencies, fellowships and schemes that are currently undergoing in the department, recognition from accreditation agencies as well as various achievements by the faculties and students of the Biotechnology Department. He also talked about the enhanced infrastructure of the department to conduct cutting edge research. He also talked about the outcome of the department, placement and higher studies statistical data for the last 7 years. He talked about previous batch GATE cleared students from the department, various recruiters, and list of universities in which the students have got admission. He also briefed about the various co-curricular and extra-curricular activities that the students participate in during their 5-year period at the Department of Biotechnology, SVCE. He also briefly explained the foremost features of curriculum from 2022 Regulation (R2022). He concluded his talk by briefing about the uniqueness of the department in terms of various infrastructural components and facilities available. This was followed by “Question and Answer session” for the students as well as the parents who were present in the meeting. The queries / clarifications raised by the parents and students were addressed by the expert speakers, the Head of the Department, as well as the alumni members. The Head of the Department, Prof. E. Nakkeeran also answered the queries related to admission procedure for getting into the Department of Biotechnology, SVCE.

The entire participants were happy about the conduction of “SVCE Pathways - Biotechnology: Explores the Technology that Transforms Lives” which they shared in the form of feedback. The webinar concluded with the vote of thanks by Prof. E. Nakkeeran, Head of the Biotechnology department, SVCE by thanking the guest speakers, alumni, coordinators, Dr. K. Ganesh Prasath and Dr. J. Isaivani and the management for their support in conducting this program successfully. The program ended at 11.15 AM.

Glimpse of Pathways 2023



Glimpse of Pathways 2023

General Skill development: What and How?

The slide features a Venn diagram on the left with a central circle labeled 'SOFT SKILLS'. The four overlapping circles represent:

- Problem solving:** Logical approach, framing problem statement
- Critical thinking:** Analytical development, Data interpretation
- Management Skills:** Time/ People/ Data/ Self-management
- Technical skills:** Subject Matter Expert, Core Technical knowledge

Communication skills (Resume writing, Email writing, Presentation, Interview, Public speaking) and Technical skills overlap with Problem solving. Problem solving and Critical thinking overlap. Critical thinking and Management Skills overlap. Management Skills and Technical skills overlap. All four overlap in the center.

On the right, a flowchart shows 'Resources' branching into 'Personal skills' and 'Professional skills'. 'Personal skills' includes Hobbies and Volunteering/Social activities. 'Professional skills' includes Networking and Work Experience.

Uniqueness of the Department

- CCSEA approved animal house facility
- Wave Bioreactor - unique equipment available in TN
- Tissue culture facility & *In-situ* fermenter
- Computational Systems Biotechnology Lab - Softwares worth of Rs. 25 lakhs
- Good infrastructure with sophisticated equipment
- MS (By Research), CSIR – SRF, N-PDF.

The screenshot also shows a grid of participants in a Google Meet window, including 'HoD-BIO', 'Rajesh Niti', 'ASWIN JENO J G', and '19 others'. The bottom of the window shows the Windows taskbar with the time 10:58 and the text 'uic-phww-zdt'.

Faculty Interaction with the Delegate

Dr. Venkat Gopalan, Professor, Department of Chemistry and Biochemistry, Center for RNA Biology, The Ohio State University, USA, interacted with the faculty and students of the department sharing his insights into the recent research developments in biotechnology.

Dr. Venkat Gopalan's enlightening talk shed light on the fascinating world of Salmonella metabolism and its implications for drug development. We extend our heartfelt gratitude to Dr. Venkat Gopalan for taking the time to visit our institution and sharing his valuable insights.



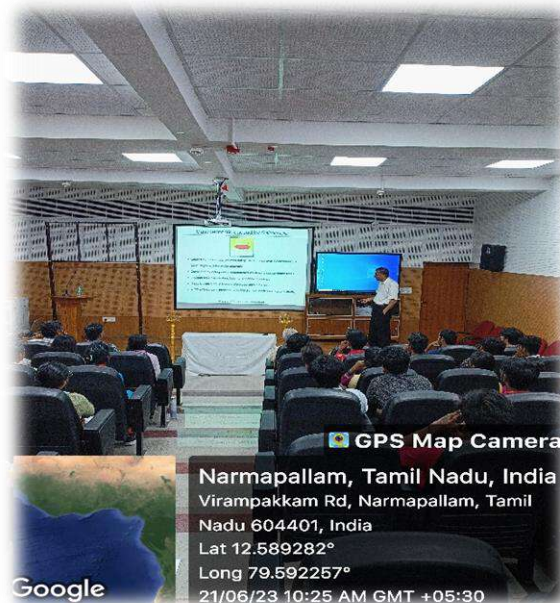
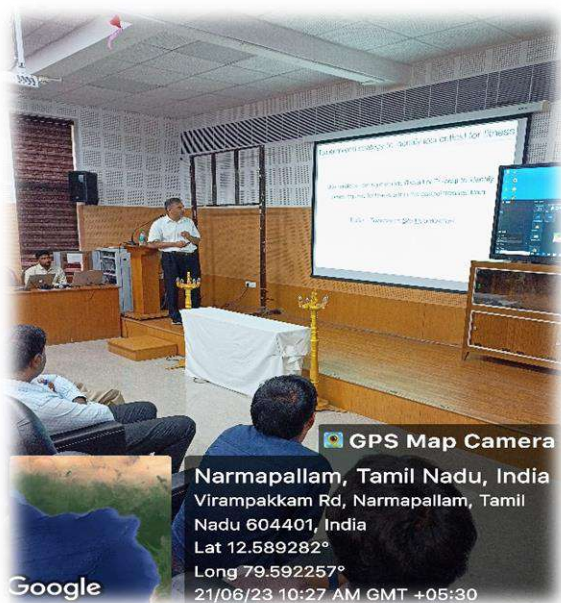
Guest Lecture

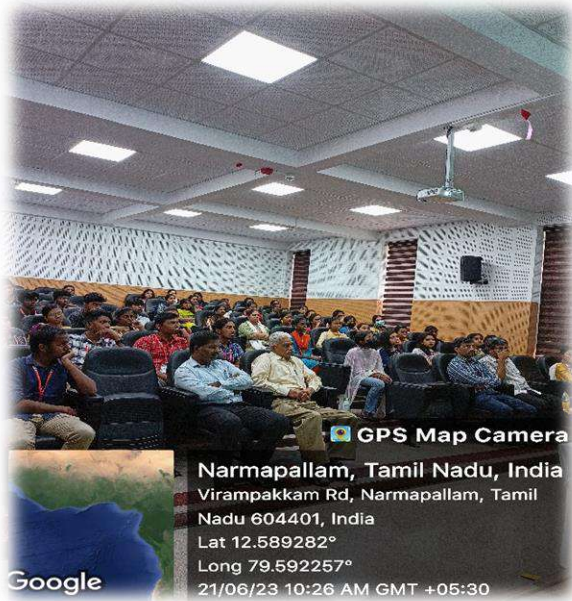
A guest lecture on “Fructose Asparagine Metabolism by Salmonella: Prospects for Drug Discovery” on 20th June 2023



Dr. Venkat Gopalan, Professor, Department of Chemistry and Biochemistry, Center for RNA Biology, The Ohio State University, USA

The Department of Biotechnology of Sri Venkateswara College of Engineering organized a Guest Lecture on “Fructose Asparagine Metabolism by Salmonella: Prospects for Drug Discovery” by Dr. Venkat Gopalan, Professor, Department of Chemistry and Biochemistry, Center for RNA Biology, The Ohio State University, USA on 20th June 2023 (Tuesday) at 09.00 AM (IST) at Dr. ACM Central Library Seminar Hall.





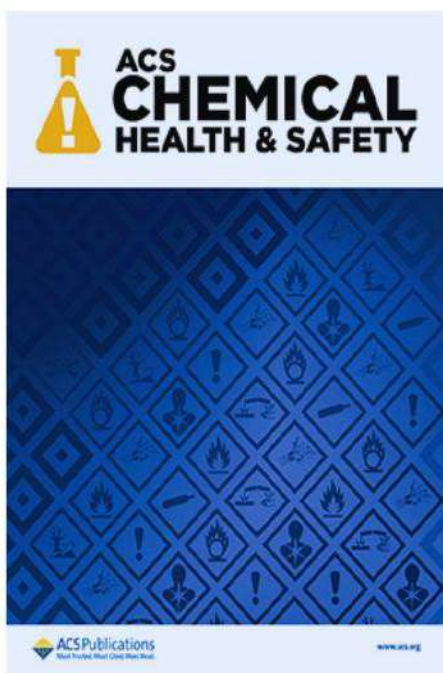
Publication of Review article

Ms. Ashwini Pushparaj, Ms. Gaayathri Mahesh Kumar, Ms. Nithila Sundarapandian, and Ms. Sulakshuna Balaji of II year B. Tech Biotechnology (Batch 2021-2025) have published a Review article titled "Toxicity of Polymeric Nanodrugs as Drug Carriers" under the guidance of Dr. Ananda Babu Sairam, AP/ACH and Dr. Anandhavelu Sanmugam, AP/ACH in the Journal, ACS Chemical Health & Safety Article.

Recent Review Article Publication

"Toxicity of Polymeric Nanodrugs as Drug Carriers"

ACS Chemical Health & Safety Journal



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DOI: [10.1021/acs.chas.3c00008](https://doi.org/10.1021/acs.chas.3c00008).

Industrial Visit

B. Tech 2022-2026 Batch

M. Tech 2022-2024 Batch

An industrial visit to ‘Vijay bio farm’, Narmapallam, Tamilnadu was successfully organized by the department of biotechnology on 14th June 2023. Fifty students, Ms. N. Kanagam, Dr. K. Ganesh Prasath (Faculty advisors) and Mr. N. Munivelan (Lab assistant) visited the bio farm to learn and understand about farming of rare plant species, bio toilets, bio composting etc.,

The owner of the bio farm, Mr. Vijay, shared his experience in the field of biotechnology, explaining the scope of biotechnology in various sectors. We also came to know about the unique facility they had developed which was the bio digester which is an innovative technology for disposal of human waste in an ecofriendly manner. He explained to us the mechanism and working of it on how the innovation degrades and converts human waste into usable water and gas in an eco-friendly manner. He shared his experience about building bio toilets in Kashmir with heaters fit inside the bio digester to maintain optimum temperature for bacterial decomposition.

The construction of the toilet included 4 stages. In the first stage honeycomb and bacteria were added that consumes the waste. Then there are 2 stages of filtration, and the last stage involves an activated carbon filter which purifies the water and clean water can be taken out after all these processes. The generated gas can be utilized for energy/cooking and water for irrigation purposes. The process involves the bacteria which feed upon the faecal matter inside the tank, through anaerobic process which finally degrades the matter and releases methane gas that can be used for cooking, along with the treated water. Mr. Vijay got national rewards for this eco-friendly idea.

After an interactive session we were taken to explore the farm which was surrounded by rare species of trees and plants such as the China almond tree, Country fig, Dragon fruit plant, Lychee tree, Cinnamon tree, Jackfruit tree, and many more. We came to know that the milk from Naatu Athi tree is good for uterus and for treating bone fractures in animals.

Natural biofertilizer using cow dung, urine, jaggery and plant waste is used to grow all those plants and trees. This farm had seasonal visit place for migrating birds such as cranes. There was a small

water tank filled with a few black and white catfishes. We students enjoyed ourselves a lot with those animals. This made our visit pleasant and refreshing.

As students of Biotechnology, we came to know how biotechnology plays a significant positive impact on environmental protection and preservation. We also came to know how the production of microorganisms performs the decomposition of waste management in this era. Overall, it was an informative and wonderful experience.



Guest Lecture given by the Faculty

Prof. E. Nakkeeran, Head of the Department, Biotechnology, has delivered an invited guest lecture entitled “**Techniques and Guidelines for Recombinant Protein Purification**” on a 21-day workshop on Recombinant Protein Production and Purification conducted by Center of Advanced Study in Crystallography and Biophysics University of Madras Guindy Campus, Chennai on 21st June 2023.



Events attended by the Faculties

Dr. K. Vasantharaj, Assistant Professor, Department of Biotechnology have successfully completed one-week training program on R&D Equipment on the theme "Exploring the Science with Sophisticated Instruments" during 21st June 2023 to 27th June 2023 at Central University of Tamilnadu, Thiruvavur under STUTI-21 funded by DST, Government of India.



Dr. G. Karthigadevi, Assistant Professor, Department of Biotechnology attended Faculty Development Program / Training Program On "Innovative Teaching and Learning Pedagogy" from 26-30 June 2023 Organized by the Research Foundation of India & RFI-CARE.

Events attended by the Students

Ms. Tharangini S (Batch 2021-2025) of II Year, B. tech Biotechnology, and Ms. Magdeline P (batch 2020 -2024) of II Year, B. tech Biotechnology under the guidance of Mr. S. Naga Vignesh, Assistant Professor, Department of Biotechnology and Mr. J. Hariharan Assistant Professor, Department of Biotechnology presented an oral presentation on "Prioritization of candidate genes for type 1 diabetes from integrated GWAS using integrated network and pathway analysis" conducted as a part of biotechcellence'23 held from 24th to 26th April, 23.

Alumni Write-up



Ms. Rajashree T
(2019-2023 Batch)

In the episode of my SVCE life it was filled with happiest learning and wonderful memories. Though we had lost two years of college life due to covid our professors made great efforts and kept us on track in learning through virtual mode without any breaks, even our practical classes was conducted during lock down relaxation period. As an engineer, we should have a better industrial exposure, Our department of biotechnology has conducted various webinars of industrial experts in different fields, so we came to know about the recent trends and research in industries. Each semester we have industrial visit according to our college regulations, again this provide us a great industrial exposure. In SVCE, I also developed the managerial skills as I had been a part of students' biotech forum of our department , we have conducted various webinars and symposium. Our teachers were most friendly, they offered best guidance and constantly motivated us to ace every competition and to crack competitive exams. Overall, I had a best college life experience in department of biotechnology, SVCE.

Sri Venkateswara College of Engineering SVCE

(Autonomous - Affiliated to Anna University), Sriperumbudur Tk - 602 117, Tamilnadu, India



Biotechnology Department

INFORMATION BROCHURE FOR ADMISSION TO M.TECH. BIOTECHNOLOGY & Ph.D. PROGRAMME (2023-2024)

ABOUT SVCE

Sri Venkateswara College of Engineering (Autonomous) is a premier self financing institution started in 1985 and received Autonomous status in 2016 and accredited by NAAC with A+ grade. Department of Biotechnology established in 2005 under the guidance of our chairman, Governing Council Dr. A.C. Muthiah, a well known industrialist, in order to explore and experience new frontiers of Biotechnology. The department has started B.Tech Biotechnology in 2005, M.Tech Biotechnology in 2010 & Ph.D. in 2011.

SCHOLARSHIPS

- PG scholarship of Rs. 50,000/year for 30% of the top scorers of sanctioned class strength for 2 years.
- Management Scholarships for tuition fees and assistance for books and instruments.
- AICTE-GATE Scholarship of Rs. 12,400/month for student having valid GATE score from AICTE.
- Intramural M.E/M.Tech Student Research Grant to carry out innovative projects in Biotechnology.
- Sponsorships for students to attend conferences.

Awardees of PG Scholarship



WHY BIOTECHNOLOGY @ SVCE

- State of the art research facilities are available to carry out research in various fields & experienced faculty members.
- Well equipped infrastructure for imparting practical knowledge to the students.
- MoU with industries to help the students for Internship, Training & Placement.
- Student Research Day to appreciate innovative students research projects.
- Encouraging students to take up Entrepreneurship through SVCE-EPIC Scheme.
- Industry Visits & Guest lectures by eminent speakers from reputed institutions & Industries.
- Handling courses by eminent visiting Professors from Abroad.
- Motivating students to participate in International competition like iGEM, USA.
- Encouraging students leadership activity through Technical symposium.
- Encouraging students to publish their research findings in reputed journals.
- Providing placement in biotechnology based core companies like Tata Chemicals Ltd., Zifo RnD Solutions, AstraZeneca, AGS Health, etc.
- Department received research grants (1.71 Crore) from various funding agencies such as DBT, ICMR, DST-SERB, CSIR, AICTE, MSME, TNSCST, etc.
- Department received several grants (23 lakhs) for organizing workshops, conferences, popular lectures, short-term training programmes and FDP from various funding agencies like DBT, CSIR & ICMR, AICTE, EDII, etc.

MAJOR FACILITIES

- Animal House facilities - CCSEA approved
- Wave Cell Bag Bioreactor for Mammalian Cell Culture
- Real Time - PCR & ELISA, FT-IR
- Automated Continuous Stirred Tank Bioreactor
- Computational Systems Biotechnology Laboratory
- Facilities for Stem Cell Technology
- Fluorescence & Phase Contrast Microscope
- High Performance Liquid Chromatography
- Column chromatographic Systems like FPLC
- Freeze Dryer & Spray Dryer
- Spectrofluorophotometer
- 2D - Gel Electrophoresis
- Exclusive cold room facility

RESEARCH FOCUS

- | | |
|---|--------------------------------------|
| ➤ Immunology & Immuno-technology | ➤ Food Biotechnology |
| ➤ Biomaterials & Tissue Engineering | ➤ Bioseparation Techniques |
| ➤ Stem Cell Technology | ➤ Product Development |
| ➤ Genetic Engineering & rDNA Technology | ➤ Metabolic Engineering |
| ➤ Cellular & Molecular Biology | ➤ Aquatic Fish Toxicology |
| ➤ Computational Systems Biotechnology | ➤ Algal Biotechnology |
| ➤ Bioprocess Engineering | ➤ Environmental Biotechnology |
| ➤ Degenerative Diseases & Regenerative Medicine | ➤ Nano-Biotechnology & Drug Delivery |
| ➤ Herbal Medicines & Antioxidants Research | |
| ➤ Microbial Technology & Metagenomics | |

ADMISSION INFORMATION

Eligibility: As per Anna University Guidelines.

Admissions are through Tamil Nadu Common Admissions by Anna University & Entrance Examinations conducted by Consortium for the Management seats.

For department video tour, click the below link
<https://youtube.com/watch?v=Ryc3-wJ2ACY>



BIO-SVCE

[Department webpage](#)

FOR MORE INFORMATION PLEASE CONTACT

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DEPARTMENT OF BIOTECHNOLOGY
SRI VENKATESWARA COLLEGE OF ENGINEERING



COURSES OFFERED

1. B.Tech Biotechnology
2. M.Tech Biotechnology
3. M.S. (By Research)
4. Ph.D. Biotechnology

A GLIMPSE OF OUR MAJOR FACILITIES



WAVE BIOREACTOR 200 SYSTEM - GE HEALTHCARE LIFE SCIENCES

**FOR
FURTHER DETAILS
OR
ENQUIRIES**

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