

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY



S.P.G.Chidambara Nadar - C. Nagammal Campus,
S.P.G.C. Nagar, K. Vellakulam - 625 701, Near Virudhunagar, Madurai District.
Accredited by NAAC with "A" Grade

PROCEEDINGS

First International Conference
on
Sustainable Development in Energy & Environment



ICSDEE

18th-20th July, 2019

Organized by

DEPARTMENT OF BIOTECHNOLOGY

Accredited by NBA, New Delhi



About the College

Our College was established in the year 1998. It is promoted and supported by Virudhunagar Hindu Nadars' Devasthanam, various Hindu Nadars' Mahamai Tharappus in Virudhunagar and other places and educational institutions of Virudhunagar. The management of the institution consists of the elected members of various Mahamai Tharappus and ex-officio members of various educational institutions of Virudhunagar. The office bearers, the president, the vice-president, the secretary, the joint secretary and the treasurer - are elected by the managing board members.

Our College is ideally located on the home land of Karmaveerar "Bharat Ratna" K. Kamaraj and our institution is one of the Virudhunagar's most recognisable landmark. Our beloved Patron Thiru.A.S.K.A.M. Nagarajan magnanimously donated 50 Lakhs and Our Founder Secretary Er.S.P.G.C. Srimurugan has donated 25 acres of Land for the progress of our college. Our Institution is growing with sustained progress due to the generous contributions from Virudhunagar Devasthanam, Various Mahamai Tharappus and Educational Institutions. Presently, Our College spans to 47.36 acres of land.

Vision of the Institution

To make this Institution the unique of its kind in the field of Research and Development activities in this part of world.

Mission of the Institution

To impart highly innovative and technical knowledge to the urban and unreachable rural student folks through "Total Quality Education".

About the Department

The Department of Biotechnology was incepted in the academic year 2002 – 2003 with B.Tech course. M.Tech – Biotechnology was introduced in the academic year 2009 – 2010. Our Department was approved by Anna University as the Centre for Research in the year 2011. Subsequently, Ph.D program was initiated in 2011. So far, about 7.5 crore rupees have been invested in the Infrastructure development of Biotechnology department. The Department of Biotechnology has received various research grants from DRDO, AICTE, TNSCST, BARC – BRNS, DBT, IAS and has been accredited by NBA (2017 – 2020).

Vision of the Department

To make the Department of Biotechnology, Unique of its kind in the field of Research and Development Activities Pertaining to the Field of Biotechnology in this Part of the World.

Mission of the Department

To Impart Highly Innovative and Technical knowledge in the Field of Biotechnology to the Urban and Rural Student Folks through “Total Quality Education”.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

1. The student will be able to pursue higher education in India/abroad in Biotechnology and its related fields by taking up competitive exams like GATE, CSIR, TANCET etc.,
2. The student will be able to come up with solutions for any scientific or technical problems related to Biotechnological industries/institutes.
3. The student will be able to plan and conduct experiments in modern biotechnology and allied field laboratories including interpreting the significance of resulting data, reporting results and writing technical reports.
4. The student will be able to get familiarized with professional and economical issues in biotechnology and foster important job related skills such as communications and experience in working as a team that will help them to become good Entrepreneurs.

PROGRAM OUTCOMES(POS)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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.
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.
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.
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.
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.
7. **Environment and sustain ability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in-diverse teams, and in multidisciplinary settings.
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.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and 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.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1. **Higher education preparedness:** Demonstrate an ability to appear for National level examination to pursue higher studies. Demonstrate practical and theoretical knowledge essential for pursuing higher studies.
2. **Biotechnology industry-oriented preparedness:** Demonstrate an ability to identify careers in biotechnology, domain like Pharmaceutical, Food industry etc, and skills required to work in a biotechnology laboratory or manufacturing facility.

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WWT-1205**ANALYSIS OF WASTEWATER FROM MEDICAL INSTITUTIONS IN INDIA****Aastha Dhingra¹, Sirajuddin Ahmed¹, Nadeem Ahmad Khan¹, Siddhartha Gautam², &Svitlana Kovalenko³***¹Department of Civil Engineering, Jamia Millia Islamia, New Delhi, India**²Delhi Pollution Control Committee, India**³Department of Applied Mechanics and technologies of environmental protection, National University of Civil Defence of Ukraine*Email: er.nadimcivil@gmail.com**Abstract:**

One of the main reasons for the deterioration of the quality of natural waters is industrial and household human activity. Medical wastewaters contain significant amounts of chemical waste, such as antibiotics, disinfectants and others. Wastewater from health-care facilities contains organic particles (faeces, hair, food, vomit, paper, fibres), soluble organic material (urea, proteins, pharmaceuticals), inorganic particles (sand, grit, metal particles), soluble inorganic material (ammonia, cyanide, hydrogen sulfide, thiosulfates) etc. The problem is intense as these get discharged into the ground and surface water, due to improper treatment before being discharged as part of the hospital effluents. In some countries, such as India and Ukraine, hospital wastewater is discharged to urban wastewater treatment plants. The quantity of wastewater produced in a health-care facility depends on the amount of water used and is best measured by the water consumption. A survey was conducted in 75 hospitals, including 25 hospitals from the categories of high, medium and low. The average water consumption per bed per day in a hospital of Delhi ranges between 500-600 LPD. The annual water consumption in hospitals of Delhi is about 9000 million litres. Since the composition of the wastewater of medical institutions is diverse, it is necessary to conduct an extensive characterization to study the composition of the wastewater for their further use.

Keywords: *Medical institutions; Natural waters; Pharmaceuticals; Wastewater; Wastewater discharge.*