



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution affiliated to Madurai Kamaraj University)

Re-accredited with 'A' Grade by NAAC

VIRUDHUNAGAR - 626001

Education □ Discipline □ Culture

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Dr. A. SARATHI, M.Sc., M.Phil., Ph.D.,
Principal

13-06-2024

To

Dr. GARIMA GUPTA,
Scientist 'F' - Department of Biotechnology,
Ministry of Science and Technology,
Room No. 510, Block 3 CGO Complex, Lodhi Road,
New Delhi - 110 003.

Respected Madam,

Sub:	Submission of Annual Progress Report for the year 2023-24 for the Star College Scheme- Reg.
Ref:	Sanction Order HRD - 11011/165/2020-HRD-DBT

Hereby we are submitting the **Annual Progress Report** for Strengthening Component of DBT-Star College Scheme for the year 2023-2024. We are also submitting the **Audited Utilisation Certificate** and **Statement of Expenditure for Financial Year 2023-24** along with the Progress Report.

We kindly request you to release the grant amount for the Third year of the scheme at the earliest.

With thanks

PRINCIPAL

Progress Report (FY 2023-2024)
DBT - Star College Scheme
for Strengthening of Science Education and Training at
Undergraduate Level



Submitted to
DEPARTMENT OF BIOTECHNOLOGY
Ministry of Science & Technology
New Delhi – 110003

Submitted by



VIRUDHUNAGAR HINDU NADARS'
SENTHIKUMARA NADAR COLLEGE
(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Virudhunagar - 626 001, Tamil Nadu

Annual Progress Report

DEPARTMENT OF BIOTECHNOLOGY

Annual Progress Report supported under Star College Scheme

1. **Name of the College :** V.H.N.Senthikumara Nadar College
(Autonomous), Virudhunagar

2. **Name of Coordinator, Designation, Address, Phone No's.** Dr. N. PRITHIVIKUMARAN,
Head & Associate Professor,
Department of Physics,
V.H.N.Senthikumara Nadar College
(Autonomous), Virudhunagar
Mobile: 94866 36535
Email: prithivikumar@vhnsnc.edu.in

3. **Assessment Duration** 01/04/2023 to 31/03/2024
Duration in Years: 1 Year

4. Details of Departments Supported

Sl. No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty members	
			Total = 74	
			With Ph.D.	Without Ph.D.
1.	Physics	B.Sc., M.Sc., and Ph.D	13	1
2.	Mathematics	B.Sc., M.Sc., and Ph.D	11	7
3.	Chemistry	B.Sc., M.Sc., and Ph.D	13	1
4.	Botany	B.Sc., M.Sc., and Ph.D	8	1
5.	Zoology	B.Sc., M.Sc., and Ph.D	12	0
6.	Microbiology	B.Sc. M.Sc., and Ph.D	5	3
7.	Computer Science	B.Sc. and Ph.D	4	0

5. Number & Date of Advisory committee meeting:

Three

The institutional advisory committee meetings were held on 09.10.2023, 18.10.2023 and 10.01.2024.

6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).

The DBT-Star college fund support has led to the following qualitative improvements:

- Procurement of consumables, glassware and chemicals aided in upgrading existing teaching resources.
 - Students were able to perform experiments independently.
 - New experiments were introduced and many existing experiments were creatively extended.
 - All the departments supported under this scheme organized field visits / industrial visits to industries and scientific research institutes for the students which reinforce their knowledge through experiential learning.
 - Students were assigned Project works which are to be done under the guidance of faculty which gave them hands on training. They gained knowledge through this participative learning activity.
 - Guest lectures by experts organized for the students not only provide expertise in a topic but also add credibility to the curriculum content.
 - The additional facilities and funds available through Star College Scheme, in terms of equipment and consumables, now permit students to explore more challenging projects.
- **Among the various number of project works done by the students Five prominent project works are listed below.**

1. **Title of the project:** Comparative study of Ayurvedic soap and synthetic soap against *Staphylococcus aureus* from wound infection

Done by: Kiruba Celin V, Muthuroobini S R and Padma priya R III BSc (Microbiology)

Abstract: The research topic focuses on conducting a comparative analysis of the antibacterial activity of chemical soap and Ayurvedic soap against *Staphylococcus aureus* pathogens. With the rise of antibiotic-resistant bacteria posing a significant public health threat, there is growing interest in alternative antibacterial agents, including soaps. *Staphylococcus aureus* is a common bacterial pathogen responsible for various infections, ranging from minor skin infections to life-threatening conditions such as pneumonia and sepsis. The study aims to evaluate the effectiveness of chemical soap, typically formulated with synthetic antibacterial agents, and Ayurvedic soap, derived from natural ingredients based on traditional

Ayurvedic medicine principles, in inhibiting the growth of *Staphylococcus aureus*. The research will involve experimental assays to measure the antibacterial activity of both types of soap, potentially using methods such as agar diffusion or broth dilution. The outcomes of the study will provide insights into the comparative efficacy of chemical and Ayurvedic soaps in combating *Staphylococcus aureus* infections. By examining the antibacterial properties of these soaps, the research seeks to contribute to the development of alternative strategies for bacterial infection control. The findings may inform the formulation of soap products with enhanced antibacterial efficacy, potentially offering new solutions to combat antibiotic resistance and improve public health outcomes.

2. Title of the project: Biocontrol potential of *Bacillus thuringiensis* isolated from soil samples against larvae of mosquito

Done by: Mahalakshmi D, Nivetha G and Mohamad Giyath S III BSc (Microbiology)

Abstract: A major challenge for achieving successful mosquito control is overcoming insecticide resistance. *Bacillus thuringiensis* which is one of the most effective biolarvicide for control of species of mosquitoes and monitoring of larval susceptibility is essential to avoid resistance development. Mosquito larvicidal activity of *Bacillus thuringiensis* was assessed by isolating them from ecologically different soil habitats in and around the campus. The isolated organisms were confirmed as *Bacillus thuringiensis* based on biochemical characterization and microscopic observation. The larvicidal activity of *Bacillus thuringiensis* isolates was tested against the larval of mosquito by using the standard cup bioassay. The isolates of *Bacillus thuringiensis* showed a significant level of variation in their larvicidal activity.

3. Title of the project: Fabrication of Women Safety Device With GPS Tracking System Using Arduino Uno

Done by: Sathiya jothi C, Subhashini T and Sobana N III BSc (Physics)

Abstract: The concept of the project is to build a safety device which will generate an emergency alarm and send a message to the user's friend, family or to the police. This will also help the women when she falls in trouble

and keep others alert. By this process, location tracking becomes easy. This module works on the principle of Trilateration. It receives signals from multiple GPS satellites using a combination of algorithms and determines the distance between it and the satellite. From this data it determines the location of the person in trouble.

4. **Title of the project:** Isolation and identification of cellulose degrading bacteria from horse dung.

Done by: Akila M and Rahumath Nisha S III BSc (Zoology)

Abstract: Cellulolytic microorganisms such as bacteria are responsible for much of the cellulose degradation in horse dungs. Despite this vast number of cellulase producers, there is a deficiency of microorganisms that can produce significant amount of the three cellulase enzyme specificities i.e. endoglucanases, exoglucanases and cellobiases to efficiently degrade cellulose to fermentable products. Little emphasis has been given to cellulase production from bacteria despite their extremely high natural diversity, which endows them with the capability to produce stable enzymes. Horse dung samples collected in the college campus were inoculated separately and from each, only a single bacterial isolate was obtained. The three isolates were screened for cellulolytic activity using Congo red stain on Carboxymethyl cellulose (CMC) agar plates inoculated with the isolates. All the isolates were found to hydrolyze Carboxymethyl cellulose. A Gram stain test carried out identified the three isolates as Gram-positive rods. Morphological and biochemical analysis indicated that they all associated mainly with members of the *Bacillus* sp. Isolates from selected for further functional studies bore the two enzyme specificities of a cellulase enzyme system.

5. **Title of the project:** Studies on the Oyster Mushroom Cultivation in Virudhunagar

Done by: Arul Selvan M, Aswin Kumar D, Ayyanar S, Bagavathi kannan A and Guna M III BSc (Botany)

Abstract: Mushroom cultivation, a form of biotechnology, has gained significant attention worldwide due to the nutritional value, culinary appeal, and economic potential of mushrooms. Among the various mushroom species cultivated, the Oyster Mushroom (*Pleurotus* spp.) stands out as one of the most popular and commercially viable choices. Its ease of

cultivation, rapid growth, adaptability to a wide range of substrates, and delicious taste makes it an attractive option for both small-scale farmers and large-scale producers.

7. Any Novel aspect introduced or planning to be introduced during the Scheme duration.

Planning to introduce:

- It has been planned to conduct science popularization programmes as outreach activities for school teachers so that they will motivate their young students to choose to opt for science programmes in higher studies.
- Planned to arrange for field visits to national laboratories and places of scientific importance for school students to give them experiential learning to kindle scientific temper and also for school teachers to make them updated with the latest scientific knowledge.

Novel aspects introduced:

- Students of all the participating departments underwent field visit to places of scientific importance which enabled them to gain knowledge through experiential learning.
- Project works given to UG students has enhanced their bench skills
- Handling efficiency of instruments was augmented. It improved the basic research knowledge and scientific writing among students.
- BSc students of department of Microbiology carried out projects on anti-fungal activity of various plant extracts against dandruff causing *Malassezia* sp. and screening and antibiotic resistance bacteria from different soil samples.
- The Mathematics Models lab maintained by Department of Mathematics was upgraded with the addition of new models.
- Students of department of Physics used Arduino circuits to design electronic kits for the construction of RADAR system, fabrication of women safety system using GPS and construction of security alarm.
- Department of Botany gave their BSc students projects on effects of imbibition on germination of seeds and pulses and Oyster Mushroom cultivation.

- Students of BSc Computer science did their projects on IOT Enabled Fire Detection System, IOT Enabled Light Detection System, Online Health Care Management System and Automated Vegetables and Fruits Stall Bill Using Stack Data Structure which employed advanced programming techniques which will enable the students to become employable easily.
- Interdisciplinary projects such as Image & signal processing techniques, Cryptography with matrices, Mechanical vibrations, Social network graph were done by students of BSc Mathematics.
- All the participating departments serviced their lab instruments which were under repair and replaced minor instruments which were discarded as they gone unusable, utilizing the funds available under this DBT Star college Strengthening UG science component scheme. These enabled efficient functioning of under graduate laboratories so that students can undergo hands on training to get better understanding of the theories studied.
- The procured multiple copies of equipment in the laboratories of participating departments, improved the equipment to student ratio and helped to provide better practical training to UG students. New practical and demonstrations uplifted the existing teaching-learning process.
- Conducted summer internship programmes for students of other colleges by the department of Physics. Totally 24 students from three colleges got benefitted. They underwent hands on training using the instruments purchased under DBT Star college Strengthening UG science component scheme.

8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300words).

Lessons learnt:

- If students are given more hands-on training in laboratories, it creates more interest among them towards their curriculum and make them understanding the subject clearly.
- Individual use of equipment in laboratories gives them confidence to face end semester practical examinations.
- More field visits / industrial visits enable them to learn beyond their curriculum and enrich them with practical knowledge.

Difficulties faced:

Nil

9. Key performance indicators

S. No	Indicator	Pre-support	During /After Support	Remarks
1	No. of students admitted	Total =266	Total = 229	
		M= 125 F= 141	M= 125 F= 104	
		SCSTOBCGSCSTOBCGSCSTOBCGSCSTOBCG	SCSTOBCGSCSTOBCGSCSTOBCG	
		21 1 102 1 22 0 119 0	24 1 100 0 19 0 85 0	
2	No. of students passing out (%) Students Admitted/passing out(pass %)	Physics- 97.22% Chemistry- 97.14 % Mathematics - 100% Zoology - 92.86% Botany - 96.77% Computer Science - 100% Microbiology - 97.14%	Physics-92.31% Chemistry- 97.56 % Mathematics –97.96% Zoology–91.76% Botany – 97.30% Computer Science–95.65% Microbiology – 100%	
3	Drop-out rates (Percentage of Drop-outs)	Physics - 6 % Chemistry - 2 % Mathematics - 4 % Zoology - 1 % Botany - Nil Computer Science -3 % Microbiology - Nil	Physics - 5% Chemistry - 15 % Mathematics-3% Zoology - 3% Botany - 10% Computer Science- 12% Microbiology- 2%	---
4	No. of students opting for M.Sc	Physics - 7 Chemistry - 7 Mathematics - 12 Zoology - 0 Botany - 4 Computer Science - 3 Microbiology - 17	Physics-13 Chemistry - 14 Mathematics -7 Zoology - 5 Botany -12 Microbiology- 16	
5	Average marks	Physics - 65 % Chemistry - 62 % Mathematics - 71 % Zoology - 63 % Botany - 63 % Computer Science - 72 % Microbiology - 65 %	Physics–76% Chemistry – 76 % Mathematics –79 % Zoology–64% Botany – 70 % Computer Science– 70 % Microbiology– 71 %	---
6	No. of hands-on experiments being conducted	Zoology - 163 Botany - 78 Chemistry - 57 Computer Science - 206 Physics - 60 Micro biology - 67	Zoology -138 Botany – 79 Chemistry -51 Computer Science –206 Physics -60 Micro biology-61	---
7	No. of new experiments introduced	Zoology - 4 Botany - 10 Chemistry - 12 Computer Science - 45 Physics - 2 Micro biology - 8	Zoology -8 Botany -17 Physics - 4 Micro biology-8	---

S. No	Indicator	Pre-support	During /After Support	Remarks
8	Publications (Scopus Indexed) /patents, if any.	Publications: 40 Botany – 6 Chemistry – 23 Physics – 5 Zoology – 4 Computer Science – 2 Patent: 1 Chemistry – 1	Publications: 61 Botany – 3 Chemistry – 26 Physics – 16 Zoology – 7 Computer Science – 2 Mathematics – 1 Microbiology – 6	---
9	Training received by Faculty	Botany – 3 Mathematics -3 Physics – 2 Computer Science - 5	Mathematics – 7 Zoology -6 Chemistry – 1 Botany – 6 Computer Science – 1 Physics – 1	---
10	Exhibitions/seminars /training courses conducted	Botany – 1 Chemistry – 2 Computer Science – 1 Physics – 2 Micro biology – 4 Mathematics -1	Zoology – 2 Botany – 3 Chemistry – 4 Computer Science – 7 Physics – 4 Micro biology – 4 Mathematics – 4	---
11	Books/journals subscribed from grants	Books purchased : Chemistry – 106 Zoology – 55 Physics – 62 Botany – 46 Computer Science – 15 Mathematics – 45 Micro biology - 97	Journals subscribed: Zoology – 3 Microbiology – 1	---
12	Outreach activities (Popular lectures)	----	Botany – 3 Chemistry – 1 Physics – 4 Microbiology – 3 Mathematics – 1	---
13	Colleges mentored to apply for DBT Star College grants	---	Mentored St. John College, Bangalore and Sri Vidhya Manthir College, Krishnagiri to apply for DBT Star college grants	---
14	Invited lectures	Physics – 6 Mathematics – 5 Botany – 2 Chemistry – 8 Micro Biology – 5 Computer Science – 10	Physics – 2 Mathematics – 3 Botany – 2 Zoology – 1 Chemistry – 4 Micro Biology – 3 Computer science - 3	---

10. Self evaluation :

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Mathematics	<ul style="list-style-type: none"> • Preparing Mathematical Models and Charts to give students experiential learning • To offer Mini-Projects to the UG students • Arranging Field visits for students • Making students to participate in seminars • Arranging guest lecture programmes 	100%	10
Zoology	<ul style="list-style-type: none"> • Faculty attending training programmes • Arranging Field trips for the students • Offering project works for the final year students • Conducting workshops for students • Arranging Guest lecture programme for students 	100%	10
Computer Science	<ul style="list-style-type: none"> • Project works for the final year students • Arranging Field visits to students • Conducting workshops for students • Faculty attending training programmes • Serving lab instruments and purchase of spares 	100%	10

Chemistry	<ul style="list-style-type: none"> • Arranging guest lectures involving visiting faculties • Offering industrial training programme to students • Arranging field trips for students • Offering project works to students • Servicing lab instruments 	100%	10
Physics	<ul style="list-style-type: none"> • Arranging Field trips for students • Offering project works for UG Physics students • Servicing lab instruments • Conducting workshops for students • Faculties attending training programmes 	100%	10
Micro biology	<ul style="list-style-type: none"> • Arranging industrial visit to students • Conducting seminars for students • Arranging for training programme for students • Servicing lab instruments • Conducting seminars 	100%	10
Botany	<ul style="list-style-type: none"> • Faculty undergoing training programmes • Arranging field visit for students • Conducting guest lecture programmes • Projects for UG Botany students • Faculty attending seminars 	100%	10

*For quantitative analysis you may fix five objective (max) each having 2 marks and accordingly can calculate the matrix.

11. ZBSA Status: (Mark Check Box):

Not opened Under process Opened but not mapped on PFMS Account is functional

12. Sanctioned Budget details: (Rs. in Lakhs)

Total Sanctioned Budget	Total Released Budget	Expenditure	Balance as on 31.03.2024	Remarks if any
Grants for creation of capital assets (Non-recurring)	Nil	Nil	Nil	---
Grants-in-aid General (Recurring)	18.00	18.00	Nil	---
Total	18.00	18.00	Nil	---


Course Coordinator

(With Seal)
Dr. N. PRITHIVIKUMARAN
Head & Associate Professor
Department of Physics
V.H.N.S.N. College (Autonomous)
VIRUDHUNAGAR - 626 001.


14/6/24

Head of the Institution

(With Seal)
Dr. A. SARATHI
PRINCIPAL
VIRUDHUNAGAR HINDU NADARS'
SENTHIKUMARA NADAR COLLEGE
(AUTONOMOUS)
VIRUDHUNAGAR



Proof for S.No 6 to 14 of Key performance indicators

• Number of hands on experiments being conducted

BSc Physics

III BSc

1. Determination of Refractive Index of the given Small angled prism using Spectrometer.
2. Determination of Refractive Index of the given prism by I – I' curve method using Spectrometer.
3. Determination of number of lines per meter of the grating (N) and wavelength (λ) of prominent lines of the mercury spectrum by minimum deviation method using Spectrometer.
4. Determination of Resolving Power of a grating using Spectrometer.
5. Determination of the wavelength (λ) of prominent lines of the mercury spectrum using Hartmann's interpolation using Spectrometer.
6. Study the frequency current relationship of a Series LCR circuit.
7. Study the frequency current relationship of a Parallel LCR circuit.
8. Determination of Self-inductance of the coil using Maxwell's bridge (AC method).
9. Determination of Self-inductance of the coil using Owen's bridge (AC method).
10. Determination of Impedance & Power factor using LR circuit.
11. Determination of Impedance & Power factor using CR circuit.
12. Determination of Mutual Inductance of the given coils using Spot Galvanometer.
13. Comparison of Mutual Inductance between two coils using Spot Galvanometer.
14. Determination of High Resistance by leakage method using Spot Galvanometer.
15. Determination of angle of Acceptance and Numerical aperture of the given Fiber optic cable
16. Characteristics of Zener diode.
17. Construction and study of Bridge rectifier with π filter.
18. Construction and study of Voltage Doubler and Tripler.
19. Characteristics of Transistor (CE mode).
20. Construction and study of Single Stage Amplifier.
21. Construction and study of Hartley Oscillator.
22. Construction and study of Colpitt Oscillator.
23. Regulated power supply using IC 7805.
24. Verification of De Morgan's Laws.
25. NOR gate as a universal building block.
26. NAND gate as a universal building block.
27. Construction and study of Half Adder and Full Adder circuits using IC's.
28. Construction and study of Integrator and Differentiator circuits using IC 741.
29. Construction and study of Adder and Subtractor circuits using IC 741.
30. Construction and study of R-S & J-K flip flop using gates.

II BSc

31. Determination of number of lines per meter of the grating (N) and wavelength of prominent lines of the mercury spectrum (λ) using Spectrometer.
32. Determination of refractive index of the prism by i-d curve method using Spectrometer.
33. Determination of dispersive power of a prism using Spectrometer
34. Comparison of Capacitances of Capacitors using De Sauty's Bridge.
35. Comparison of Capacitances of Capacitors using Owen's Bridge.
36. Determination of Self inductance of the coil using Anderson's Bridge.
37. Determination of Thickness of hair using Air wedge
38. Determination of Radius of curvature of convex lens using Newton's rings.
39. Comparison of Capacitances of Capacitors using Spot galvanometer.
40. Comparison of Charge sensitiveness using Spot galvanometer.
41. Comparison of EMF's using Spot galvanometer.
42. Comparison of EMF's using Potentiometer.
43. Determination of Figure of merit using Table Galvanometer.
44. Determination of M and BH using Tan C method.

I BSc

45. Determination of rigidity modulus using Torsional pendulum with & without loads.
46. Determination of Young's modulus by uniform bending (Pin & Microscope) method.
47. Determination of Young's modulus by non-uniform bending (Optic lever) method.
48. Determination of Young's modulus by cantilever load depression method.
49. Determination of co-efficient of viscosity by Stokes' method.
50. Determination of viscosity by Poiseuille's flow method.
51. Verification of parallel axes theorem on moment of inertia.
52. Verification of perpendicular axes theorem on moment of inertia.
53. Determination of Frequency of AC mains using Sonometer.
54. Verification of laws of vibration using Sonometer.
55. Determination of Frequency of Tuning fork using Melde's String.
56. Determination of Thermal conductivity of bad conductor using Lee's disc method.
57. Determination of specific heat of liquid by Joule's electrical heating method
58. Determination of specific heat by cooling method.
59. Determination of Refractive index of glass Prism using Spectrometer.
60. Calibration of low range voltmeter using Potentiometer.

BSc Chemistry

III BSc Chemistry

Organic preparation:

Organic preparation:

1. Oxidation: Preparation of benzoic acid from benzaldehyde
2. Hydrolysis: (i) Preparation of benzoic acid from benzamide
(ii) Preparation of benzoic acid from ethyl benzoate.

3. Acetylation: Preparation of acetanilide from aniline
4. Bromination: Preparation of p-bromoacetanilide from acetanilide
5. Nitration: (i) Preparation of m-dinitrobenzene from nitrobenzene
(ii) Preparation of picric acid from phenol.
6. Benzoylation: Preparation of β -naphthyl benzoate from β -naphthol
7. Addition: Preparation of osazone from glucose.

Gravimetric Estimation:

8. Estimation of lead as lead chromate.
9. Estimation of barium as barium chromate.
10. Estimation of calcium as calcium oxalate
11. Estimation of copper as cuprous thiocyanate.
12. Estimation of nickel as Ni-Dimethylglyoxime.
13. I Determination of molecular weight by
 1. Transition temperature method – Sodium thiosulphate pentahydrate, sodium acetate trihydrate
 2. Cryoscopic method –Rast method
14. II Phase diagram
 1. Simple eutectic phase diagram
15. III Critical Solution Temperature
 1. Determination of CST of phenol – water system
 2. Effect of impurity on CST of phenol water system
16. IV Heat of Solution
 1. Determination of heat of solution of oxalic acid in water
 2. Determination of heat of solution of $K_2Cr_2O_7$ in water
 3. Determination of heat of solution of $(NH_4)_2C_2O_4$ in water
17. V Kinetic experiments
 1. Kinetics of acid catalysed hydrolysis of ester
 - a) Determination of rate constant of the reaction
 - b) Determination of relative strength of acids.
18. VI Conductometric methods
 1. Acid base titration: $NH_4Cl \rightarrow NaOH \rightarrow HCl$
 2. Determination of cell constant of the given cell and determination of dissociation constant of weak acid.
19. VII Potentiometric methods
 1. Acid base titration: HCl vs $NaOH$
 2. Redox titration: $KMnO_4$ vs FAS

II BSc Chemistry

Volumetric analysis:

21. I. Acidimetry and alkalimetry:

1. Estimation of hydrochloric acid ($Oxalic\ acid \rightarrow NaOH \rightarrow HCl\ solution$)

2. Estimation of oxalic acid (KHP → NaOH → Oxalic acid solution)
3. Estimation of sodium hydroxide (Na₂CO₃ → HCl → NaOH solution)
4. Estimation of NaOH and Na₂CO₃ in a mixture (Na₂CO₃ → HCl → Mixture)
5. Estimation of Na₂CO₃ and NaHCO₃ in a mixture (Na₂CO₃ → HCl → Mixture)
22. II. Permanganimetry:
 1. Estimation of Fe²⁺ (Oxalic acid → KMnO₄ → Mohr's salt solution)
 2. Estimation of Ca²⁺ – Direct method (Oxalic acid → KMnO₄ → Calcium salt solution)
 3. Estimation of Pb²⁺ – Indirect method (Oxalic acid → KMnO₄ → Lead salt solution)
23. III. Iodometry and iodimetry:
 1. Estimation of Cu²⁺ (K₂Cr₂O₇ → Thio → Copper salt solution)
 2. Estimation of potassium dichromate (CuSO₄ → Thio → K₂Cr₂O₇ solution)
 3. Estimation of KMnO₄ (K₂Cr₂O₇ → Thio → KMnO₄ solution)
24. IV. Dichrometry:
 1. Estimation of Fe²⁺ – External indicator method (K₂Cr₂O₇ → FeSO₄ solution)
25. V. Argentimetry – Precipitation titrations:
26. Estimation of chloride ion – Mohr's method (NaCl → AgNO₃ → NaCl solution)
27. Estimation of BaCl₂ (NaCl → AgNO₃ → BaCl₂ solution)
28. 1. (a) Qualitative Analysis of some Bio-organic compounds
 - (i) Carbohydrate, Fat, Protein and Vitamins
 - (b) Food Analysis
 - (i) Analysis of Wheat flour
 - (ii) Analysis of Potatoes
 - (iii) Analysis of Bread
 - (iv) Analysis of Egg
 - (v) Analysis of Cheese
 - (vi) Analysis of Milk
29. 2. (a) Estimation of reducing sugar by using Benedict's reagent.
 - (b) Estimation of creatine by Folin method.
 - (c) Estimation of Inorganic phosphate by Fiske and Subbarow method.
30. 3. Analysis of various Food Adulterants

I BSc Chemistry

Oil analysis lab

31. Determination of Specific gravity
32. Determination of Surface tension
33. Determination of Viscosity
34. Determination of Refractive index
35. Determination of %Free Fatty acid
36. Determination of Iodine value
37. Determination of Saponification value
38. Determination of Unsaponifiable Matter

39. Determination of Acetyl value
40. Determination of oil content in seeds by Soxhlet extraction method.
41. Visit to Oil Industry

Organic lab

A double titration involving the making up of the solution to be estimated and the preparation of standard solution.

42. Acidimetry and Alkalimetry
 1. Estimation of Na_2CO_3
 2. Estimation of NaOH/KOH
 3. Estimation of oxalic acid
 4. Estimation of mixture of NaOH and Na_2CO_3
43. Redox reactions – Permanganometry
 1. Estimation of Fe(II) ion
 2. Estimation of oxalic acid
 3. Estimation of calcium (direct method)
44. Redox reactions – Dichrometry
 1. Estimation of ferrous ion
 2. Estimation of ferric ion using external indicator
45. Iodometry
 1. Estimation of $\text{K}_2\text{Cr}_2\text{O}_7$
 2. Estimation of KMnO_4
 3. Estimation of copper
46. Applications of volumetric analysis
 1. Determination of acetic acid in commercial vinegar using NaOH .
 2. Determination of alkali content in antacid tablet using HCl .
 3. Estimation of calcium content in chalk as calcium oxalate by permanganometry.
 4. Estimation of hardness of water by EDTA

Oil analysis II lab

47. Determination of Iodine value, Saponification value, Unsaponifiable Matter, Acetyl value
48. Test for presence of Mineral Oil – Holde's method
49. Test for presence of Sesame oil (Baudouin test)
50. Test for presence of Cottonseed oil (Halphen's test)
51. Bellier test (Turbidity Temperature – acetic acid method)

BSc Botany

III BSc Botany

BIOCHEMISTRY and BIOTECHNIQUES

1. Determination of the pH of different solutions
2. Titration of weak acid with a strong base
3. Determination of R_f value of amino acids by paper chromatography

4. Verification of Beer-Lambert's law
5. Estimation of starch in plant tissue by gravimetric method
6. Estimation of amino acid by Ninhydrin method
7. Estimation of protein by Lowry et al method
8. Qualitative tests for carbohydrates, proteins, amino acids and lipids

GENETICS AND PLANT BREEDING

9. Solving Problems related to Monohybrid, Dihybrid crosses, Test cross, Incomplete dominance, co-dominance
10. Problem related to complementary gene, epistasis
11. Study of polygenic inheritance for quantitative traits in plants such as length of pods and leaves, number of seeds in fruits
12. Emasculation techniques, various breeding experiments.

TAXONOMY OF ANGIOSPERMS

13. Refer angiosperm plants to their respective families giving reasons.
14. Describe the plant in technical terms. (Draw labelled diagrams of the floral parts including longitudinal sections of the flower, construct the floral diagram and give the floral formula.)
15. Identify the local angiosperms / from the herbarium collected during the field study.
16. Preparation of Herbarium. (15 plants)
17. Go for field study under supervision for minimum of three days to acquaint with the flora of Hills.

PLANT PHYSIOLOGY

To carry out the following experiments and explain the working principle, observation, Results & Interpretations.

18. Imbibition – Direct weight method.
19. Osmotic pressure – Plasmolytic method.
20. Rate of transpiration – Farmer's Potometer.
21. Rate of Photosynthesis – Test tube Funnel method.
22. Separation of photosynthetic pigments- Paper chromatography method.
23. Demonstrate the Physiological Experiment set up.
24. Potato osmoscope.
25. Bell – jar experiment
26. Ganong's Potometer
27. Kuhne's fermentation
28. Ganong's Light screen
29. Mohl's half leaf experiment.
30. Measurement of growth using Lever Auxanometer.
31. Geotropism
32. Phototropism.
33. Hormones

MICROBIOLOGY AND BIOTECHNOLOGY

34. Basic equipments used in Microbiology Laboratory.
35. Sterilization of glass wares and culture media
36. Motility of Bacteria – Hanging drop method.
37. Gram staining of bacteria
38. Preparation of culture media – Nutrient Broth, Nutrient Agar, Potato Dextrose Agar.
39. Isolation of microorganisms from environment.
40. Isolation of DNA from tender coconut endosperm.
41. Quantitative estimation of DNA.
42. Agarose gel electrophoresis - Demonstration
43. Blotting techniques.
44. Plant tissue culture - Demonstration

ORGANIC FARMING

45. Demonstration of Vermi compost preparation.
46. Preparation of Panchagavya Krishi
47. Biofertilizer.
Industrial Visits and Educational Institutional visits for a minimum of two days
48. Preparation of Onion root tip and observe the Mitotic stages.
49. Preparation of Squamous epithelial cells.
50. Qualitative test for Ammonia, Urea and Uric acid.
51. Qualitative test for Protein, Carbohydrate and lipids.
52. Mounting of mouth parts , sting of Honey bees- Demo only

List of Spotters

53. Mitochondria , Golgi Body , Endoplasmic reticulum, lysosome and Ribosome
54. Mitosis –Stages identification
55. Meiosis -stages identification
56. Following stages of frog embryo i)Egg ii)Sperm iii)Blastula iv) Gastrula
57. Primary lymphoid organ – Thymus.
58. Secondary lymphoid organ – Spleen.
59. Paper cutting of Giraffe neck growth to explain Lamarckism
60. Identification of Catla ,Roghu, Mrigal
61. Model fish pond
62. Vermicompost
63. Newton's hive
64. Poultry feeds, feeder and waterers
65. Milk and their by products.

II BSc Botany

66. Observation of slides – Albugo, Rhizopus, Aspergillus, Agaricus and Alternaria.
67. Study of external and internal structure of basidiocarp of Agaricus.
68. Study of the infected region of the Amaranthus and Arachis hypogea leaves
69. Study of the external and internal morphology of Usnea thallus and apothecium.
70. Study of the etiology of bacterial, fungal and viral disease prescribed in the syllabus.
71. Observation of Soredia, Isidia and Cephalodia.

*A field study / trip to research institute / Universities / Industrial visit should be carried out for at least two days.

72. Study the external and internal morphology of Stem, Leaves and Cones- Psilotum, Lycopodium , Equisetum and Marsilea
73. Study the external and internal morphology of Stem, Leaves and cones - Pinus and Gnetum
74. Prepare two permanent slides
75. Observe the fossil slides prescribed in the syllabus.

I BSc Botany

76. Micro-preparation of the types prescribed in the syllabus.
77. Identifying the micro slides relevant to the syllabus.
78. Identifying types of algal mixture.
79. Economic importance of Algae as: (i) Food (ii) Feed (iii) Biofertilizers (iv) Seaweed liquid fertilizer (v) Hydrogen production by algae (vi) SCP (vii) Agar Agar (viii) Alginate (ix) Diatomaceous earth.

BSc Zoology

III BSc Zoology

ANIMAL PHYSIOLOGY

1. Salivary Amylase activity with relation to substrate.
2. Estimation of oxygen consumption in fish with reference to body weight.
3. Qualitative test for nitrogenous waste products in animals.
4. Enumeration of Red Blood Corpuscles (RBC) by Haemocytometer
5. Total count of White Blood Corpuscles (WBC) by Haemocytometer
6. Osmolarity of Red Blood Corpuscles (RBC) in different saline solutions
7. Sphygmomanometer – Demonstration
8. Spotters –Structure of Human Heart and Human kidney (model), Striated muscles, Non-striated muscles and Cardiac muscles (Slide), Human blood smear - whole mount.

GENETICS AND BIostatISTICS

9. Study of Mendelian traits in human
10. Study of monohybrid experiment using beads
11. Study of dihybrid experiment using beads

12. Human Blood grouping
13. Analysis of dermatoglyphic pattern
14. Calculation of mean, median, mode, standard deviation and standard error using Polyalthia leaves/Shells
15. Study of polygenic inheritance of quantitative traits (correlation between height and weight of students).
16. Study of probability using coin tossing experiment
17. Spotters- Pedigree chart, DNA model, Klinefelter's, Turner's and Down's syndromes, conjugation, transformation and transduction charts, Bar diagram, Histogram, Pie diagram and Frequency curve

ECOLOGY

18. Estimation of Dissolved oxygen in pond water
19. Mounting of fresh water/ marine water plankton
20. Detection of Transparency of water by Secchi Disc.
21. Observation of Animal Associations.
22. Study of Pond Ecosystem.
23. A Study tour to a minimum of three days duration should be conducted compulsorily, exposing the students to different habitats like forest ecosystem, pollution affected areas, wildlife sanctuaries, zoological parks, aquarium, marine habitat and museums. A report on the same should be submitted individually in hand written mode at the time of practical examination and assessed.

EVOLUTION

24. Analysis of dermatoglyphic pattern
25. Animals of Evolutionary importance: Peripatus, Limulus, Archaeopteryx
26. Mimicry: Leaf insect, Stick insect
27. Adaptive colouration: Chameleon
28. Homologous and Analogous organs
29. Vestigial organs
30. Fossils

BIOCHEMISTRY

31. pH Meter & Measurement of different biological samples.
32. Preparation of Phosphate buffer
33. Determination of Acid number in edible oil.
34. Verification of Beer-Lambert's law using potassium dichromate
35. Separation of Amino acids by Paper Chromatography
36. Centrifuge - Isolation of RBC using centrifuge.
37. Qualitative analysis of Protein, Carbohydrate and Lipids
38. Spotter -Structure of Glucose (Model/ Diagram)
39. Spotter - Polypeptide chain (Diagram)

MICROBIOLOGY

40. Preparation of culture media – Broth, Agar plates and slants
41. Pure culture techniques - Pour plate, Spread plate and Streak plate methods
42. Serial dilution technique for soil sample
43. Motility by wet mount preparation in curd sample
44. Simple and Gram staining technique
45. Analysis of air microflora by open plate method
46. Spotters-Nutrient Broth, EMB Agar, L rod, Turn table, Inoculation Loop/Needle,

IMMUNOLOGY

47. Preparation of Antigen (SRBC)
48. Preparation of serum from sheep blood
49. Isolation of lymphocytes
50. Agglutination – Widal slide test
51. Precipitation – Radial immunodiffusion test – Demonstration
52. Spotters –Immunoglobulin G, Immunization Schedule, Rh Blood group, Spleen and Lymph node.

BIOTECHNOLOGY

53. Isolation of genomic DNA from goat liver/ spleen
54. Agarose gel electrophoresis of DNA (isolated in the previous experiment/ commercial DNA)
55. Estimation of DNA by diphenylamine method
56. Estimation of RNA by orcinol method
57. Production of recombinant insulin (chart/ model)
58. Polymerase Chain Reaction (Visit to a research laboratory may be undertaken)
59. Southern blotting and Northern blotting (ICT tools)
60. Animal cell culture (photographs/ models)
61. DNA fingerprinting (chart/ photograph)

II BSc Zoology

CELL BIOLOGY

62. Microscopy - Dissection microscope, Compound Microscope
63. Mounting of Squamous epithelial cell
64. Identification of different epithelial cells using permanent slides
65. Chironomus larva - Mounting of Salivary gland Chromosomes
66. Observation of mitotic stages in onion root tip
67. Observation of meiotic stages using permanent slides
68. Microtome
69. Preparation of histological slide (Demonstration)
70. Study of cell organelles using models/ charts: Endoplasmic reticulum, Ribosomes,
71. Mitochondria, Golgi complex, Nucleus, DNA, tRNA
72. Sketching of cells using Camera lucida

DEVELOPMENTAL ZOOLOGY PRACTICAL

73. Mounting of live sperms of a Vertebrate animal (fish/bull)
74. Observation of Mosquito life stages
75. Observation of developmental stages:
76. Frog – Egg, cleavage, gastrulation, through (Permanent slide)
77. Chick –24hrs, 33 hrs, 48hrs, 72hrs and 96 hrs – primitive streak (Permanent slide)
78. Temporary mounting of Chick blastoderm
79. Placental types: Shark, rabbit, pig. (museum specimens/ chart/ model).
80. Human embryology: T.S of testis & ovary; Structure of mature sperm & Graafian follicle. (slide/ photograph)
81. Study of chick embryo permanent slides: 24, 48, 72 and 96 hours
82. Study of the developmental stages and life cycle of Drosophila from stock culture
83. Spotters: Slides of mammalian sperm and Ovum, Different developmental stages of chick embryos (primitive streak, 24, 48, 72, 96hrs), Blastula and gastrula of frog (morula, early gastrula, yolk plug stage, late gastrula), Placenta of fish/sheep/pig/rat
84. Project report on Drosophila culture/chick embryo development

I BSc Zoology

DISSECTIONS

85. Earthworm: Nervous System
86. Cockroach: Digestive System

MOUNTINGS

87. Earthworm: Body Setae
88. Cockroach: Trachea
89. Prawn: Appendages
90. Mosquito: Mouth Parts

SPOTTERS

91. Protozoa: Paramecium – Conjugation;
92. Euglena, Entamoeba, Plasmodium.
93. Porifera: Simple Sponge; Sponge – Gemmule; Sponge – Spicules
94. Coelenterata: Obelia colony, Obelia medusa, Aurelia, Physalia, Sea anemone
95. Helminthes: Liver fluke, Redia larva, Cercaria larva, Ascaris (Male and Female)
96. Annelida: Earthworm, Nereis, Heteronereis, Chaetopterus
97. Arthropoda: Cockroach, Scorpion, Centipede, Peripatus
98. Mollusca: Pila, Fresh water mussel, Chiton, Sepia, Solen
99. Echinodermata: Starfish, Sea-urchin, Sea-cucumber, Brittle star, Bipinnaria larva

SERICULTURE

100. Preparation of maps showing extension of sericulture in the World and in India
101. Preparation of Pie charts: different types of silk production in India

102. Stem cutting preparation and raising mulberry saplings adopting nursery band polythene bag methods
103. Production of grafts and layers:
1. Shoot and Root grafting: Whip and tongue grafting techniques
 2. Budding: Patch and T-budding techniques
 3. Layering: Ground and air layering techniques
104. Irrigation methods – surface, subsoil, sprinklers and drip irrigation
105. Determination of pH and water holding capacity of soil in a mulberry garden
106. Determination of moisture content and moisture retention capacity of mulberry leaves (tender, medium and coarse leaves)
107. Evaluation of quality of mulberry leaves by physical/ chemical methods
108. Estimation of mulberry leaf yield in one acre under different spacing patterns (Field visit).
109. Mounting of silk gland
110. Visit to a rearing farm house to observe the incidence of silkworm diseases and the students are required to submit the report and the same should be assessed internally

DISSECTIONS

111. Fish (Tilapia) – Digestive system
112. Frog- Digestive system- Book plate/ Model only
113. Calotes – Arterial System and Venous System – Book plate/ Model only

MOUNTINGS

114. Fish (Tilapia): Gill Lamella and Air Bladder
115. Fish: Scales from an edible fish available in the market
116. Chick: Brain
117. Birds: Quill feather-Barbs, Barbules and booklets

SPOTTERS

118. Prochordata: Amphioxus, Balanoglossus, Ascidian
119. Agnatha: Petromyzon
120. Pisces: Narcine, Echeneis, Hippocampus, Eel, Catla, Tilapia
121. Amphibia: Bufo, Rhacophorus, Ichthyophis, Salamander
122. Reptilia: Poisonous snakes: Cobra, Krait and Viper: Non – Poisonous Snakes:
123. Dryophis and ptyas; Calotes, Chameleon and Draco
124. Aves: Pigeon, Pectoral and Pelvic girdle of Pigeon, Archaeopteryx
125. Mammals: Bat, Loris, Pangolin

SERICULTURE Lab II

126. Morphology of egg, larva, pupa, and adult of Bombyx mori
127. Identification of sex in silkworm
128. Reproductive system of male and female silk moth
129. Life cycle of mulberry silkworm (Chart/ Specimens)

130. Life cycle of Muga, Eri, and Tasar silkworm (Chart/ Specimens)
131. Mating and oviposition
132. Egg preparation – Egg cards and loose eggs
133. Moth examination
134. Grainage centre
135. Cocoon characters of popular uni-, bi-, and multivoltine races (Photographs/ Chart/ Specimens)
136. Identification of protozoan, bacterial, viral, and fungal diseases of silkworm (Charts/ Photographs)
137. Identification of pests of silkworm (Photographs/ Charts/ Specimens)
138. Visit to a rearing farmhouse to observe the incidence of silkworm diseases and the students are required to submit the report and the same should be assessed internally.

III BSc Computer Science

1. Write a program to display three marks of five students in a table
2. Write a PHP program to design a client page to get two numbers and add, subtract, multiply and divide them in server and display
3. Write a PHP program to design a page to get age of a person and display he/she is eligible for vote or not in server page.
4. Write a PHP program to design a client page to get five marks of a student and display total, Average, Grade in server page
5. Write a PHP program to Get 'n' value in the client page and display its factorial value in the server page
6. Write a PHP program to Get 'n' value in the client page and display Fibonacci series in the server page
7. Write a PHP program to Get 'n' value in the client page and display multiplication table of n in the server page.
8. Write a PHP program to Get two text value in client page, done string manipulation and display in server page(Any five functions)
9. Write a PHP program to Get value 'n' in the client page and display Reversed number in the server page
10. Write a PHP program to find Sum of digits
11. Write a PHP program to find Biggest number using Function
12. Write a PHP program to display Book details using Foreach Loop
13. Write a PHP program to display registration Form
14. Write a PHP program to Copy from one file to another file
15. Write a PHP program to Multiples of 7 using REQUIRE
16. SELECT commands in MY-SQL
17. DML/TCL commands in MY-SQL
18. Find the sum of two numbers using Command Line argument.
19. Get one number from user, and prints a countdown from that number to zero using

- while Loop.
20. Find the sum of all the primes for the given range using for loop.
 21. Program that accepts a sequence of whitespace separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically
 22. String Manipulation
 23. Find mean, median, mode for the given set of numbers using list data structure.
 24. Compute cumulative product of a list of numbers using function.
 25. Demonstrate use of tuple and its related functions.
 26. Count the numbers of characters in the string and store them in a dictionary data structure
 27. Print each line of a file in reverse order.
 28. Compute the number of characters, words and lines in a file.
 29. Retrieving data from a file using regular expression.
 30. Retrieving information from HTML file using Regular Expression.
 31. Perform two tasks simultaneously using thread.
 32. Thread communication using queue
 33. Create a GUI for an Expression Calculator using tk.
 34. Chatting Program using TCP.
 35. File Transfer using FDP.
 36. Program to implement DML operations.
 37. Retrieving row from a MySQL database table using GUI.
 38. To implement controller in AngularJS
 39. To use \$scope Object in AngularJS
 40. To implement ng-repeat and ng-init directives in AngularJS
 41. To implement ng-model and ng-view directive in AngularJS
 42. To develop Custom directives
 43. To display the Arithmetic Operations of numbers in AngularJS
 44. To implement Arrays in AngularJS
 45. To implement the following built in filters a) Lowercase b) Uppercase c) Number d) JSON and e) Currency
 46. To develop custom filters
 47. To implement AngularJS Services
 48. To display list of Book names and author names in a table format.
 49. To create a Forms in AngularJS
 50. To implement database in AngularJS
 51. Create a bio data and manipulating a text using MS-Word.
 52. Create a document and design a department invitation using formatting option.
 53. Create a document and to insert picture in right side and related information in left side using page layout option in MS-Word.
 54. Create a text manipulation with scientific notations in MS-Word.

55. Create a class timetable using table option in MS-Word.
56. Create a table along with table formatting options using MS-Word.
57. Write a college invitation letter and merge the draft with student's personal database using mail merge on a letter head MS-Word.
58. Draw a flowchart to find sum of two numbers using drawing toolbars in MS-Word.
59. Create a student personal details using Formatting cell option in MS-Excel.
60. Create a student mark sheet and to find the total and average of each student using formula editor in MS-Excel.
61. Create a student mark sheet and determine rank, class using sorting and filtering function in MS-Excel.
62. Create a worksheet for student mark analysis and prepare the Bar and Pie Charts in MS Excel.
63. Create a suitable worksheet with necessary information and make out a suitable chart showing gridlines, legends and titles for axes in MS-Excel.
64. Manipulate two worksheet data in a single page in MS-Excel.
65. Create a PowerPoint presentation (five slide minimum) relevant to your course of study or field of work.
66. Create a PowerPoint presentation using various theme and variant.
67. Create a PowerPoint presentation using Pictures and Layouts.
68. Create a PowerPoint presentation using various Slide Transitions and Custom animation
69. Develop an Android Application to welcome a user.
70. Develop an Android Application using linear layout.
71. Develop an Android Application using relative layout.
72. Develop an Android Application using table layout.
73. Develop an Android Application using frame layout.
74. Develop an Android Application using intents.
75. Develop an Android Application using onClick event.
76. Develop an Android Application using listview.
77. Develop an Android Application using option menu.
78. Develop an Android Application using context sensitive menu.
79. Develop an Android Application to create new widget.
80. Develop an Android Application that displays a alert dialog notification.
81. Develop an Android Application that displays a status bar notification.
82. Develop an Android Application to add data into SQLite.
83. To create login form.
84. To check given number is odd or even and Prime or not.
85. To create function
86. To design simple application using CheckBox, RadioButton, DateTimePicker.
87. Dynamically change the background color using Scrollbar.
- 88.

89. To Design Digital Clock.
90. To Design menu for arithmetic operation.
91. Transfer items between 2 listboxes (single or all)
92. To implement array operation (insert, length,reverse,sort,indexof)
93. To implement string operation (compare,equal,remove,replace,contain)
94. To implement Stack operation.
95. Student Mark sheet preparation, connect to database and Perform insert,delete, update, select operation
96. Hello World using Node.js
97. Modules in Node.js
98. Require function in Node.js
99. HTTP module in Node.js
100. File system in Node.js
101. Events in Node.js
102. File upload in Node.js
103. Retrieve contents from MySQL in Node.js
104. Create and Sort MongoDB using Node.js
105. Perform Insert, Delete and Update in MongoDB using Node.js
106. Query MongoDB database using Node.js
107. Design a web page for displaying a document using basic html elements
108. Design a web page with <hr> , <div> and heading tags
109. Design a web page for displaying a document using colors and style attribute
110. Design a web page with order and unordered lists.
111. Design a web page with nested lists and marquee tag
112. Design a web page with definition lists.
113. Design a web page with image tag
114. Design a web page with anchor tag
115. Design a web page with basic table tag
116. Design a web page with table tag and row span and col span attributes
117. Design a web page with frame tag
118. Design a web page with basic form elements
119. Design a web page for illustrating Cascading Style Sheets
120. Design a web page for illustrating Embedded Multimedia.

II BSc Computer science

121. Program to compute factorial value of N using command line arguments
122. Program to find biggest value of an array using command line arguments
123. Program to calculate sum of two complex numbers using class and objects
124. Program to calculate Euclidean distance between two co-ordinates using class and objects
125. Program to find area and volume of a rectangle using single inheritance.

126. Program to process student's marks using multiple inheritance
127. Program to check the given string is palindrome or not using String Buffer class
128. Program to insert integer objects into a vector and compute sum by reading from it
129. Program to add two complex numbers using package and class concept
130. Program to compute area of circle using package and interface concept
131. Program to illustrate unchecked exception
132. Program to illustrate checked exception
133. Program to illustrate multithreading by extending Thread class
134. Program to illustrate multithreading by implementing Runnable interface
135. Program to copy a text file using character stream class
136. Program to copy an image using a byte stream class
137. Program to display life cycle of an applet
138. Program to display digital clock using applet
139. Program to display different graphical shapes in applet
140. Program to display graphical bar chart by passing parameters in applet
141. Program to find factorial value of N using AWT high level event handling
142. Program to illustrate text box event and check box event handling
143. Program to illustrate window closing using AWT low level event handling
144. Program to illustrate TCP based network communication
145. Program to illustrate UDP based network communication
146. Program to find sum of digits using RMI
147. Program to find length of the given string using RMI
148. Program to compute factorial value of N using JSP
149. Program to display book selection using JSP.
150. Program to manipulate with String using JSP
151. Program to illustrate JDBC using connection string
152. Program to illustrate JDBC using Data Source Name

I BSc Computer science

153. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
154. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the five subjects are to be input by user. Assign grades according to the following criteria: Grade A: Percentage ≥ 80 Grade B: Percentage ≥ 70 and < 80 Grade C: Percentage ≥ 60 and < 70 Grade D: Percentage ≥ 40 and < 60 Grade E: Percentage < 40
155. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
156. Write a Python script that prints prime numbers less than 20.
157. Program to find factorial of the given number using recursive function.

158. Write a Python program to count the number of even and odd numbers from array of N numbers.
159. Write a Python class to reverse a string word by word.
160. Given a tuple and a list as input, write a program to count the occurrences of all items of the list in the tuple. (Input : tuple = ('a', 'a', 'c', 'b', 'd'), list = ['a', 'b'], Output : 3)
161. Create a Savings Account class that behaves just like a BankAccount, but also has an interest rate and a method that increases the balance by the appropriate amount of interest (Hint:use Inheritance).
162. Write a Python program to construct the following pattern, using a nested loop
163. Read a file content and copy only the contents at odd lines into a new file.
164. Create a Turtle graphics window with specific size.
165. Write a Python program for Towers of Hanoi using recursion
166. Create a menu driven Python program with a dictionary for words and their meanings.
167. Devise a Python program to implement the Hangman Game.

I. Simple Programs

168. Write C++ programs to solve simple problems (without using class and object).
169. Write a C++ program to calculate area and circumference of a circle using Inline Function.00
170. Write a C++ program to prepare student mark sheet using Class & Object.
171. Write a C++ program to prepare employee pay bill using Class & Object.
172. Write a C++ program to compute area of 3 different shape using Function Overloading.

II. Programs using Constructors and Friend Functions

173. Write a C++ program to implement Parameterized Constructor for computing volume of different objects using Constructor Overloading.
174. Write a C++ program for Bank transaction using Multiple Constructors
175. Write a C++ program using Constructor Overloading to compute addition of two complex numbers.
176. Write a C++ program swapping two values between two classes using Friend Function.
177. Write a C++ program to find maximum and minimum of two numbers between two classes using Friend Function.

II. Programs using Operator Overloading

178. Write a C++ program to Overload unary- Operator which changes the sign of integer data members of an object.
179. Write a C++ program to Overload binary +Operator that adds two complex numbers.
180. Write a C++ program to perform string concatenation using binary + Operator Overloading.

181. Using Overloading binary- operator, write a C++ program to calculate Internet café usage time in HH:MM format.
182. Write a C++ program to subtract two matrices using binary Operator -Overloading.

III. Programs using Inheritance

183. Write a C++ program to process four arithmetic operations to illustrate Single Inheritance.
184. Write a C++ program to process Student Information using Multilevel Inheritance.
185. Write a C++ program to process EB Bill creation using Multiple Inheritances.
186. Write a C++ program to process Family Details using Hybrid Inheritance.
187. Write a C++ program to process Employee Details using Hierarchical Inheritance.

IV. Program using Polymorphism

188. Mark Processing based on year of study
189. EB Bill Processing based on type of Power Tariff.
190. Write HTML code to develop a web page having the background in red and body "My First Page" in any other color.
191. Create a HTML document giving details of your name, age, telephone, address, roll no. using align tag.
192. Write HTML code to design a page containing a text in a paragraph give suitable heading style.
193. Design a page having background color given text color red and using all the attributes of font tab.
194. Write HTML code to create a WebPage that contains an Image at its center.
195. Create a web Page using href tag having the attribute alink, vlink.
196. Write a HTML code to create a web page of pink color and display moving message in red color.
197. Create a web page, showing an ordered list of name of your five friends.
198. Create a HTML document containing a nested list showing the content page of any book
199. Create a web page, showing an unordered list of name of fruits
200. Create the following table in HTML with Dummy Data
201. Write HTML code to generate following output
202. Write HTML code to create a web page that displays your class time table.
203. Write a HTML code to generate the following output: a. Diamondshape b. Chemical equations
204. Create a web page having two frames one containing links and another with contents of the links.
205. Design an application form using all input types.
206. Design a website of your own by using all html tags.

• **Publications - Scopus indexed:**

Department of Physics

S. No.	Author	Title	Journal	Year	Vol	Issue	link
1.	Mohanty A.K., Vivekanandhan S. , Das O., Romero Millán L.M., Klinghoffer N.B., Nzihou A., Misra M.	Biocarbon materials	Nature Reviews Methods Primers	2024	4	1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85187880878&doi=10.1038%2fs43586-024-00297-4&partnerID=40&md5=19d00d1f787fb1d698d3f13ab9c9f082
2.	Priyadharshini D., Vivekanandhan S.	Gracilaria edulis seaweed derived nitrogen, oxygen, and sulfur self-doped biocarbon materials for supercapacitor applications: An investigation on the impact of acid washing and activation	Energy Storage	2024	6	1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85174413233&doi=10.1002%2fest2.526&partnerID=40&md5=48fdb2acc2db1929fab620418a5a414
3.	Sumangala Devi N., Vivekanandhan S.	Effect of carbonization temperatures on the synthesis of biocarbon from Borassus flabellifer fruit fiber for capacitive energy storage	Applied Research	2024			https://www.scopus.com/inward/record.uri?eid=2-s2.0-85190447430&doi=10.1002%2fappl.202400005&partnerID=40&md5=73a3e88d9e265beb9da988bc7b6c1835
4.	Saranya A., Arulprakasajothi M., Srimanickam B., Prithivikumar N. , Marnadu R., Manoharan D.	A novel sol–gel assisted nanoporous TiO ₂ /PS electrode-based carbohydrate biosensor	Journal of Materials Science: Materials in Electronics	2024	35	1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85180127703&doi=10.1007%2fs10854-023-11659-1&partnerID=40&md5=7dd2519612966fca28e8bc9721d6fcc5
5.	Sudha Periathai R., Pon Vengatesh R., Abarna S., Prithivikumar N.	Treatment of water pollution system using SnO ₂ nanoparticles synthesized by sol–gel process	Applied Nanoscience (Switzerland)	2024	14	1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85173496065&doi=10.1007%2fs13204-023-02965-5&partnerID=40&md5=9c504f5f27d39630a5349f6324f5dc22
6.	Weldekidan H., Vivekanandhan S. , Tripathi N., Mohanty A., Misra M.	Highly conductive biocarbon nanostructures from burlap waste as sustainable additives for supercapacitor electrodes	Materials Advances	2023	5	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85181807918&doi=10.1039%2fd3ma00491k&partnerID=40&md5=30a2d16616382d28c5641dcebf77e532

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8.	Kanimozhi S., Hariram M., Ganesan V., Muthuramkumar S., Vivekanandhan S.	Exploring Azadirachta indica Gum as the Sustainable Fuel in Combustion Process for the Synthesis of ZnO Nanoparticles with Antimicrobial and Antioxidant Potentials	Nano LIFE	2023	13	2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85175133436&doi=10.1142%2fS1793984423500046&partnerID=40&md5=777413344a61c7f9419da977cc0cbf53
9.	Sindhan R., Sriramachandran P., Shanmugavel R., Ramaswamy S.	On the effective temperature of large sunspot umbra using AIH molecular lines	New Astronomy	2023	99		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85140252153&doi=10.1016%2fj.newast.2022.101939&partnerID=40&md5=9a7907545bec3e2d10be909f592bc8ac
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11.	AlaguLakshmi Alagarsamy ., Jeyaprakash Pandiyarajan., Subramanian M., Natarajan Prithivikumaran., Natarajan Jayakumaran.	Antibacterial activity of Fe-doped Cd ₂ SnO ₄ nanoparticles against staphylococcus aureus and salmonella typhi	International Journal of Nano Dimension	2023	14	2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85179315600&doi=10.22034%2fIJND.2023.1973653.2191&partnerID=40&md5=60698bf5a3f52fe38a63e6c84916a6cd
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13.	Ganesan V., Hariram M., Vivekanandhan S., Muthuramkumar S.	Endophytic Fungal (Periconia sp.) Biomass Derived 2D Biocarbon and its Influence on Germination and Growth of	Nano LIFE	2023	13	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85167480038&doi=10.1142%2fS1793984423500083&partnerID=40&md5=66b203bf5ea8327b54fd7d596f013275

		Mung Bean: A Preliminary Study					
14	Dhanalakshmi S., Manohara Babu I., Karuthapandian S., Prithivikumaran N.	Facile synthesis of mesoporous Gd ₂ O ₃ /CuS nanorods for high performance supercapacitors	Materials Chemistry and Physics	2023	309		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85171614627&doi=10.1016%2Fj.matchemphys.2023.128355&partnerID=40&md5=27eb51e5b67fcbf4c83e8cc70c959d35

Department of Chemistry

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2.	Prakash K., Saravanakumar K., Babu S.G., Muthuraj V., Karuthapandian S. , Kalidass S.	Fabrication of Sm ₂ (WO ₄) ₃ /g-C ₃ N ₄ heterojunction for boosting photodegradation of methyl parathion and ofloxacin: Characteristics, mechanism insight and pathways	Journal of Molecular Structure	2024	1305		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85184994795&doi=10.1016%2Fj.molstruc.2024.137729&partnerID=40&md5=ce5648a39b63aa5964c981d798931795
3.	Dhinesh Kumar M., Karthikeyan M., Kaniraja G., Muthukumar K., Muneeswaran G., Karunakaran C.	Computational modelling and optimization studies of electropentamer for molecular imprinting of DJ-1	Journal of Molecular Graphics and Modelling	2024	128		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85184066524&doi=10.1016%2Fj.jmgm.2024.108715&partnerID=40&md5=17c423d80b9abd4e7cc4a5d6865f1506
4.	Sheela S.F.S., Kumar K.A., Raman N.	New homoleptic imine derivative of lawsone and its metal complexes: Preparation, characterization, in vitro and in silico biological investigation	Applied Organometallic Chemistry	2024	38	2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85179922932&doi=10.1002%2Fao.7332&partnerID=40&md5=41e899e876cfdee2e5dc579f6dc29e79

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11	Karthikeyan M., Dhinesh Kumar M., Kaniraja G., Karunakaran C.	Theoretical investigations of free energy of binding and chiral recognition studies of (R)- and (S)-Noradrenaline towards β -cyclodextrin	Journal of Molecular Graphics and Modelling	2023	124		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85163484997&doi=10.1016%2fj.jmngm.2023.108552&partnerID=40&md5=3098fecb74c917763c189ece4a7b4e49
12	Jones B.M.F., Mamba G., Maruthamani D., Muthuraj V.	Visible light-driven photocatalytic degradation of fluoroquinolone drugs in water over plasmonic Ag/ZnNb ₂ O ₆ @SC ₃ N ₄ indirect Z-scheme nanostructures	Colloids and Surfaces A: Physicochemical and Engineering Aspects	2023	674		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85163204571&doi=10.1016%2fj.colsurfa.2023.131876&partnerID=40&md5=cbbdae06b10390a61b34ff0e6cd0628b
13	Dhinesh Kumar M., Karthikeyan M., Kaniraja G., Ananthappan P., Vasantha V.S., Karunakaran C.	Screening and comparative studies of conducting polymers for developing effective molecular imprinted sensors for copper, zinc superoxide dismutase	Sensors and Actuators B: Chemical	2023	391		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85163286913&doi=10.1016%2fj.snb.2023.134007&partnerID=40&md5=52599946b77b121300e58b81b0b4d1b3
14	Kasirajan P., Karunamoorthy S., Velluchamy M., Subramaniam Karuthapandian. , Park C.M., Sundaram G.B.	Fabrication of copper molybdate nanoflower combined polymeric graphitic carbon nitride heterojunction for water depollution: Synergistic photocatalytic performance and mechanism insight	Environmental Research	2023	233		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85162870733&doi=10.1016%2fj.envres.2023.116428&partnerID=40&md5=719bed569f62463adb54ae88e7a9789c
15	Sount harya S., Jones B.M.F., Muthuraj V., Swaminathan Karuthapandian.	Construction of Ternary Photocatalyst of Cu/ZnO/BN with Enrich the Photocatalytic Activity Driven by Visible Light Irradiation for Degradation of RhB-MO Mixture and Amoxicillin	Journal of Inorganic and Organometallic Polymers and Materials	2023	33	7	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85153210407&doi=10.1007%2fs10904-023-02621-z&partnerID=40&md5=638a67e290e0540a897e845daa71001d

16	Nasar N.M., Samuel M., Jayaraman P., Sheela F.S., Raman N.	Virtual Screening, DNA Strapping and Antimicrobial Investigation of Mixed Ligand Transition Metal Complexes	Asian Journal of Chemistry	2023	35	6	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85163971970&doi=10.14233%2Fajchem.2023.27874&partnerID=40&md5=fb72c42c8722d67d339bb7e3526c4f9b
17	Karthikeyan M., Dhinesh Kumar M., Kaniraja G., Ananthappan P., Sivasamy Vasantha V., Karunakaran C.	Gold nanoparticles enhanced molecularly imprinted poly(3-aminophenylboronic acid) sensor for myo-inositol detection	Microchemical Journal	2023	189		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85148357931&doi=10.1016%2Fj.microc.2023.108536&partnerID=40&md5=0279293eff2ce8fad36479b30fc25fa4
18	Jeyaraman P., Michael S., Natrajan Raman. , Adaikalam A.A.R.	In silico and biological exploration of greenly synthesized curcumin-incorporated isoniazid Schiff base and its ruthenium complexes	Structural Chemistry	2023	34	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85139210959&doi=10.1007%2Fs11224-022-02065-0&partnerID=40&md5=caa9289546281dd35ddff6050ad2c006
19	Michael S., Jeyaraman P., Marimuthu B., Rajasekar R., Thanasamy R., Kumar K.A., Raman N.	Influence of electron density on the biological activity of aniline substituted Schiff base: in silico, in vivo and in vitro authentication	Journal of Molecular Structure	2023	1279		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85147198865&doi=10.1016%2Fj.molstruc.2023.134987&partnerID=40&md5=7d2ef5f2386d111213e0baf53de8fcdf
20	Nasar N.M., Samuel M., Jayaraman P., Sheela F.S., Raman N.	Virtual and in vitro, in vivo Screening of Transition Metal Complexes of N,N-Chelating Ligand: Experimental and Theoretical Investigations	Asian Journal of Chemistry	2023	35	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85149132007&doi=10.14233%2Fajchem.2023.27565&partnerID=40&md5=32fcf355ff1a809ee2222859de9852f7
21	Murugalakshmi M., Govindan K., Umadevi M., Breslin C.B., Muthuraj V.	Fabrication of a Sm2O3/In2S3 photocatalyst for boosting ciprofloxacin oxidation and the Cr(vi) reduction: process parameters and degradation mechanism	Environmental Science: Water Research and Technology	2023	9	5	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85151083292&doi=10.1039%2Fd2ew00894g&partnerID=40&md5=4488ac9d0ea79aa7162a3b474f7573f4
22	Bhuvaneswari C., Palpandi K., Amritha B., Paunkumar P., Lakshmi Priya R., Raman N. , Ganesh Babu S.	Conniving for the first time of BiVO4 – rGO/CE-BN and its potential as enhanced electrochemical sensing of	Microchemical Journal	2023	184		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85142148061&doi=10.1016%2Fj.microc.2022.108174&partnerID=40&md5=52a5f5521714e5f785dd723ffa75c77f

		non-steroidal anti-androgen drug					
23	Marimuthu B., Saravanaselvam S., Michael S., Jeyaraman P., Arulannandham X.	Synthesis, characterization, in vitro, in silico and in vivo investigations and biological assessment of Knoevenagel condensate β -diketone Schiff base transition metal complexes	Journal of Biomolecular Structure and Dynamics	2023	41	9	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85128724431&doi=10.1080%2f07391102.2022.2056509&partnerID=40&md5=683be89808daa03fd3cf6666b9cfc28
24	Paulpandian P. , Beevi I.S., Somanath B., Kamatchi R.K., Paulraj B., Faggio C.	Impact of Camellia sinensis Iron Oxide Nanoparticle on Growth, Hemato-biochemical and Antioxidant Capacity of Blue Gourami (Trichogaster trichopterus) Fingerlings	Biological Trace Element Research	2023	201	1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85125140527&doi=10.1007%2fs12011-022-03145-2&partnerID=40&md5=af33578c62756c2c21b8cd83c6fb2985
25	Moorthy S., Arunpandian M., Moorthy G., Swaminathan Karuthapandian.	Rational design and fabrication of novel MnSeO ₃ /GO nanocomposites for catalysis applications: Analysis of degradation efficacy, stability and degradation pathway	Inorganic Chemistry Communications	2024	160		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85183758808&doi=10.1016%2fj.inoche.2023.111946&partnerID=40&md5=2473d5c001fdce924204906495fbfd9b
26	Parvathi L.T., Arunpandian M., Sivaganesh D., Nagarajan E.R., Karuthapandian S.	Visible light-driven photodegradation of Noxious methyl orange dye by Pd @ WO ₃ nanocomposite catalysts in aqueous solution	International Journal of Environmental Analytical Chemistry	2023	103	19	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85116775117&doi=10.1080%2f03067319.2021.1982925&partnerID=40&md5=1e7b7893ca4c619399472946c0dc1930

Department of Botany

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1.	Gobinath R.M., Pothiraj C., Arumugam R., Pariyakarupiah P. , Ali D.,	Biocatalytic Conversion of Lignocellulosic Water Hyacinth Biomass by	Topics in Catalysis	2024			https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191739660&doi=10.1007%2fs11244-024-01952-

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2.	Ganesan V., Hariram M., Vivekanandhan S., Muthuramkumar S.	Endophytic Fungal (Periconia sp.) Biomass Derived 2D Biocarbon and its Influence on Germination and Growth of Mung Bean: A Preliminary Study	Nano LIFE	2023	13	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85167480038&doi=10.1142%2fS1793984423500083&partnerID=40&md5=66b203bf5ea8327b54fd7d596f013275
3.	Kanimozhi S., Hariram M., Ganesan V., Muthuramkumar S. , Vivekanandhan S.	Exploring Azadirachta indica Gum as the Sustainable Fuel in Combustion Process for the Synthesis of ZnO Nanoparticles with Antimicrobial and Antioxidant Potentials	Nano LIFE	2023	13	2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85175133436&doi=10.1142%2fS1793984423500046&partnerID=40&md5=777413344a61c7f9419da977cc0cbf53

Department of Zoology

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1.	Naveenkumar S., Alagumanikumaran N. , Kaviyarasu K., Muthukumar A.	Influence of encapsulated sodium alginates and pectin on selenium nanoparticles and efficient cardioprotective effect in C2C12 cell line	Journal of Nanoparticle Research	2024	26	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85186759830&doi=10.1007%2fs11051-024-05956-x&partnerID=40&md5=7d180ae64b4b6eadd5a5c6ccf140147b
2.	Shankar S., Kumar D. , Jaiswal D.	Molecular Characterization of Rare Predaceous Aquatic Beetle Methles indicus Regimbart, 1899 (Coleoptera: Dytisidae) from Eastern Ghats, India	Proceedings of the Zoological Society	2024			https://www.scopus.com/inward/record.uri?eid=2-s2.0-85189327274&doi=10.1007%2fs12595-024-00523-7&partnerID=40&md5=9012f99595d7d3c7ac035465e67e79d8
3.	Deepa J., Shankar S., Kumar D. , Madasamy K., Jadhav S., Sulthana R.	Molecular and Morphological identification of the genus Dineutus MacLeay, 1825	Journal of Insect Biodiversity	2023	9	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85172157348&doi=10.52547%2fjibs.9.3.499&partnerID=40&md5=a709db2d061c302d933b9d59a1aef728

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4.	Shankar S., Kumar D. , Deepa J., Madasamy K., Jadhav S., Kunte K.B.	Aquatic beetles (Insecta, Coleoptera) of Koundinya wildlife sanctuary, Andhra Pradesh, India	Journal of Insect Biodiversity and Systematics	2023	9	3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85168347655&doi=10.52547%2fjibs.9.3.449&partnerID=40&md5=0bb6cb2cf067fba8f4c6681d3a2d21b8
5.	Madasamy S., Ramananthatherthan A., Marikani K., Venugopal D., Aldhayan S.H.A., Al-Dayyan Noortheen. , Palanivelu S., Dhanasekaran S.	Biofabrication of nickel oxide nanoparticles from Pedalium Murex leaf extract: A promising approach for biomedical and environmental applications	Surfaces and Interfaces	2023	40		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85164418590&doi=10.1016%2fj.surfin.2023.103087&partnerID=40&md5=074e6d9d338b57de6f36c7b75e8c2026
6.	Gokul T., Kumar K.R., Prema P. , Arun A., Balaji P., Faggio C.	Particulate pollution and its toxicity to fish: An overview	Comparative Biochemistry and Physiology Part - C: Toxicology and Pharmacology	2023	270		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85159583529&doi=10.1016%2fj.cbpc.2023.109646&partnerID=40&md5=e1a2b61db709433a8acb1924b426625f
7.	Rameshkumar K., Ananthi V., Arun A., Prema P. , Veeramanikandan V., Nguyen V.-H., Balaji P.	Trianthema portulacastrum leaf extract mediated synthesis of silver nanoparticles and elucidation of their larvicidal and antibacterial activities	Materials Today Communications	2023	35		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85153324829&doi=10.1016%2fj.mtcomm.2023.105980&partnerID=40&md5=4bfe62ac3ca85bb96e9c2449a454cc0f

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1.	Karthikeyan S., Kathirvalavakumar T. , Prasath R.	Classification of the Class Imbalanced Data Using Mahalanobis Distance with Feature Filtering	Lecture Notes in Computer Science	2023			https://www.scopus.com/inward/record.uri?eid=2-s2.0-85174587956&doi=10.1007%2f978-3-031-44084-7_5&partnerID=40&md5=d1841d0ae0c9a2ce10146db1e63612c2

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Department of Maths

S. No.	Author	Title	Journal	Year	Vol	Issue	Link
1.	Gandhi S.R. , Prabhavathi K., VeeraSivaji R., Kumar R.S., Tharmar S.	Efficient Domination In Fuzzy Graphs and Intuitionistic Fuzzy Graphs in Strong and weak forms	E3S Web of Conferences	2023	399		https://www.scopus.com/inward/record.uri?eid=2-s2.0-85169600771&doi=10.1051%2fe3sconf%2f202339904026&partnerID=40&md5=91101a785bd2b3297e0a56f38a5a295c

Department of Microbiology

S. No.	Author	Title	Journal	Year	Vol	Issue	Link
1.	Mahendran S., Sankaralingam S., Maheswari P., Dhivya R.R., Kathiresan D., Karthikeyan S., Ramya S.S., Seethapathy P., Harinathan B., Palpperumal S.	Production, characterization, and feed supplement applications of phytase enzyme from <i>Aspergillus tubingensis</i> isolated from Western Ghats soil	Biomass Conversion and Biorefinery	2024	14	7	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85131525456&doi=10.1007%2fs13399-022-02894-3&partnerID=40&md5=14b0b945e64cbe63d280df6e21bf6192
2.	Mahendran S., Sankaralingam S., Tamilarasi S., Maheswari P., Kathiresan D., Ramya S.S., Seethapathy P., Kousalya L., Harinathan B., Palpperumal S.	Correction to: Bioactive potential of invertase by yeast <i>Saccharomyces cerevisiae</i> from the honey bee gut: isolation and characterization (Biomass Conversion and Biorefinery)	Biomass Conversion and Biorefinery	2024	14	4	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85127274639&doi=10.1007%2fs13399-022-02615-w&partnerID=40&md5=a61ac6b0e7b04564d09784df6ebc4b91

3.	Shunmugiah Mahendran, Subbiah Sankaralingam, Selvaraj Tamilarasi, Pandiaraj Maheswari, Durairaj Kathiresan, Ramya S.S., Parthasarathy Seethapathy, Loganathan Kousalya, Balasundaram Harinathan, Selvam Palpperumal	Bioactive potential of invertase by yeast <i>Saccharomyces cerevisiae</i> from the honey bee gut: isolation and characterization	Biomass Conversion and Biorefinery	2024	14	4	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85125619502&doi=10.1007%2fs13399-022-02499-w&partnerID=40&md5=58c8ef9c3fc0b9f63034a84912581a39
4.	Palpperumal S. , Sankaralingam S., Balachandran C., Mahendran S., Venkatesh S., Alharbi N.S., Thiruvengadam M., Duraipandiyam V., Baskar K.	Antioxidant, Anticancer, Hepatoprotective and Wound Healing Activity of Fucopyranose (Sulfated Polysaccharides) from <i>Padina pavonica</i> (L.)	Indian Journal of Microbiology	2024			https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191030716&doi=10.1007%2fs12088-024-01237-2&partnerID=40&md5=4cd215bc81dcec40ae974519d72753e3
5.	Shunmugiah Mahendran, Subbiah Sankaralingam, Senthurpandian Muthuramalinga Sethupathi, Durairaj Kathiresan, Mahalingam Muthumani, Loganathan Kousalya, Selvam Palpperumal, Balasundaram Harinathan	Evaluation of antioxidant and cytotoxicity activities of polyphenol extracted from brown seaweed <i>Sargassum tenerrimum</i> biomass	Biomass Conversion and Biorefinery	2024	14	2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85123104752&doi=10.1007%2fs13399-022-02301-x&partnerID=40&md5=d3b37f14bb21f4877fb871b521802923
6.	Seethapathy P., Pandita A., Pandita D., Sankaralingam S., Balasundaram H. , Loganathan K.	Cordyceps (<i>Ophiocordyceps sinensis</i>)	Mushrooms: Nutraceuticals and Functional Foods	2023			https://www.scopus.com/inward/record.uri?eid=2-s2.0-85151729970&doi=10.1201%2f9781003322238-17&partnerID=40&md5=4b52c2c1e10a589074c75bc274f67524

• **FDP/Training attended by Faculty members:**

S.No	Date	Department	Staff Name	Programme	Organized by
1.	21.07.2023 to 04.08.2023	Mathematics	Dr. C. Ganesan	Interdisciplinary Refresher Course on Advanced Research Methodology	Ramanujan College, University of Delhi
2.	17.08.2023 to 30.08.2023	Mathematics	Dr. T. Nithya	Refresher Course in Mathematics on Recent Trends in Analysis and its Applications	Madurai Kamaraj University, Madurai
3.	17.08.2023 to 30.08.2023	Mathematics	Dr. M. Annalakshmi	Refresher Course in Mathematics on Recent Trends in Analysis and its Applications	Madurai Kamaraj University, Madurai
4.	01.09.2023 to 14.09.2023	Mathematics	Dr. N. Sugantha Meena	Refresher Course in Mathematical Sciences on Foundation Course in Vedic Mathematics	Ramanujan College, University of Delhi
5.	01.09.2023 to 14.09.2023	Mathematics	Dr. M. Bhuvaneshwari	Refresher Course in Mathematical Sciences on Foundation Course in Vedic Mathematics	Ramanujan College, University of Delhi
6.	26.10.2023 to 08.11.2023	Mathematics	Dr. A. Rizwana	Refresher Course in Mathematics	Bharathidasan University, Tiruchirappalli
7.	20.11.2023 to 05.12.2023	Mathematics	Dr. P. Mahalakshmi	Refresher Course in the subject Mathematics, Statistics & Computer Science,	University of Lucknow
8.	06.12.2023 to 9.12.2023	Botany	Dr. N. Nirmal Kumar	Refresher Course in Environmental Studies (Multidisciplinary)	Bharathiar University, Coimbatore

S.No	Date	Department	Staff Name	Programme	Organized by
9.	07.12.2023 to 20.12.2023	Botany	Dr. P. Periyakarupiah	Refresher Course in Botany on Recent Trends on Plant Research	Madurai Kamaraj University, Madurai
10.	23.11.2023 to 25.11.2023	Botany	Dr. P. Mehalingam	Hands on Training on Plant Genome Sequencing	Pasumpon Thiru Muthuramalinga Thevar memorial College, Kamuthi
11.	15.02.2024	Botany	Dr. M. Suresh	Training programme on Mushroom Cultivation	Agricultural College and Research Institute, Madurai
12.	15.02.2024	Botany	Dr. P. Periyakarupiah	Training programme on Mushroom Cultivation	Agricultural College and Research Institute, Madurai
13.	22.02.2024 & 23.02.2024	Botany	Dr. P. Mehalingam	Training programme on Drafting Skills for Patent and Design Filing	Mother Teresa Women's University, Kodaikanal
14.	22.08.2023 to 05.09.2023	Chemistry	Dr. E. Jayabharathi	Refresher Course on Advanced Research Methodology	Ramanujan College, University of Delhi
15.	16.09.2023 to 30.09.2023	Zoology	Dr. G. Rameshkumar	Refresher Course in Zoology	Ramanujan College, University of Delhi
16.	07.12.2023 to 20.12.2023	Zoology	Dr. P. Viji	Refresher Course in Zoology in the topic Recent Developments in Animal Sciences	Madurai Kamaraj University, Madurai

S.No	Date	Department	Staff Name	Programme	Organized by
17.	10.08.2023 to 18.08.2023	Zoology	Dr. G. Rameshkumar	Faculty development programme on Outcome Based Education & Essential AI Tools for Teachers	Carmel College, Mala, Thrissur, Kerala
18.	23.11.2023 to 25.11.2023	Zoology	Dr. N. Nagarajan	Hands on Training on Plant Genome Sequencing	Pasumpon Thiru Muthuramalinga Thevar memorial College, Kamuthi
19.	22.02.2024 & 23.02.2024	Zoology	Dr. N. Nagarajan	Training programme on Drafting Skills for Patent and Design Filing	Mother Teresa Women's University, Kodaikanal
20.	18.03.2024 to 23.03.2024	Zoology	Dr. M. Kannan	Faculty development programme on Outcome Based Education & Essential AI Tools for Teachers	Sri Padmavati mahila Visvavidyalayam (SPMVV University), Tirupati
21.	30.09.2023	Computer Science	Dr. T. Kathirvalavakumar	Participated in the 52nd Edition of Bridge 2023 - Madurai (A High Impact Industry-Institute Interaction event of India)	ICT Academy, Chennai
22.	07.09.2023 & 08.09.2023	Physics	Dr. N. Prithivikumaran	National Workshop on X – ray diffraction	Sathyabhama Institute of Science and Technology, Chennai

- **Seminars / Workshops / training programmes conducted**

Sl.No	Date(s)	Department	Programme
1.	22.09.2023	Botany	Training on “Gardening Techniques and Nursery Techniques”
2.	06.11.2023 to 08.11.2023	Botany	International Conference on “Emerging Trends in Science and Social Science”
3.	06.03.2024	Botany	State Level Inter Collegiate Competition on "FLORA FEST - 2024
4.	07.08.2023 to 31.08.2023	Chemistry	Certificate Course on “Fundamentals and applications of Forensic Science”
5.	28.12.2023	Chemistry	Seminar on “Pharmaceutical Drugs and Nanotechnology (PDN-2023)”
6.	18.01.2024	Chemistry	Workshop on “Polymers in Nanotechnology”
7.	26.02.2024 to 28.02.2024	Chemistry	Academy Lecture Workshop on “Recent Advances in Chemical Sciences”
8.	09.01.2024	Computer Science	Workshop on "Project Development in PHP - hands on approach
9.	09.01.2024	Computer Science	Workshop on "FLUTTER"
10.	18.01.2024	Computer Science	Workshop on "Web Development using Python"
11.	10.02.2024	Computer Science	Workshop on "FLUTTER”
12.	12.02.2024	Computer Science	Workshop on "FLUTTER"
13.	17.02.2024	Computer Science	Workshop on "LARAVEL and MVC"
14.	02.03.2024	Computer Science	Workshop on "FLUTTER"
15.	10.07.2023	Mathematics	Value Added Course on "Mathematics for Competitive Exams
16.	15.09.2023 to 15.12.223	Mathematics	Training and Career Guidance for Competitive Examination
17.	15.02.2024	Mathematics	Workshop on Graph Theory with Python Programming
18.	27.02.2024	Mathematics	Workshop on Data Analytics Using R Programming
19.	28.07.2023	Micro biology	Training program on "Food Safety Management System"
20.	15.09.2023	Micro biology	International Seminar on "Microbiome Research and Human Health"
21.	29.12.2023	Micro biology	Training program on "Hazard Analysis Critical Control Point (HACCP)"
22.	13.03.2024	Micro biology	Symposium by name "Microbiome IV"
23.	22-11-2023 to 27-11-2023	Physics	Internship training programme on Renewable Energy
24.	14-02-2024	Physics	Workshop on Astronomy
25.	21-02-2024	Physics	Intercollegiate Physics competitions ExTOP’24
26.	15-05-2024 to 24-05-2024	Physics	Internship training programme on Renewable Energy sources and applications
27.	29.01.2024	Zoology	Skill development programme on "Mass Mulberry Leaves Harvesting and Mass Silkworm Rearing"
28.	16.02.2024	Zoology	Workshop on "Silk Cocoon Handicrafts"

• **Outreach activities**

Sl. No	Date(s)	Department	Activity
1.	04-08-2023	Botany & Zoology	Students from Kshatriya Vidhyasala Centenary School, Virudhunagar visited museum in the department of Zoology and Herbal repository in the department of Botany
2.	06.03.2024	Botany	State Level Inter Collegiate Competition on "FLORA FEST - 2024
3.	14.10.2023	Chemistry	Students of department of Chemistry visited dropout students of SSA residential school, Kunthalapatti village near Virudhunagar and conducted various events for students and also donated note books, lunch, snacks, groceries and sanitizers.
4.	05.07.2023 to 07.07.2023	Micro biology	Organised a Science Popularization programme on "Anemia" for the students of M.S.P. Nadar College of Education, Virudhunagar"
5.	28.12.2023	Micro biology	Organised a counselling programme on Anemia for the Girl Students of M.S.P. Nadar College of Education, Virudhunagar 28.12.2023
6.	22.09.2023	Botany & Micro biology	Organised Mega Seed Ball Fest 2.0 - an Initiative to <i>One Student One Seed Ball</i> by making and throwing seed balls in Virudhunagar District as part of World Ozone Day celebration
7.	23.08.2023	Physics	A Science Popularisation Programme was conducted by live telecasting the Soft landing of Chandrayaan-3 LVM3-M4 as part of Moon Mission of India for the to popularize the science education among non-science students of the college
8.	12.10.2023	Physics	Organised Science Popularization Program for the students of Thangammal Periyasamy Nadar Girl's Higher Secondary School, Virudhunagar. Lecture programme and visit to various science laboratories and Zoology museum were arranged.
9.	22-11-2023 to 27-11-2023	Physics	Organised 5 day Internship training programme on Renewable Energy sources and applications for the students of SFR College for women, Sivakasi
10.	15-05-2024 to 24-05-2024	Physics	Organised 10 day Internship training programme on Renewable Energy sources and applications for the students of Sri Kaliswari college, Sivakasi, Scott Christian college, Nagercoil and SFR College for women, Sivakasi
11.	15-09-2023 To 15-12-2023	Mathematics	Organised a Value Added Course on "Mathematics for Competitive Exams (V22MA1) for the UG and PG students of the college.

• **Invited Lectures organized**

Date	Department	Programme	Topic & Resource person(s)
22.01.2024	Botany	Guest Lecture	<i>Environment Needs You</i> Resource Person: Dr. S. Jeyakumar, Environmental Scientist, Tamil Nadu Pollution Control Board, Thoothukudi
20.03.2024	Botany	Guest Lecture	<i>Anti-Cancer Drugs</i> Resource Person: Dr. N. Raman, Associate Professor of Chemistry, VHNSN College
24.07.2023	Chemistry	Guest Lecture	<i>Polymers</i> Resource Person: Dr. Raja Shunmugam, Professor of Chemistry, Polymer Research Center, IISER - Kolkata, Mohanpur Campus, Mohanpur, Nadia, West Bengal.
13.09.2023	Chemistry	Guest Lecture	<i>Electron Spin Resonance Spectroscopy</i> Resource Person: Dr. S. Indira, Associate Professor, Department of Chemistry, National College, Trichy
14.12.2023 & 15.12.2023	Chemistry	Guest Lecture	<i>Polymers - 2023</i> Resource Person: Dr. Rajashunmugam, M.Sc., Ph.D, Professor of Chemistry, Polymer Research Center Indian Institute of Science Education and Research (IISER)-Kolkata Mohanpur Campus, Mohanpur, Nadia, West Bengal
12.02.2024	Chemistry	Guest Lecture	<i>A Journey from Chemist to Chemical Engineer</i> Resource Person: Dr. P. Senthivel, Application Specialist, IKA India Pvt. Ltd., Bangalore
15.09.2023	Computer Science	Guest Lecture	<i>Current IT Career Trends</i> Resource Person: Mr. R. Sathish Kumar, Vagai Techknowledge, Virudhunagar
05.01.2024	Computer Science	Guest Lecture	<i>Introduction to Mechine Learning and Applications</i> Resource Person: Dr. R. Balasubramanian, Manonmaniam Sundaranar University, Tirunelveli
09.02.2024	Computer Science	Guest Lectures	<i>Soft Skills</i> Resource Persons: 1. Mr. R. Muralidharan, Director, Connect Training Solutions Pvt. Ltd., Tirunelveli 2. Mr. P. Vijayavel, Managing Director, DCE Technologies, Virudhunagar
29.12.2023	Mathematics	Guest Lecture	<i>Real Life Applications of Mathematics</i> Resource Person: Dr. D.N. Suresh, Secretary, Alumni Association, V.H.N. Senthikumara Nadar College, Virudhunagar
09.01.2024	Mathematics	Employment Opportunity Programme	<i>Employment Opportunity Programme</i> Resource Person: Mrs.S. Malarvizhi Sarpparajan, Virudhunagar

29.02.2024	Mathematics	Guest Lecture	Preamble on AI Resource Person: Mrs. B. Abirami, Assistant Professor of Commerce (CA), V.H.N. Senthikumara Nadar College, Virudhunagar
09.09.2023	Microbiology	Guest Lecture	Fighting Cancer Cells Using Transition Metal Complexes as Anti-Cancer Agents Resource Person: Dr. N. Raman, Associate Professor in Chemistry, V.H.N. Senthikumara Nadar College, Virudhunagar
04.01.2024	Microbiology	Guest Lecture	Top 10 Job Seeking Industries for Microbiologists Resource Person: Dr. M. Kannan, Assistant Professor of Zoology, V.H.N. Senthikumara Nadar College, Virudhunagar
16.02.2024	Microbiology	Guest Lecture	Pros and Cons of Food Additives Resource Person: Mrs. P. Ramalakshmi, Department of Biochemistry, V. V. Vanniaperumal College for Women, Virudhunagar
15.12.2023	Physics	Guest Lecture	Research issues in solar PV system Resource Person: Dr. D.Prince Winston, Dean - Research, Professor, Department of EEE, Kamaraj College of Engineering and Technology, Virudhunagar
28-02-2024	Physics	National Science Day Guest Lecture	A Glimpse into Astronomical Instrumentation Resource Person: Dr. Mohamed Ismail, Assistant Professor, Department of Computer Applications, V.H.N. Senthikumara Nadar College, Virudhunagar
13.02.2024	Zoology	Guest Lecture	Animal Husbandry and Entrepreneurial Opportunities Resource Person: Dr. V. Palanichamy, Professor and Head, Veterinary University Training and Research Centre, Rajapalayam


Coordinator

Dr. N. PRITHIVIKUMARAN
Head & Associate Professor
Department of Physics
V.H.N.S.N. College (Autonomous)
VIRUDHUNAGAR - 626 001.




Head of Institution

Dr. A. SARATHI
PRINCIPAL
VIRUDHUNAGAR HINDU NADARS'
SENTHIKUMARA NADAR COLLEGE
(AUTONOMOUS)
VIRUDHUNAGAR

Annexure - A
List of Projects

B.Sc PHYSICS
Course Code -U3PH6PR

S. No	Student Name	Register No	Project Title	Project Guide
1	Alagu Bharathi A	21AUPHOO1	Construction of RADAR System Using Ardiuno and Ultrasonic Sensor	Dr. M. Anitha
2	Mohaneswari M	21AUPHOO5		
3	Murugeswari V	21AUPHOO6		
4	Beela J	21AUPHOO2	RFID Door Lock System	Dr. M. Anitha
5	Jeyabharathi A	21AUPHOO3		
6	Kaviya M	21AUPHOO4		
7	Sathiya Jothi C	21AUPHOO7	Fabrication Of Women Safety Device with GPS Tracking System Using Arduino UNO	Dr. S. Prakash
8	Subashini T	21AUPHOO8		
9	Sobana N	21AUPHO21		
10	Suganya M	21AUPHOO9	Fire Detector Using Flame Sensor and Arduino	Dr. B. Lawrence
11	Mahalakshmi D	21AUPHO20		
12	Veeralakshmi N	21AUPHO22		
13	Balaganesan P	21AUPHO10	Construction of Security Alarm Using Arduino and Ultrasonic Sensor	Dr. M. Anitha
14	Sakthivel D	21AUPHO18		
15	Ganesh Kumar R	21AUPHO11	Auto Water Pump Switcher	Dr. B. Lawrence
16	Logeshkumar S	21AUPHO27		
17	Guna Sundara Balaji S	21AUPHO12	Primary Studeis of H ₂ S Removal from Raw Biogas using NaOH Solution	Dr. B. Lawrence
18	Mugeshpandi P	21AUPHO24		
19	Hariharasudhan M	21AUPHO13	Data Transmission Through Light Using Arduino UNO	Dr. S. Prakash
20	Ram Kumar A	21AUPHO17		
21	Palanikumar P	21AUPHO15	Construction And Studies on Clap Switch Using Discrete	Dr. S. Prakash
22	Praveen Pragadesh K	21AUPHO16		

B.Sc MICRO BIOLOGY
Course code – U1MB6PR

S. No	Student Name	Project Title	Project Guide
1	DIVYAPRIYA M	Preparation of anti-bacterial herbal mouthwash against oral pathogen	Mrs. Muthulakshmi
2	HEMASHREE V		
3	AJRAB ANSARI A		
4	PREM KUMAR R		
5	SASIKUMAR P		
6	KAVIYA K	g-C3N4 nanoparticles: facile synthesis and its effective antimicrobial activity	Dr. P. Senthilkumar
7	LAKSHANYA S		
8	MAHALAKSHMI K		
9	MUTHAMMAL M		
10	RAGHURAM J	Comparitive study of Ayurvedic soap and synthetic soap against <i>Staphylococcus aureus</i> from wound infection	Dr. V. Siva
11	KIRUBA CELIN V		
12	MUTHUROOBINI S R		
13	PADMA PRIYA R		
14	BHARATH B		
15	SETHUPATHI S	Biocontrol potential of <i>Bacillus thuringiensis</i> isolated from soil samples against larvae of mosquito	Dr. K. Susithra
16	MAHALAKSHMI D		
17	NIVETHA G		
18	MOHAMED GIYATH S		
19	SANTHOSH V	Anti-fungal activity of various plant extracts against dandruff causing <i>Malassezia</i> sp.	Dr. S. Palpperumal
20	SANJAI E		
21	MANJULA A		
22	GENGATHARAN P		
23	NAGARAJAN T		
24	ALAGAR RAJA N	Screening and antibiotic resistance bacteria from different soil samples	Dr.C. Edward Raja
25	BHARATHI E		
26	SAVATHIYA I		
27	MOHAMED SABIK M		
28	NAVAKRISHNAN A		
29	SAI ROHAN K		
30	MAREESWARI G	Anti-bactertial activity potential of leaf extracts of <i>Acalypha indica</i> against wound infected pathogens	Mrs. Renuga Devi
31	LOGESH I		
32	SELVAKUMAR G		
33	VARNAN M G		
34	SANJAY G		

B.Sc BOTANY

S. No	Student Name	Project Title	Project Guide
1	Dena Rani S	Preparation of vermicompost from organic waste	Dr. M.Suresh
3	Kanmani P		
4	Navneetha R		
5	Rajeswari N		
6	Pavithra Pandilakshmi S	Analysis of different enzymes by using in silico tools	Dr. N.Nirmal kumar
7	Amirtha S		
8	Ramalakshmi V		
9	Ajithkumar K	Effect of imbibition on germination of seeds & pulses	Dr. N.Nirmal kumar
10	Akash R		
11	Anand B		
12	Arul Selvan M	Studies on the oyster mushroom cultivation	Dr.P.Periyakaruppiah
13	Aswin Kumar D		
14	Ayyanar S		
15	Bagavathikannan A		
16	Guna M		
17	Jeyasurya S	Micro green cultivation through hydroponics using green gram peas (<i>Pisum sativum</i>)	Dr. Bagyalakshmi
18	Karuppasamy Pandiyan M	Micro green cultivation through hydroponics using green gram seed (<i>Vigna radiata</i>)	
19	Ramamoorthy M	Micro green cultivation through hydroponics using cowpea (<i>Vigna unguiculata</i>)	
20	Shanmugapandi M	Micro green cultivation through hydroponics using bengal gram	
21	Rajarajeshwari R.P	To evaluate growth factors of fenugreek in hydroponics system	Dr. Bagyalakshmi
22	Vaira Moorthy S	Macropropagation of <i>Justicia adhatoda</i> L.	Dr.P.Mahalingam
23	Karthigai Selvam V		
24	Vairakumar P		
25	Kaliraj K		
26	Vasu M		

B.Sc CHEMISTRY

S. No	Student Name	Project Title	Project Guide
1	JEYAPRIYA A	A Comparative Study on Photocatalytic Degradation of Eosin Yellow Dye Using Nanoparticles / Nanocomposites A Review	Dr.S.Dhanalakshmi
2	PANDISELVI V		
3	PRAVEENKUMAR N		
4	KAVITHA K	Schiff bases incorporating isoniazid and their antitubercular properties: A brief review	Dr.N.Raman
5	YOGA NANDHINI J		
6	ANANDHAKALIRAJ K		
7	KAVITHA S	Determination of Oxalate Ion and Citric Acid Contents in Tropical Fruits	Dr.P.Sami
8	GOPI S		
9	LEELA SRI R		
10	NANDHINI S B	Synthesis, Characterization and Antimicrobial Study of ZnO and ZnO/C Nanomaterials	Dr.A.Vijayakumar
11	NATHIYA R		
12	MOHAMED AABITH T		
13	RAJA MAHA DEVI S	Phytochemical Analysis of Caesalpinia Coriaria	Dr.E.Jayabharathi
14	MAREESWARAN R		
15	PRIYADHARSHINI M		
16	REVATHI M	Review on synthesis of urea and thiourea containing mannich base ligands	Dr.K.Murali
17	SESUMARIAMMAL S		
18	SRIRAM R		
19	SARANYA P	Recent Trends and case study on Computer aided drug design and it's applications	Dr.C.Karunakaran
20	MOHAMED DHARIK H		
21	RENIL CHRISTOBAR A		
22	ANANTH S	Design and Characterization and admet studies of naringenin based metal complexes	Dr.K.Arunsunai Kumar
23	DHEJESWARA V		
24	GURU PRASATH G		
25	BALASUBRAMANIAN D	Photocatalytic Degradation of Methyl Orange Dye by Nano Materials A critical Review	Dr.S.Karuthapandian
26	BARATH KUMAR M	Applications of Schiff bases and their transition metal complexes	Dr.R.Paulpandian
27	VINOTHKUMAR K		
28	VISWESHWARAN		
29	MATHAN KUMAR R	Health Aspects of Food Adulteration A Sample Review	Dr.R.Vahini
30	SHABA AARNIKA V M		
31	KESAVAN M		
32	SELVAKUMAR M	Green Synthesis of Silver Nanoparticles A Critical Review	Dr.S.Karuthapandian
33	VISHNU PANDIYAN M	Nanomaterials Used in the field of Supercapacitor An Overview	Dr.S.Karuthapandian
34	VIJAYALAKSHMI A	Quality Analysis Of Milk And Milk Products	Dr.V.Muthuraj
35	HARIBALAN S	A Study Of Quality Control And Analysis Of Vegetable Oils Under Agmark	Dr.V.Muthuraj
36	KALIMARUTHU M	Cobalt Complexes As Antiviral And Antibacterial Agent	Dr.V.Muthuraj
37	AAKASHKUMAR R		

B.Sc MATHEMATICS

S. No	Student Name	Project title	Project Guide
1	CHANDANI J	Image & signal processing techniques	Dr.C.Ganesan
2	JOTHILINGAM M		
3	YOGESWARAN M		
4	CHITHRADEVI T	Fibonacci numbers	Dr.M.Annalakshmi
5	PANDISELVI M		
6	KARUPPASAMY B		
7	SANTHOSH BABU T	Cryptography using application of matrix	Dr.M.Bhuvaneshwari
8	SAMUVEL S		
9	CHITRADEVI M		
10	ROSHNI J	Advanced topics in optimization techniques	Dr.M.Bhuvaneshwari
11	MAYAKRISHNAN M		
12	PRAVEEN C		
13	DHANALAKSHMI M	Prime labelling in the context of duplication of graph elements	Dr.T.Nithya
14	NAGAJOTHI J		
15	MUGESH KANNAN K		
16	VEERASELVAKUMAR V	Computer geometry	Dr.N.Sugandha Meena
17	DHIVYA DEVI R		
18	SARANYA V		
19	MUTHUMANIKANDAN R	Statistical methods using microsoft office excel	Dr.N.Sugandha Meena
20	THANGA ANANDHA SELVAM G		
21	DIVYA M		
22	SEEVA SAHITHA M	Social network graph	G.Petchiammal
23	KEERTHANA P		
24	YOGESWARI M		
25	GAYATHIRI K	Applications of game theory	Dr.A.Rizwana
26	KRISHNAPRIYA N		
27	SHALINI M		
28	KOWSALYA M	Cryptography with matrices	Dr.A.Rizwana
29	HEMAPRIYA K		
30	ABINESHKUMAR B		
31	MALARVIZHI M	Mechanical vibrations	Dr. P.Mahalakshmi
32	SHANTHOSHINI S		
33	NAGAJOTHI J		
34	JENIFER M	Fussy graphs	Dr. P.Mahalakshmi
35	MARIA ANCY M		
36	SWATHI K		
37	ARIHARASUTHAN R	Prime labelling in the context of duplication of graph elements	Dr.B.Komala Durga
38	SENTHIL MURUGAN K		
39	SATHISHKUMAR A		
40	SIVAN RAJ S	Some applications of matrix in graph theory, cryptography, computer science	Dr.B.Komala Durga
41	MENAKA K		
42	ARUN ESHWARAN P		
43	VIGNESH RAJAA G	Error detection and correction using hamming distance and group codes in coding theory	Dr.R.Ezhil Mary
		Practical numerical methods using python	Dr.R.Ezhil Mary
		Applications of queuing theory	Dr.R.Ezhil Mary
		Fourier series and its application	Dr.R.Ezhil Mary
		Numerical methods in python	Dr.R.Ezhil Mary

BSc ZOOLOGY

S. No	Student Name	Project Title	Project Guide
1	AATHILAKSHMI P	Analysis of physico - chemical parameters of pond water in Virudhunagar	Dr.N.Nagarjan
2	KODEESWARARAM P		
3	ABHINAYA M	Comparative analysis of Vermicompost quality: Sericulture waste Vs. Household waste	Dr.T.Annalakshmi
4	VIJI V		
5	AKILA M	cellulose utilization activities of goat gut microorganism	Dr.M.Vigneeswaran
6	RAHUMATH NISHA S		
7	ALAGULAKSHMI A	<i>A study on the effect of caffeine and Arjuna on the physiological activity of Tilapia</i>	G.Rameshkumar
8	MANI BHARATHI V		
9	DEEPIKA SRI S	Analysis of Mendelian and Non-Mendelian traits among V.H.N.S.N College students	Dr.P.Viji
10	APPANASAMY A		
11	GOWRI T	A study on morphometric and meristic characters of (Red pomfret) <i>Pampus argentenus</i>	Dr.N.Alagumanikumar
12	PRIYANKA V		
13	SIVAPRIYA S	The studies on association between Insects and Plant Interactions During December 2023 to March 2024	Dr. M.Kannan
14	ABROSH FARSHANA R		
15	SUBBULAKSHMI M	Larvicidal and Pupicidal potential of <i>Ficus religiosa</i> and <i>Prosopis juliflora</i> leaf extracts against the dengue vector, <i>Aedes aegypti</i>	Dr.A.Noorthen
16	RAMALAKSHMI G		

B.Sc COMPUTER SCIENCE

S.No	NAME	PROJECT
1	DEEPA LAKSHMI S	IOT Enabled Sound Detection System
2	MALLIKA T	
3	DIVYALAKSHMI K	Optimizing The Chained Matrix Multiplication Order
4	KALAIYARASI N	Backtracking in Solving Sum of Subset
5	KAVIYA M	Analysis of Efficiency of Quick Sort and Counting Sort Algorithms
6	LAVANIYA C	Data Search by Binary Search
7	NIVETHA R	Investigating the Efficiency of Bucket Sort Pigeonhole Sort Algorithms
8	PRADHIYUKSHA M	IOT Enabled Fire Detection System
9	PRIYADHARSHINI M	
10	RAJALAKSHMI J	K-Nearest Algorithm for Classifying the IRIS Dataset
11	SIVASREE R	An Analysis of Efficiency of Radix Sort and Shell Sort Algorithms
12	YAZHINI T	Graphical Representation of Bubble Sort and Selection Sort
13	ALAGESHWARAN K	Interactive Tic-Tac-Toe Game
14	ANTHONY RAJ J	Supermarket Management System
15	ANTONY RAJ M	Generate Minimum Spanning Tree Using Prim's Algorithm in Greedy Method
16	ARUN G	Electricity Bill Sertvice Management
17	BALAMURUGAN S	An Implementation of Singly Linked List
18	BHAGATH SINGH B	Sorting Two Different Algorithms
19	BHUVANESHWARAN N	Job Sheduling
20	BHUVANESHWARAN P	IOT Enabled Light Detection System
21	GOPAL G R V	
22	HARIHARASUDHAN T	Shortest Path to Every Pair of Vertices
23	INBARAJ K	Bank Management System
24	JEYAKUMAR G	A Comprehensive Overview of Eight Essential Operation in Doubly Linked List
25	KARTHICK K	N-Queen Problem
26	KAVIN KUMAR P	Analyzing Two Different Sorting Algorithms
27	KESAVAN K	Online Bus Ticket Booking System
28	YOGESHWARAN K	
29	MADHAN KUMAR E	Generating Optimal Traveling Salesman Path Using Backtracking
30	MANIKANDAN A	Bus Reservation System
31	MANIKANDAN C	IOT Enabled Touch Detection System
32	SABARIGANESAN M	
33	MASANAM M	Analyzing Six Different Searching Algorithm
34	MITHUN RISHIKESH K	Automated Vegetables and Fruits Stall Bill Using Stack Data Structure
35	MUTHU LAWRENCE M	Stack Data Structure Based Hotel Management System
36	PRABHU R	Single Source Shortest Path to Every Other City
37	SANTHOSH M P	Circular Linked List
38	THENKARAI MAHARAJA S	Optimal Binary Search Tree Using Dynamic Programming
39	VIJAYA SAMRAT M	Hotel Management

Audited Utilisation Certificate

UTILISATION CERTIFICATE


For the financial year ending 31st March 2024

(From 01-04-2023 to 31-03-2024)

1	Title of the project	:	Strengthening of Life Science and Biotechnology Education and Training at undergraduate level under Star College Scheme.
2	Name of the Institution	:	Virudhunagar Hindu Nadars' Senthikumara Nadar College (Autonomous), Virudhunagar
3	Principal Investigator / Coordinator	:	Dr. N. Prithivikumar, M.Sc.,M.Phil., Ph.D.,PBDCSA., Associate Professor & HOD in Physics
4	Sanction order No. & date of sanctioning the project	:	HRD-11011/165/2020-HRD-DBT Dated 24-08-2020
5	Amount brought forward from the previous financial year quoting DBT letter No. & date in which the authority to carry forward the said amount was given	:	
	i) Letter No.	:	OM No. DST/PRAO/TSA/01/2022 dt.23.09.2022
	ii) Amount	:	₹ 15951/-
	iii) Date	:	14.02.2023
6	Amount received / assigned from DBT during the financial year (also give No. and date of sanction order showing the amount released by DBT)	:	₹ 17,84,049/- HRD-11011/165/2020-HRD-DBT Dt.26.06.2023
7	Details of other receipts / interest earned, if any, on the DBT grants	:	Nil
8	Total amount that was available for expenditure during the financial year (Sl. nos. 5, 6 and 7)	:	₹.18,00,000/-
9	Actual expenditure (excluding commitments) incurred during the financial year (Statement of expenditure in this regard is enclosed herewith)	:	₹.18,00,000/-


Project Co-ordinator

Dr. N. PRITHIVIKUMARAN
Head & Associate Professor
Department of Physics
V.H.N.S.N. College (Autonomous)
VIRUDHUNAGAR - 626 001.


Head of the Institution
Dr. A. SARATHI
PRINCIPAL
VIRUDHUNAGAR HINDU NADARS'
SENTHIKUMARA NADAR COLLEGE
(AUTONOMOUS)
VIRUDHUNAGAR




Finance Officer

D. DHAYABARAN, B.Com., FCA., DISA.,
CHARTERED ACCOUNTANT
30-C, Samiannan Pillayar Kovil street 1st floor,
Virudhunagar - 626 001

10	Unspent balance refunded, if any (a copy of BharatKosh receipt in this regard is enclosed herewith)	:	Nil
11	Balance amount available at the end of the financial year 2023-2024	:	Nil
12	Amount allowed to be carried forward to the next financial year vide letter No. & date	:	Nil

- i) Certified that the amount of ₹.18,00,000/- mentioned against Col. 9 has been utilized on the Project for the purpose for which it was sanctioned and an amount of ₹. Nil has been surrendered to Government (Vide BharatKosh Receipt No. Nil)
- ii) Certified that I have satisfied myself that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled / are being fulfilled and that I have exercised the following checks to see that the money was actually utilised for the purpose for which it was sanctioned

Kinds of checks exercised:

- 1 Statement of Expenditure


Project Co-ordinator

Dr. N. PRITHIVIKUMARAN
Head & Associate Professor
Department of Physics
V.H.N.S.N. College (Autonomous)
VIRUDHUNAGAR - 626 001.




Finance Officer



Head of the Institution
Dr. A. SARATHI
PRINCIPAL
VIRUDHUNAGAR HINDU NADARS'
PRITHIVIKUMARA NADAR COLLEGE
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VIRUDHUNAGAR

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30 - C, Samiannan Pillayar Kovil street 1st floor,
Virudhunagar - 626 001

Statement of Expenditure

VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE (AUTONOMOUS), VIRUDHUNAGAR

Statement of Expenditure (SoE) (Referred to in para 9 of the Utilisation Certificate)

Showing grants received from the Department of Biotechnology and the Expenditure Incurred in **Financial year 2023-2024** during the period from 01-04-2023 to 31-03-2024

S.No	Budgetary Object Heads	Unspent balance Carried forward from previous financial year ₹.	Grants Received / assigned from DBT during the financial year ₹.	Other receipts / interest earned on the DBT grants ₹.	Total Grant Available ₹. (3+4+5)	Actual Expenditure (excluding commitments) incurred during the financial year ₹.	Balance Grant Available (6-7) ₹.	Remarks (if any)
1	2	3	4	5	6	7	8	9
A	Grants for creation of capital Assets	Nil	Nil	Nil	Nil	Nil	Nil	Nil
B	Grants-in-aid General							
	i. Recurring	--	15,00,000	--	15,00,000	15,00,000	--	--
	ii. Travel	15,951	1,84,049	--	2,00,000	2,00,000	--	--
	iii. Contingency	--	1,00,000	--	1,00,000	1,00,000	--	--
C	Details of other receipts / interest earned on the DBT grants (if any)	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Grand Total	15,951	17,84,049	Nil	18,00,000	18,00,000	Nil	Nil

- The signatories hereby certify that the expenditure incurred from the released grant was utilized solely for the purpose of implementation of the project under consideration, and in compliance with the sanction order. We also certify that monthly emoluments of engaged human resource in this project have been disbursed in accordance with the duly notified norms / guidelines of the Government Department / Ministry / Autonomous Bodies. Detailed expenditure, if asked for, will be submitted for the purpose of Audit.
- It is also certified that the institute has not utilized more than the amount sanctioned under the "Overhead" component.


Project Co-ordinator

Dr. N. PRITHIVIKUMARAN
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Department of Physics
V.H.N.S.N. College (Autonomous)
VIRUDHUNAGAR - 626 001.




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