

Report for utilization of DST-FIST support

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3. Date and ref. No. of DST Sanction letter: IFD Dy. No. 2119 dated 14.08.2018 (S.No. 96)

4. Details of the Grants

<i>Budget Heads</i>	<i>Amount Sanctioned with Date</i>	<i>Amount Received with Date</i>
<i>a. Equipment</i>	62,00,000 (29.08.2018)	50,000,00 (13.09.2018)
<i>b. Infrastructure</i>	8,00,000 (29.08.2018)	50,000 (13.09.2018)
<i>c. Networking</i>	7,00,000 (29.08.2018)	7,00,000 (13.09.2018)
<i>d. Maintenance</i>	3,00,000 (29.08.2018)	Nil
<i>e. Total</i>	80,00,000 (29.08.2018)	57, 50,000 (13.09.2018)

5. Equipment ordered/purchased/installed:

See **Annexure I**

6. Details of Infrastructure developed:

See **Annexure I**

7. Details of Networking:

A common computer net working Lab is established in the Dept. of Mathematics. It includes 30 computers (10 through DST-FIST) support with internet connectivity. Another E-learning lab equipped with HPE ML350 Gen9 E5-2620v4 16GB SFF Server , online UPS, internet connectivity is being established. This lab will be beneficial mainly for the post graduate students and research scholars.

8. Utilization of the facilities created under FIST support:

a. For teaching:

The Minor instruments purchased under the DST FIST scheme are well utilized for the conduct of both UG and PG practical for the period of 2019-21. Furthermore, all these equipment were used by the UG and PG students to conduct their project works and dissertation works in partial fulfillment for the award of the degree by the University of Kerala.

See **Annexure 2**

b. For research:

Atomic absorption spectrophotometer is the major equipment purchased using the DST-FIST grant. Due to the continuous lockdown, there happened a delay in the supply and installation of this equipment.

All the science departments are approved research centers of University of Kerala. Active research work is going on in all these departments. In the last two years (2019-21) our 15 research scholars were awarded with Ph.D. Degree.

See **Annexure 3**

9. Details of full-length research publications (in peer-reviewed journals) during the period under report

See **Annexure 4**

10. Sponsored research projects in operation during the period under report (please provide name/s of PI/Co-PIs, title of the project, funding agency and total quantum of external support)

Name of Principal Investigator: Dr. B.T. Sulekha

Title of the Project: Critical Evaluation of Heavy Metal Pollution and *E. Coli* Concentration of Ashtamudi Lake, the Ramsar Site 1204 and Effective Conservation Management through Awareness Programmes

Period of Project: 2019-2020

Funding Agency: State Wetland Authority of Kerala (SWAK), Directorate of Environment and Climate Change.

Total Amount Sanctioned: 3,00,000/- (Rupees Three lakhs only)

11. Utilization of Equipment by External Users/ Start-ups/ MSMEs/ Manufacturing industries etc. **NIL**

12. SELF-ASSESSMENT OF THE IMPACT OF FIST SUPPORT: Please specify if any of the following activity emerged/ improved as a consequence of the FIST support:

a. New class-room experiments at B.Sc./ M.Sc. or other levels :

Experiments newly added in the department of Physics

1. Michelson Interferometer experiments
2. Study of photoelectric effect and determination of Planck's constant
3. Experiments using Laser: (a) Laser beam characteristics (b) Diffraction grating (c) Diffraction at different types of slits and apertures (d) refractive index of liquids (e) particle size determination
4. Young's modulus of different materials using strain gauge
5. Magnetic Susceptibility of a liquid using Quincke's method
6. Hall effect in a semiconductor
7. Refractive index of liquids and liquid mixtures using Abbe's refractometer
8. Simple experiments using GM counter
9. Cauchy's constants of liquids and liquid mixtures using hollow prism and spectrometer
10. Optical fibre characteristics – numerical aperture, attenuation and bandwidth of given specimen.
11. Study of Clipping and Clamping circuits
12. Differential amplifier circuits using transistors

b. Success of students at national level tests (various PG/Ph.D. entrance tests and tests for JRF etc)

Botany

In 2019-20 academic year, one student (Mr Jareem Thampan) passed JEE Main entrance exam & CSIR-JRF, and joined at IIT Roorkee. In 2020-21,

Zoology

In 2019-20 academic year three B.Sc. students were qualified MSc entrance examination of institutions outside Kerala.

Physics

PG Entrance Central University of Hyderabad (2019) - Ashiq H (2016-2019 BATCH BSc PHYSICS)

JAM 2020- IIT Madras- -Sarangi Suresh (2016-2019 BATCH BSc PHYSICS)

JRF (2020) - all India rank 27 Ashiq H (2016-2019 BATCH BSc PHYSICS)

Inspire Fellowship 2019- PhD at NIIST- Adithya S Thampi (BATCH PG 2017-2019)

GATE 2020 - Anoop Krishna (PG BATCH 2017-2019)

- c. Any new research project that emerged on the basis of the FIST support

Yes. One external aided project entitled “Critical Evaluation of Heavy Metal Pollution and *E. Coli* Concentration of Ashtamudi Lake, the Ramsar Site 1204 and Effective Conservation Management through Awareness Programmes” was sanctioned with an overall financial outlay of three lakhs from the funding agency State Wetland Authority of Kerala (SWAK), Directorate of Environment and Climate Change during the period 2019-20.

- d. Did the newly created facility lead to betterment of quality of research publications

Yes. During the year 2019-20, 45 research scholars worked in the science departments and they used all the major and minor equipment purchased in the DST-FIST project. The availability of the equipment enabled the research scholars to accomplish their research objectives within the time frame stipulated and seventeen students were able to submit the Ph.D. Thesis. Fifteen students were awarded with Ph.D. during the year 2019-21.

The research students are able to do their research as per their work plan and able to prepare good quality research papers and also to present their research findings in National and International seminars. Many of them are able to communicate and publish their works in reputed journals.

See Annexure 3

- e. Any training program/ workshop organized by the department during the period of report, specially those involving the newly created facility)

- Seven-days Online training on Biostatistics “From Basics to Data Analysis” Jointly organized by Health Club, IQAC and Research Cell of S.N. College, Kollam and Department of Aquatic Biology and Fisheries, University of Kerala.
- One-day Workshop on Floriculture and flower arrangement: Principles and practices; organized by Dept. of Botany & college PTA, SNC Kollam on 7.01.2020
- One-day workshop on Training programme on Mushroom cultivation organized by Dept of Botany & College PTA, SNC Kollam on 11.02.2020

13. Any activities pertaining to contributing to the Scientific Social Responsibility like undertaking

Training, Seminar, Workshops, Mentoring for researchers from less endowed places or women researchers or researchers belonging to weaker socio economic strata or any other appropriate relevant activity.

- International Conference on recent trends in theoretical and applied Physics (ICRTTAP)
- International Webinar on recent advances in Chemical sciences
- International Seminar on Current status and Challenges for Conservation and Sustainable use of Biodiversity (ISCCSB 2020) 22 to 24 Jan 2020 sponsored by Directorate of Environment and Climate Change, Govt. of Kerala India

A total of 45 socially and economically backward students are pursuing their PhD in the science departments during the evaluation period. Among them 27 are belonging to educationally backward community and five of them are belonging to Schedules castes. The research guides are providing special attention and mentoring efforts to bring them to into the forefront of the academic activities and research initiatives. They are sent for training and skill development courses and they are provided with opportunity to present their research works in National and international Seminars and conferences. The department of zoology, Physics and Chemistry organized three international seminars in 19-21 and thereby providing the research students to present their research works and also to interact with nationally and internationally acclaimed scientists and resource persons. The college also conducted workshops on Biostatistics for research students.

14. Is any problem faced in utilization of the grant/facilities?

Due to the Covid pandemic and the continuous lockdown there occurred a delay in the supply and installation of major equipment- Atomic absorption Spectrophotometer and the server for e-learning lab.

15. A report highlighting the research activities of the department during the period under review may also be provided.

The Teachers, PhD, UG and PG and students are utilizing the major and minor instruments procured under the DST FIST scheme for UG and PG projects and dissertation works and PhD programmes. Research in specific areas as mentioned in **Annexure 2 and 3** are being conducted in all the science departments. The results of the academic efforts are reported in the form of publications, paper presentations and PhD produced are in **Annexure 4**. The Instruments purchased and facilities established in departments and College by utilizing the FIST DST scheme imparted a significant momentum to the teaching learning and research activities in a positive way.

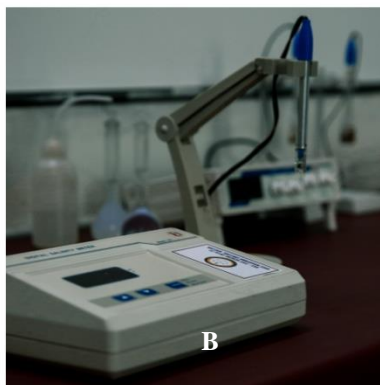
16. Status of link-up with I-STEM Portal towards uploading of the information on the existing equipment at the referred portal

Uploading the details regarding the equipments procured using DST – FST grant in the I-STEM portal is under process.

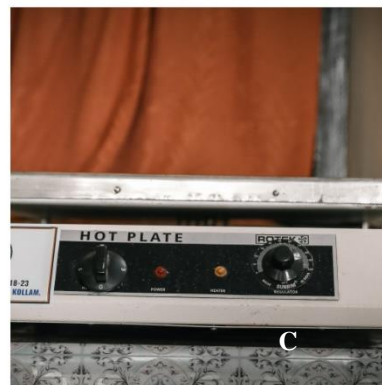
Some major Instruments Procured from DST FIST grant (2018)



A



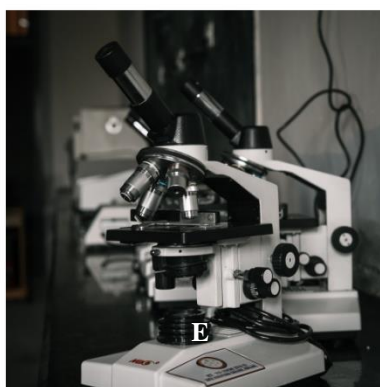
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C



D



E



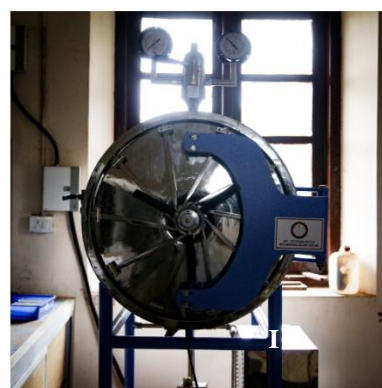
F



G



H



I

A. BOD Incubator ; B. Digital PH meter; C. Hotplate ; D. E-learning lab with network facility

E. Trinocular Compound Microscopes; F. Kjeldahl unit; G. Spectrophotometer; H. Atomic Absorption Spectrophotometer; I. Horizontal Autoclave

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Principal