July–Dec, 2022

DEPARTMENT OF BIOTECHNOLOGY
UNIVERSITY COLLEGE OF ENGINEERING
BIT CAMPUS, ANNA UNIVERSITY
TIRUCHIRAPPALLI - 620 024

BIT-BioTalks

DEPARTMENT NEWSLETTER

Photography by

Abdul Haleeq H, B. Tech (II Year)

VISION AND MISSION

THE INSTITUTION

VISION

To transform students into competent professional and responsible citizens by focusing on assimilation, analysis, synthesis and dissemination of knowledge to meet the societal needs.

MISSION

- Impart quality education to meet the needs of the profession and society.
- Attract and develop talented and committed human resource and provide an environment conducive to innovation and research.
- Facilitate effective interactions among faculty, students, premier educational institutions, R& D laboratories, industries, alumni and other stack-holders.
- Practice and promote high standards of professional ethics, transparency and accountability and team spirit and entrepreneurial skills.

THE DEPARTMENT

VISION

To develop technical manpower in biotechnology to enhance the knowledge and skill to solve problems and challenges countenanced by the industry and academia for betterment of the society.

MISSION

- To provide an academic environment that emphasizes critical thinking.
- To encourage intellectual depth and creativity of the students
- To establish institute industry interaction through projects and training.
- To promote the students to adhere professional ethics and safety considerations for the societal benefits.
- To motivate the students to pursue higher studies in various spheres of technology.
- continuous learning to face the challenges in professional career.

PROGRAMME EDUCATIONAL OBJECTIVES:

- To enable the students to formulate, analyse and solve issues in various areas of biotechnology.
- To apply the acquired knowledge to cater the needs of the academia, research and industry.
- To develop ethical quality among the students for providing constructive service to the society.
- To emphasize the value of continuous learning to face the challenges in professional career.

PROGRAMME OUTCOMES:

Upon completion of the Bachelor in Biotechnology program, graduates will be able to:

- Apply knowledge of mathematics, science and engineering to biotechnological problems. Generate hypothesis, design and conduct experiments, interpret and analyse data, and report results.
- Design systems and process to find solutions for biotechnological problems to meet the needs of society.
- Employ research skills to investigate, design, conduct experiments and interpret the data to arrive valid conclusions.
- Use of biological concepts and appropriate techniques to find solution for the problems. Recognize the moral and social values to appreciate the need for ethical standards and professional codes of conduct.
- Appreciate the contribution of biotechnology to maintain the quality of environment and sustainability of life.
- Demonstrate adherence to accepted standards of professional ethics and responsibilities. Work independently and function effectively as a member or leader of a team.
- Develop the verbal and written communication skills relevant to professional-position.
- Possess skills necessary for life-long professional learning.

PROFILE:

The Department of Biotechnology was started in the year 1999 with a vision to develop technical manpower in the wide area of biotechnology. It is a DST-FIST Sponsored Department and is offering B. Tech., M. Tech., and Ph. D. degree programmes in Biotechnology. The department has many laboratories equipped with advanced instruments like Quantitative Real Time PCR, Multimode Detector, G-PCRs, HPLC, GC, UV-Visible spectrophotometers, Fermenter, CO2 and Multi-gas incubators, Gel Documentation system, Fluorescent Microscopes, DNA Sequencer, Electroporator, Plant Growth Chamber, Rotary Evaporator, Bio-safety Cabinet (Class II) and facility for plant tissue culture. Currently, our department is strengthened by 12 well qualified faculty members from diverse fields and specializations. Several research projects funded by various national funding agencies like DBT, DST, DRDO, ICMR, and UGC have been carried out by our faculty members. Our department had been funded by AICTE for the establishment of Computational Biology and Bioinformatics laboratory under MODROB scheme.

ACADEMIC ACTIVITIES

INTERNSHIP TRAINING:

STUDENT NAME	YEAR	TITLE	INSTITUTE/ INDUSTRY	DATE
Aafrin Imrana A	IV	Biological material	CSIR	July,2022-Aug,2022
Ajitha V	IV	Handling dissolution apparatus, HPLC, UV-VS Spectrophotometer and FTIR	Synthiya research lab Pvt. Ltd.	Aug 1,2022-Sep 5,2022
Ananthraj J	IV	Bioprospecting, GIS & Remote sensing, Microbiology, Research methods and Biostatistics and Scientific writing modules	Institute of Forest Genetics and Tree Breeding	Aug 1, 2022- Aug 12,2022
Elakkiya S	IV	Handling dissolution apparatus, HPLC, UV-VS Spectrophotometer and FTIR	Synthiya research lab Pvt. Ltd.	Aug 1,2022-Sep 5,2022
Harseni R	IV	Bioprospecting, GIS & Remote sensing, Microbiology, Research methods and Biostatistics and Scientific writing modules	Institute of Forest Genetics and Tree Breeding	Aug 1, 2022- Aug 12,2022
Jayalakshmi M K	IV	Bioprospecting, GIS & Remote sensing, Microbiology, Research methods and Biostatistics and Scientific writing modules	Institute of Forest Genetics and Tree Breeding	Aug 1, 2022- Aug 12,2022
Kanish Nareen V	IV	Bioprospecting, GIS & Remote sensing, Microbiology, Research methods and Biostatistics and Scientific writing modules	Institute of Forest Genetics and Tree Breeding	Aug 1, 2022- Aug 12,2022

Karunyavarthini N	IV	Medical lab techniques	Ganesh analytical & diagnostic laboratory	Aug 27,2022- Aug 29,2022
Keerthana P	IV	Handling dissolution apparatus, HPLC, UV-VS Spectrophotometer and FTIR	Synthiya research lab Pvt. Ltd.	Aug 1,2022- Sep 5,2022
Keerthika R	IV	Medical lab techniques	Ganesh analytical & diagnostic laboratory	Aug 27,2022- Aug 29,2022
Lokesh V	IV	Pharma department (sample preparation & analysis), instrumentation (ICP-MS, GC-HS, GC-MS, HPLC, UV)	Neo science labs Pvt. ltd.	Jul 15-30,2022
Sudar oli M	IV	Bioprospecting, GIS & Remote sensing, Microbiology, Research	Institute of Forest Genetics and Tree Breeding	Aug 1, 2022- Aug 12,2022
Swetha A	IV	Handling dissolution apparatus, HPLC, UV-VS Spectrophotometer and FTIR	Synthiya research lab Pvt. Ltd.	Aug 1,2022- Sep 5,2022
Nithyashree Maheswaran	III	Action of drug Reserpine on Biofilm Formation in Candida albicans	Delhi University (ACBR)	Jun 2022 - Jul 2022

WORKSHOPS:

- **Vashnavi R, B. Tech (III Year)** participated in the workshop at NPTEL on Applications of Machine Learning Techniques in Biology on September 4-5, 2022.
- **Sophiya Selvarani A, B. Tech (III Year)** participated in the workshop at NPTEL on Applications of Machine Learning Techniques in Biology on September 4-5, 2022.

COURSES, CONFERENCE AND WEBINARS:

- **Bhavani S, B. Tech (III Year)** completed a course on Genome Editing and Engineering at the October 2022 at NPTEL.
- **Logeswari S, B. Tech (III Year)** completed the course Introduction to Data Science: Exploring Machine Learning using Python, Machine Learning. Introduction to Artificial Intelligence Python for Data Science: Data Visualisation using Python at Infosys in September 2022; Drug Discovery and Drug Development at NPTEL in October 2022.
- **Nishanth V, B. Tech (III Year)** completed courses on oil palm and palm oil from the common man's perspective at Bioingene on October 29, 2022.
- **Nithyashree M, B. Tech (III Year)** achieved Second Place in Oral Presentation at the National Conference on "Integrated Approaches to Drug Discovery and Development"; Third Place in Oral Presentation at the National Level Technical Symposium; completed online courses on Bioinformatics for Beginners in Coursera in November 2022; R Programming for Data Science in Coursera in July 2022.
- **Vinitha N, B. Tech (III Year)** completed an online course on Genome Editing and Engineering at NPTEL in October 2022.
- **Aadhithya A, B. Tech (II Year)** completed a course on cancer biology on October 3, 2022; completed a course on drug development and product management on September 11, 2022.
- **Barath M, B. Tech (II Year)** attended webinars on food processing and technology on August 31, 2022; attended webinars on industrial bioprocessing on September 19, 2022.
- **Preethi V, B. Tech (II Year)** attended a webinar on industrial bioprocesses conducted by Learn to Upgrade on September 10, 2022.
- **Sankar Sridhar A, B. Tech (II Year)** completed course on Gene and Human Condition in Coursera on August 28, 2022; attended webinars on Clinical Embryology and Industrial Bioprocess in Learn to Upgrade on September 10–11, 2022.
- **Shreya S R, B. Tech (II Year)** completed the course on cell culture technologies offered by NPTEL on October 19, 2022.
- **Sridevi J, B. Tech (II Year)** completed a course on cancer biology offered by Johns Hopkins University in Coursera on September 17, 2022.
- **Yeswanth R, B. Tech (III Year)** attended a webinar on Industrial Bioprocess conducted by Learn to Upgrade on September 19, 2022; completed an online course on Artificial Intelligence in Biology at Biotecnika on August 7, 2022; completed an online course on Biosecurity: Next Generation Biorisks at Biotecnika on July 12, 2022; completed an online course on Basics of Python Programming at Biotecnika on December 7, 2022.

SCIENCE EVERYWHERE

Next Generation Sequencing in Forensic

-Sankar Shridhar A, B. Tech (II Year)

Abstract:

The field of forensic science has experienced a significant transformation with the advent of Next Generation Sequencing (NGS) technologies. NGS enables the rapid and cost-effective analysis of DNA, revolutionizing the field of forensic genetics. This essay explores the applications, benefits, challenges, and future prospects of NGS in forensic science. It highlights how NGS has enhanced the accuracy and sensitivity of DNA profiling, expanded the range of forensic analyses, and facilitated the resolution of complex criminal cases. Moreover, the essay discusses the ethical considerations associated with NGS implementation in forensic investigations and emphasizes the need for ongoing research and development to maximize its potential in the criminal justice system.

1. Introduction:

Forensic science plays a critical role in criminal investigations by providing valuable evidence for identification, linking suspects to crime scenes, and establishing guilt or innocence. Traditionally, DNA analysis techniques such as polymerase chain reaction (PCR) and capillary electrophoresis have been employed for forensic DNA profiling. However, these methods have limitations in terms of scalability, cost, and the ability to analyse complex mixtures. The emergence of NGS has revolutionized the field by enabling high-throughput DNA sequencing and analysis.

2. Next Generation Sequencing Technology:

This section provides an overview of NGS technology, explaining the principles behind the major platforms (e.g., Illumina, Ion Torrent) and the workflow involved in forensic DNA analysis using NGS. It emphasizes the advantages of NGS, including the ability to generate vast amounts of sequencing data, multiplexing capabilities, and the potential for analysing degraded or low-quality DNA samples.

3. Applications of NGS in Forensic Science:

a) DNA Profiling: NGS enables the generation of high-resolution DNA profiles, improving the discriminatory power and accuracy of forensic DNA analysis. It facilitates the analysis of challenging samples such as touch DNA, mixtures, and degraded DNA, thereby enhancing the likelihood of obtaining usable evidence.

b) Forensic Genealogy: NGS can be utilized for forensic genealogy, aiding the identification of unknown suspects by searching public databases and identifying distant relatives. This approach has proven instrumental in resolving cold cases and identifying perpetrators of violent crimes.

c) Forensic Transcriptomics: NGS can provide insights into gene expression patterns in biological samples, allowing forensic scientists to infer tissue type, age estimation, and even predict phenotypic traits from crime scene samples. This information can be invaluable in building a suspect profile.

d) Microbial Forensics: NGS facilitates the identification and characterization of microbial communities present at crime scenes. It can aid in determining the origin of infectious agents, identifying the sources of bioterrorism incidents, and establishing links between individuals and specific environments.

4. Challenges and Ethical Considerations:

a) Data Analysis and Interpretation: The vast amount of data generated by NGS requires advanced bioinformatics tools for efficient analysis and interpretation. This section explores the challenges associated with data processing, storage, and quality control.

b) Privacy and Consent: The use of NGS in forensic investigations raises concerns about privacy and the potential misuse of genetic information. It is crucial to establish robust legal and ethical frameworks to ensure the responsible and transparent use of NGS data.

5. Future Perspectives:

This section discusses the future prospects of NGS in forensic science. It highlights ongoing research and development efforts to improve NGS technologies, enhance data analysis algorithms, and explore emerging applications such as epigenetics and metagenomics. The essay also emphasizes the importance of continued collaboration between scientists, forensic practitioners, and policymakers to maximize the benefits of NGS while addressing the associated challenges.

6. Conclusion:

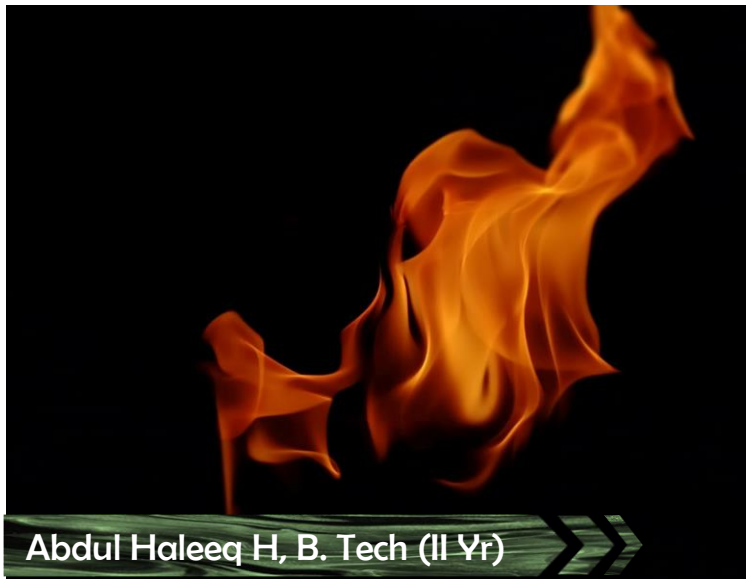
Next Generation Sequencing has revolutionized forensic science by offering improved sensitivity, scalability, and versatility in DNA analysis.

Reference:

Barton E. Slatko, Andrew F. Gardner, and Frederick M. Ausubel, Overview of Next Generation Sequencing Technologies, Current Protocol in Molecular Biology, 2018.

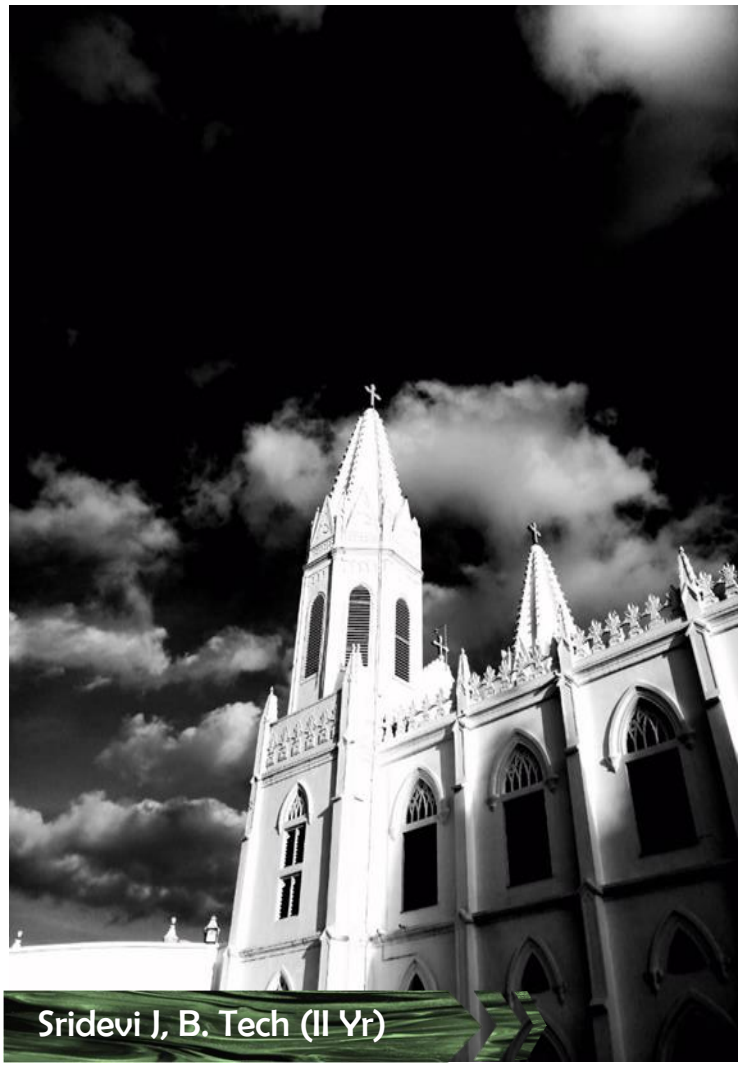
ART GALLERY

PHOTOGRAPHY



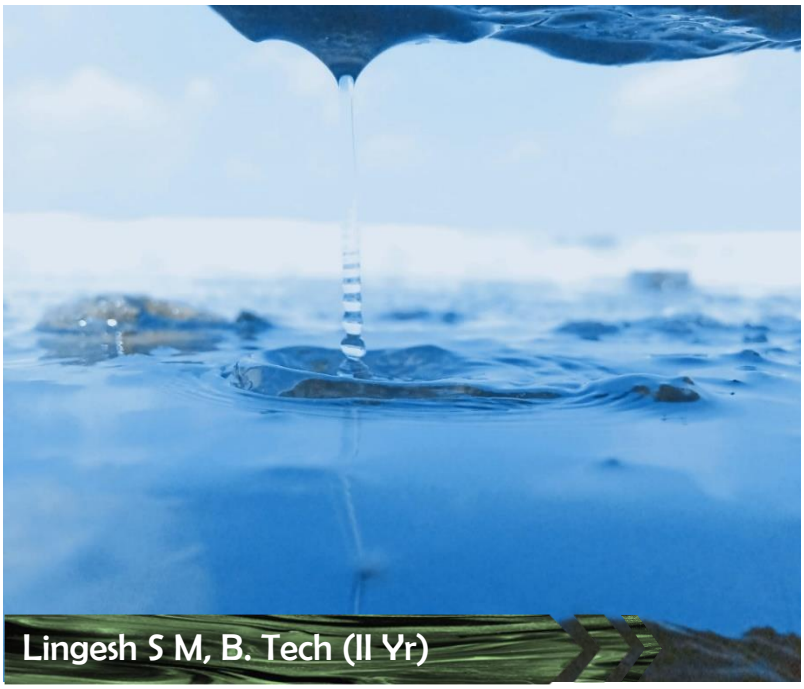
Abdul Haleeq H, B. Tech (II Yr)

Sridevi J, B. Tech (II Yr)

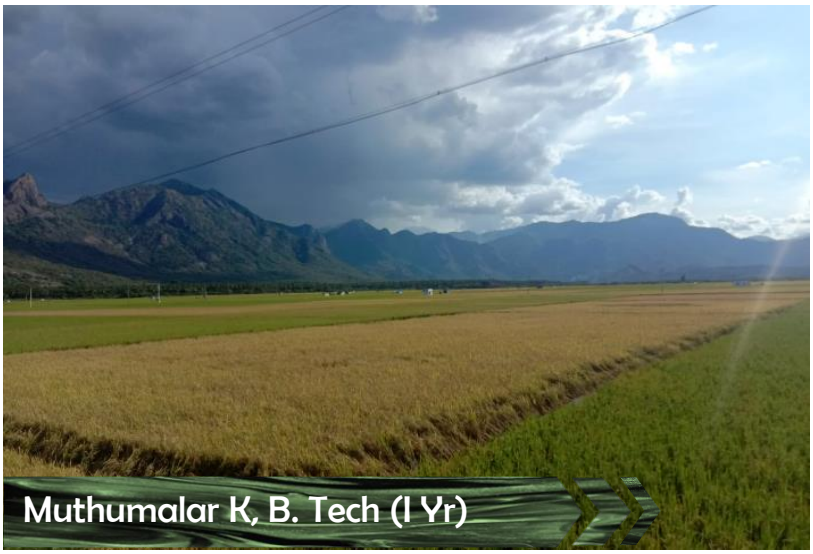


Sridevi J, B. Tech (II Yr)

Aswin Dhandapani M, B. Tech (I Yr)


Lingesh S M, B. Tech (II Yr)


Sivashri K, B. Tech (I Yr)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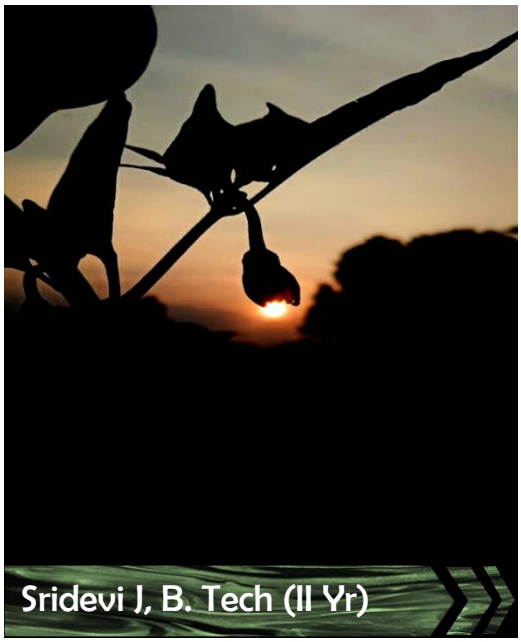
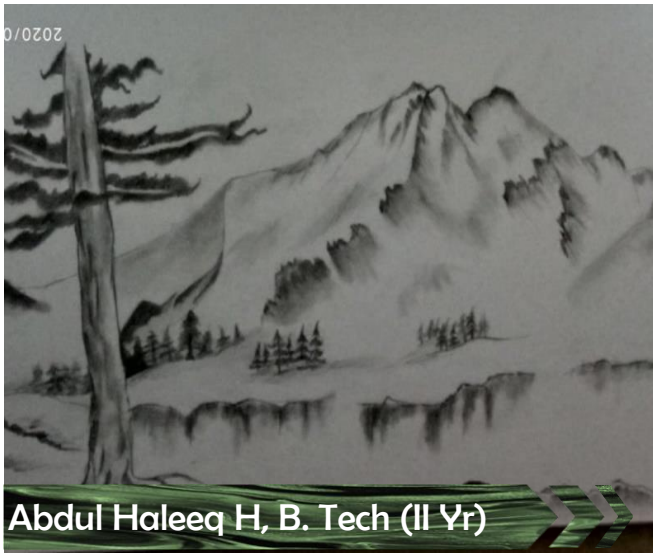

Sridevi J, B. Tech (II Yr)


Sridevi J, B. Tech (II Yr)

PENCIL SKETCH



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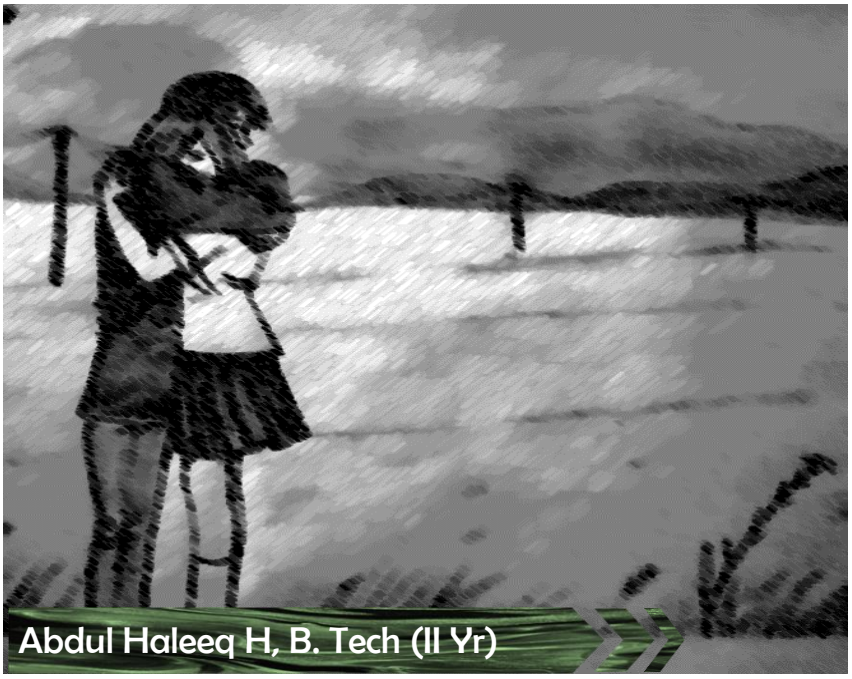

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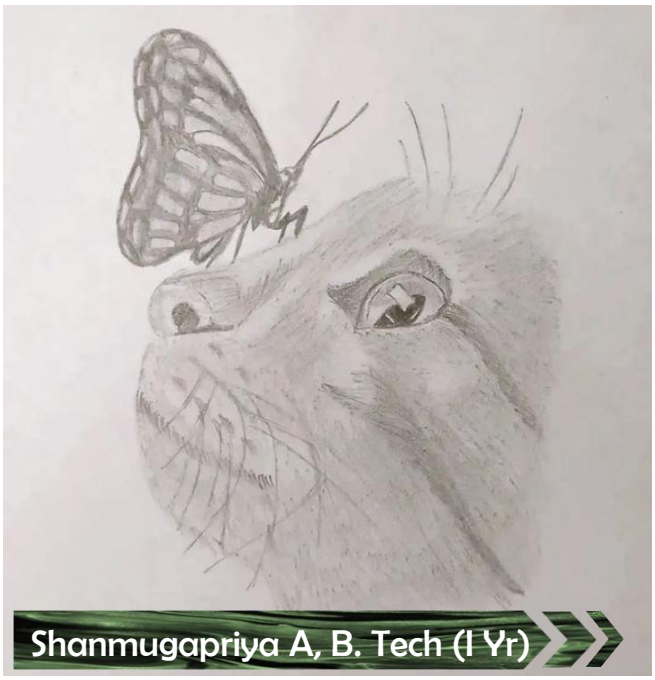

Shanmugapriya A, B. Tech (I Yr)

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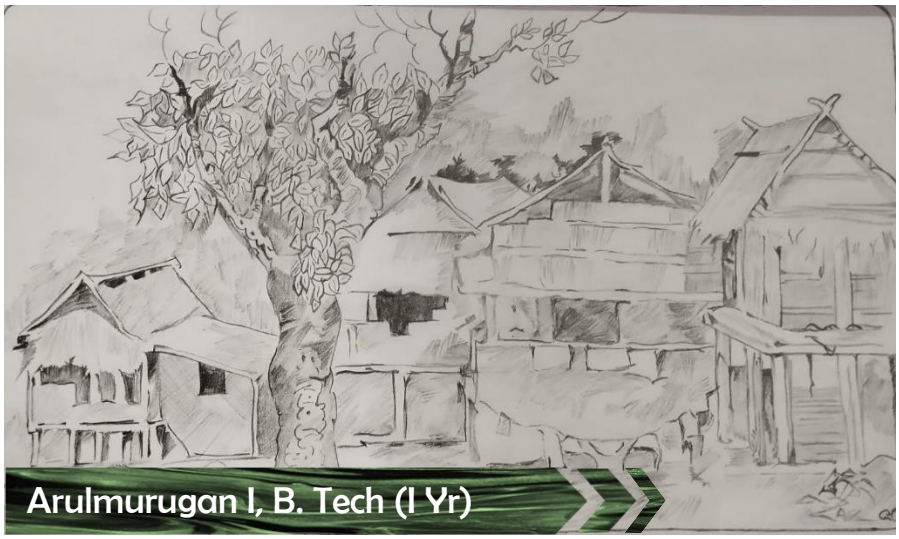

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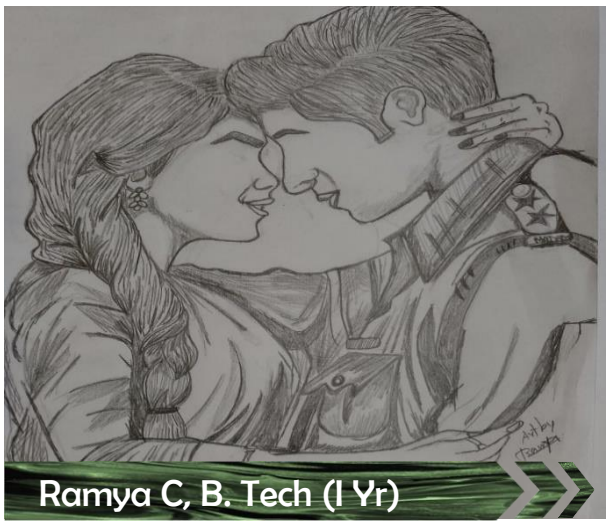
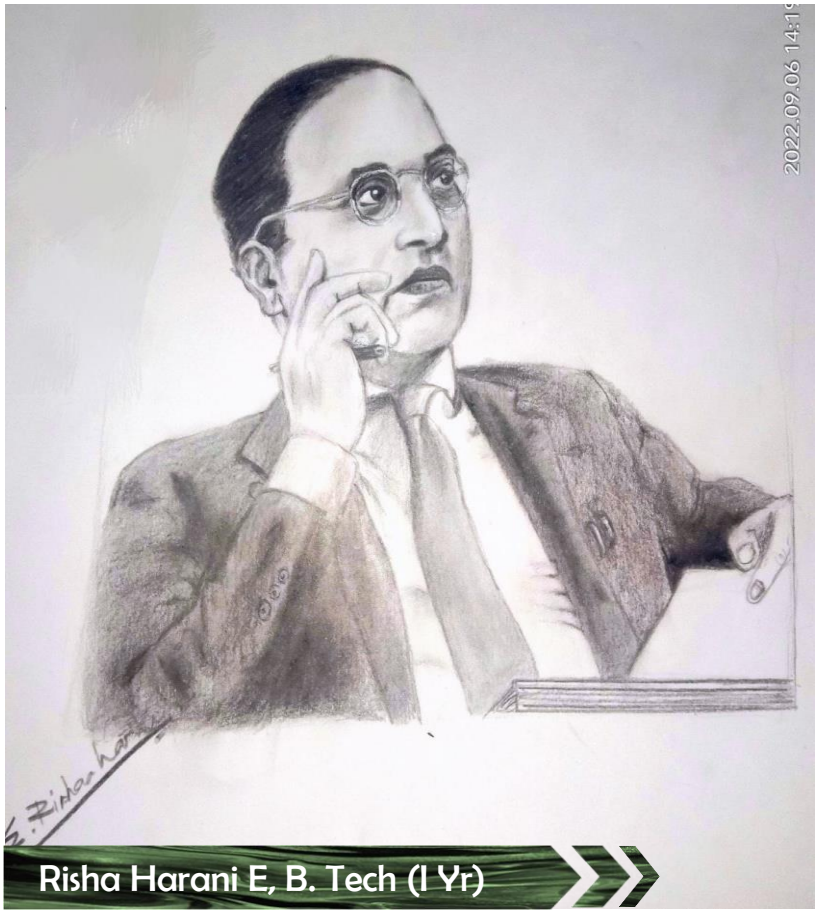


Ramya C, B. Tech (I Yr)



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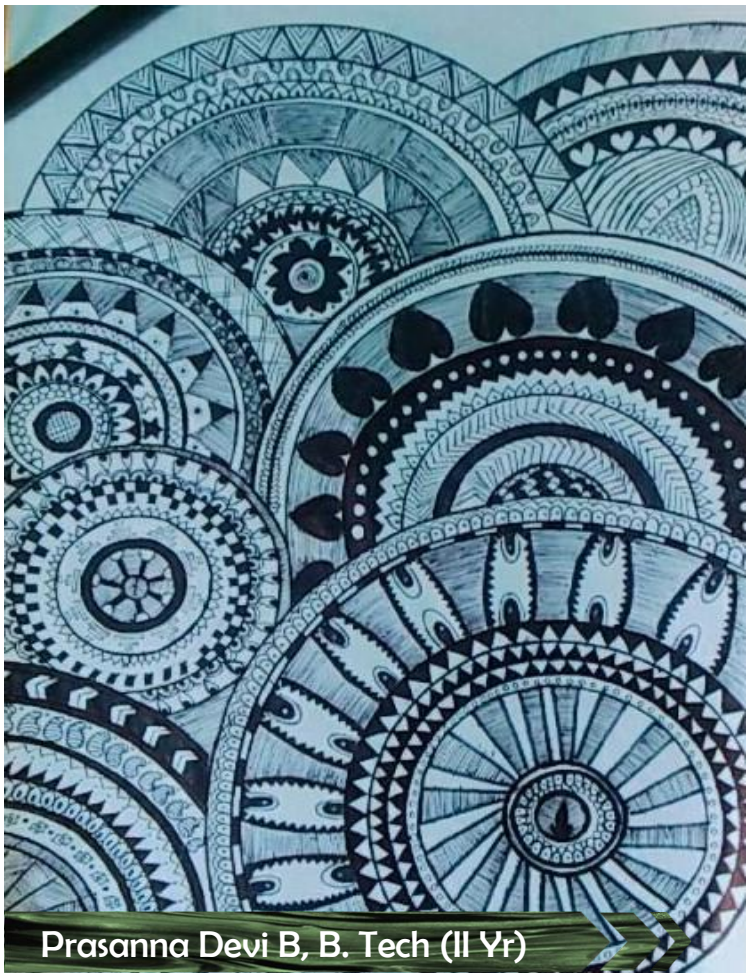
Shanmugapriya A, B. Tech (I Yr)



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Risha Harani E, B. Tech (I Yr)

PAINTING

Risha Harani E, B. Tech (I Yr)

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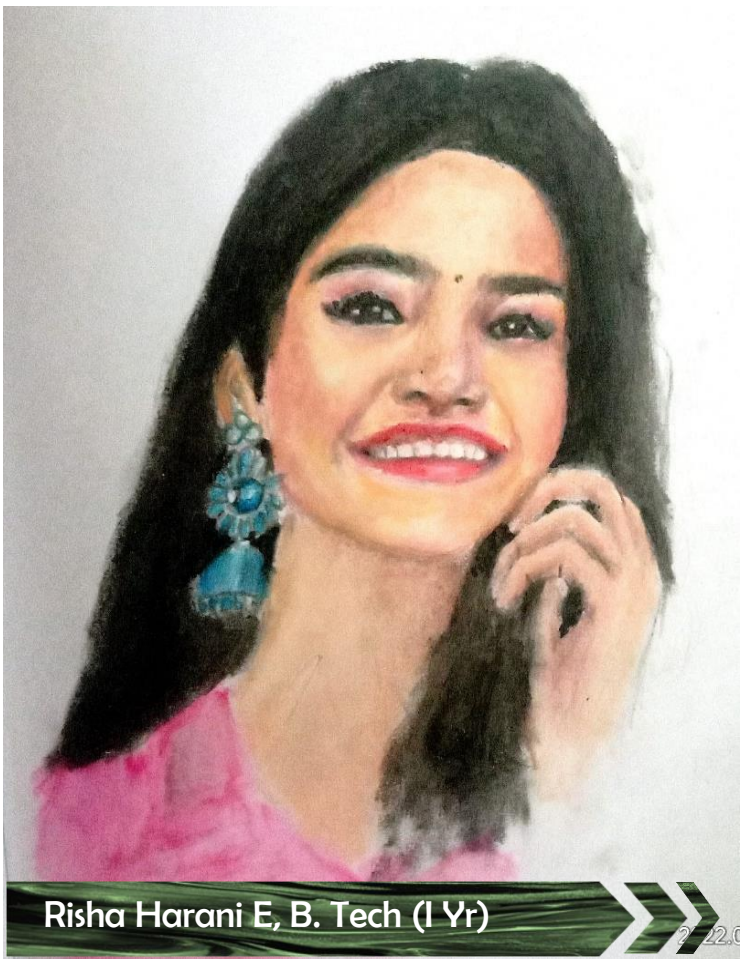

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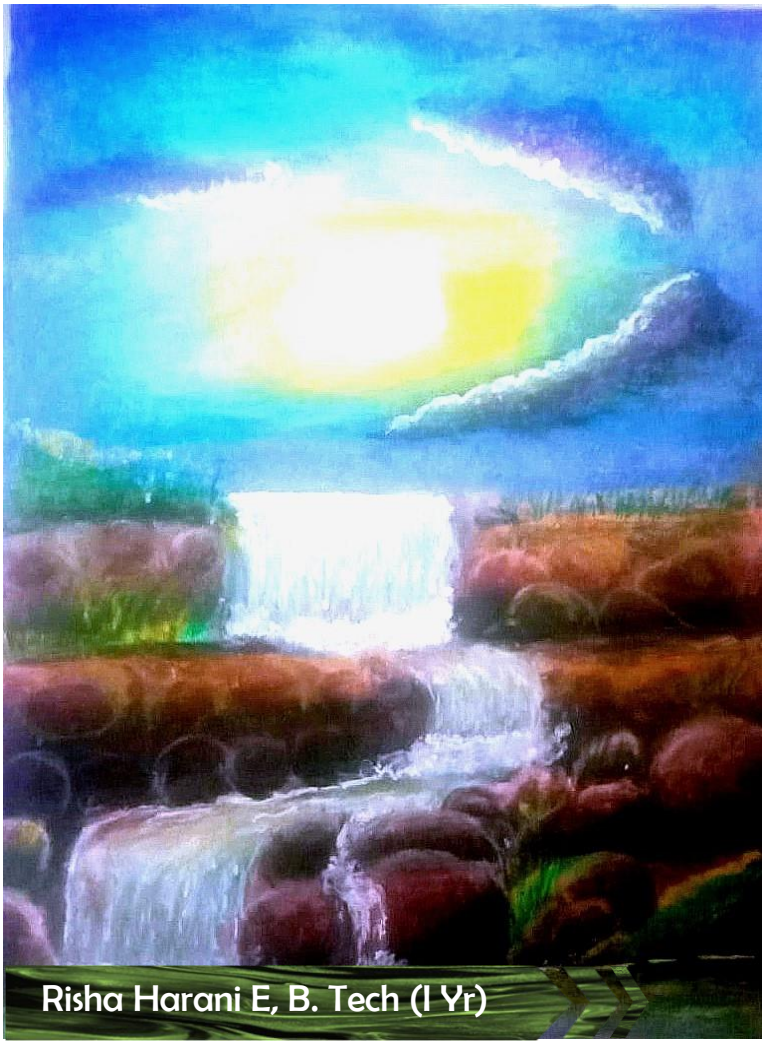

Risha Harani E, B. Tech (I Yr)

POETRY

THE EMPTY ARENA

This was the place where the claps were heard
for the heroes and villains, who people cheered
now filled with mud, blood and tears,
which dried and turned as the colour of dust
perhaps, how does it all turned out like this,
where there were castles, now only remains the bricks
when did everything change
now all it remains is this empty arena
echoing every vivid memory, it had carried with it.

-Preethi V, B. Tech (II Year)

இசை

இசையின் மகிமை புகுந்துகிறது,
இனிமையான இசை உன் வாசம் தூண்டுகிறது,
அருமையான சுதந்திரம் உன் நடனத்தில்
பயன்படுகிறது,
இனிய நெஞ்சத்தில் நீ இசையை வாசிக்கிறாய்,
இனிமையான இசை உன் வாழ்வில் பொருள் தருகிறது.

-Sabarinathan S, B. Tech (II Year)

மனித வாழ்வு

பரந்து விரிந்த நீல வானத்தின்...பின்பம் காண்பிக்கும் கடல் சூழ்ந்த உலகத்தின்...மடியில் வீற்றிருக்கும் பல உயிர்களின் வண்ணங்களும்.... தினந்தோறும் ஓடி கொண்டிருக்கும் மனிதர்களின் எண்ணங்களும்... மறைந்து விடுகிறது இருள் சூலும் வேளையில்...வீழ்த்த நினைக்கிறது அன்றாட வாழ்க்கையினை... விழி தேடி வழி மாறும் மனங்களும்.... வலி மறைய வழி தேடும் உணர்வுகளும்...பணம் தேடி தினம் இறக்கும் உயிர்களும்...தேட மறுத்த புன்னகையையும்.... வாழ மறுத்த வாழ்க்கையையும் தேடி அலைகிறது... நிலை மறந்து மண்ணில் விழும் நிலையில்.

-Prasanna Devi B, B. Tech (II Year)

இதய காதலன்

என்னவளே! நான் மறைமுகமாக ரசிப்பது தெரிந்தும் என்னை

ரகசியமாக காதலித்தவலே அழகிய ரசனையுடன் ஆனந்தம் கொண்டேன்!

என்னவளின் கண்கள் ஆயிரம்
பேசும்,மௌனமாக்கப்பட்ட வார்த்தைகள் அனைத்தும் உன் மறைக்கப்பட்ட பார்வையில் ஒலிக்கிறது! ஏனோ?

-Nishanth V, B. Tech (III Year)

With thanks...

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Mr. M. Aswin Dhandapani, B. Tech (I year)

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Ph. D / PG/ UG Students (Biotechnology)

Biotechnology Student Association

Share your academic / Cultural Activities, Articles,

Blogs, Photos, Videos and events on

BIT - Bio Talks

You may send your feedback

To bitbtnewsletter@yahoogroups.com