



Mohanlal Sukhadia University

मोहनलाल सुखाड़िया विश्वविद्यालय, उदयपुर, 313001

NAAC-SSR (Assessment Year: 2017-22)

Criterion- 3
Research, Innovations and Extension

Key Indicator 3.4:
Research Publications and Awards

Metric 3.4.4:

Number of Research Papers Published per Teacher in the
Journals as Notified on UGC CARE list
during the last five years

Additional Information

3.4.5 Additional Information

DETAILS OF BROAD AREAS OF RESEARCH IN MLSU

A. Faculty of Science:

Biotechnology: Meta genomics for development of novel molecules, enzymes, processes, products, and applications, applied microbiology and molecular biology, Genome and computational biology, Plant Molecular Biology, Plant Virology, Green Nanotechnology, Bioinformatics, Aging biology, Alzheimer's disease and Parkinson's disease, Biotechnology for society: Food Adulteration.

Botany: Study of antimicrobial activity of plant extract against plant pathogens, Preparation of herbal formulation, Synthesis of Nanoparticles using plant extract, Antimicrobial activity of Nanoparticles, use cyanobacteria as a biofertilizer, Study of Bacteriocins and Exopolysaccharide producing microbes. Algal research: ecotoxicological studies of nanoparticles on algal physiology, phyconanosynthesis, biodiesel production from algae, production of high value compounds and molecular systematics of algal flora. Phytochemical investigation of medicinal plants in search of potent bioactive lead, characterization of molecules and possible pharmacological investigation. Optimization of production and development of scale-up technology for Plant Secondary Metabolites. Chemical diversity analysis and its correlation with genetic diversity and preparation of GIS maps. Study of seed biology and conservation techniques of medicinal plants. Plant-microbe interactions, Plant-growth promoting bacteria Toxicology & Plant-stress, Plant Tissue Culture and Molecular Biology, Plant Tissue Culture & Biotechnology, Molecular Stress Physiology, Metabolic, Engineering, Plant Molecular Biology.

Chemistry: Green Chemistry, Polymer Chemistry, Synthetic Organic Chemistry, Catalysis, Combinatorial Chemistry and Medicinal Chemistry, Natural Product, Physical Chemistry, isolation, characterization of plant secondary metabolites, synthesis of biologically active natural products/ synthetic molecules, Environmental Chemistry, novel transition metal complexes of hydroxytriazenes and medicinal and catalytic application, isocyanide insertion chemistry, metal catalyzed C-H bond activation, multicomponent reaction, synthesis of biologically relevant heterocycles, synthesis of

biological active molecules and dye sensitized solar cell, Synthetic Organic Chemistry, Molecular Structure determination using X- ray, Heterocyclic Chemistry.

Computer Science: Embedded System Design, Application Specific Instruction set Processor (ASIP) Design and Synthesis, Internet of Things (IoT), Image processing and E-Commerce, MIS, Social network analysis, Business analytics and e-Learning.

Mathematics and Statistics: Relativity and cosmology, Frames in Banach Spaces & Hilbert Spaces, Algebra, Discrete Mathematics, Astronomy, Bicomplex Functions Theory and Applications, Design of Experiments & Statistical Inference, Statistical Inference & Bayesian Inference.

Microbiology: Food quality and safety, Microbial biosensors, Aflatoxin M1, Goat milk.

Pharmacy: Pharmaceutics, Pharmacognosy, Medicinal Chemistry, and Pharmacology, Diabetes, Alzheimer's disease, Cancer, Development of nano formulation, and Novel Drug Delivery System and solubility enhancement of poorly water-soluble drugs.

Physics: Compton Scattering Spectroscopy and First-principles Calculations, Materials Science, Condensed Matter Physics, Band Structure Calculations, Computational Materials Science, Experimental Condensed Matter Physics: Magnetic and Spintronic Materials, Thin Film Technology, Solar Cells and Device Physics, Atomic and Molecular Physics, Electron Spectroscopy, Atomic and Molecular Collision Theory, Synthesis of low dimension materials, Organic/inorganic Nanocomposites and their characterizations and applications.

Zoology: Surveillance and insecticide resistance mapping against mosquitoes of Malaria, Dengue and Chikunguniya in Southern Rajasthan, Bacterial biopesticide as an urgent alternate tool for resistance management and vector control. Assessment of Pharmacognostic therapeutic properties of cow products (Gomutra (cow urine) and Panchagavya) as in Malaria and Dengue control, Vector population dynamics, ecology, behaviour and their control, Molecular ecology and conservation of endangered and threatened species of Southern Rajasthan, Assessment of therapeutic efficacy of liraglutide and GABA in diabetic mice, Explore the hidden faunal diversity of tropical forests of western India. Current research interest includes animal biogeography, population structure, animal ethology, population genetics and genome analysis. The work is urgent in need, since area is still unexplored and supporting number of large

mammal of globally conservation concern, Diversity, Taxonomy and Molecular Phylogeny of Chironomids (Diptera) in Southern Rajasthan, Insect taxonomy, Pesticide toxicity, Microbial and Herbal control on vector insecticide resistance and susceptibility studies, Cytogenetics, Avian Taxonomy and wild life research techniques, Phytoplankton and Zooplankton taxonomy, Microbiological techniques, Histochemistry and Histo-Enzymology and Immunocytochemistry, Waterbirds Ecology, Mammalian Biology and Animal Behavior.

B. Faculty of Earth Sciences:

Environmental Science: Environmental Laws, Pollution Ecology, Toxicology.

Geology: Geological field are Structural Geology, Petrology, Mineralogy, Economic Geology, Paleontology, Stratigraphy, Groundwater, Environmental Geology and Remote Sensing.

Geography: Demographic, welfare and development patterns and disparities; natural resource management in general with particular focus on water, soil, forest and land resources; process and impact of urbanization; trends and patterns of urban development; urban ecology; urban morphology; urban transport management; patterns and trends of agricultural productivity and development and impact of climate change; spatio-stratal disparities in socio-economic development with particular reference to the tribal dominated southern part of Rajasthan, industrial development and environmental issues with major focus on mining industry; wetland and wasteland development; and geo-ecological balance in the southern Aravalis.

C. Faculty of Commerce: Taxation Auditing, Management, Financial and Corporate Accounts, Cost Accounting, Company Law, Human Resources, Industrial relations, Marketing Management, Business Economics and Bank Law.

D. Faculty of Management Studies: Management, Economics, Human Resource, Marketing and Govt. Schemes.

E. Faculty of Humanities & Social Sciences: Indian Writing, Fiction and Poetry, Macro Economic Policy Issues, Development Issues of Indian Economy, Tribal Development, Labour Market Issues, Agricultural development, Higher Education, Modern and Ancient History, Regional History, Economics History, Gender History, Ancient Indian History, Culture History, Gandhian Thought, Heritage & Tourism, Human Rights,

Revolutionary Movement of Rajasthan, Rajasthan History, Tribal & Economic History, Mewar History, Medieval Rajasthan History, Modern Indian History, Jainology and Prakrit, Information Processing and Handling, Classical and Vocal Music, Social Philosophy, Western Philo Existentialism, Indian Government and Politics, Gender Studies, International Politics and Law, Industrial Psychology, skills, nature connectedness, social justice behavior, internet addiction, aggressive behavior parenting issues, elderly problems, dance movement therapy, Alziemers. Local governance, police reforms, law and order, welfare schemes and policy inputs, tribal development, urban and rural development, Anthropology, Sociology of Health Theory, Demography, Sanskrit literature, literary criticisms, epic & puranic studies, manuscriptlogy ancient Indian knowledge systems, Indian art, culture and traditions, different schools, contemporary, modern art movements, relevancy of folk and tribal arts, different crafts, public art, environmental and installations art and artists.

F. Faculty of Law: International Law and Criminal Law.

Major Research Programmes

1. Ph.D. Degree/ doctoral program.
2. M.Phil. Degree
3. Research projects funded by the State, Central and International agencies.
4. Fellowship awarded by the State, Central and International agencies.
5. Internships awarded by the State, Central and International agencies.

DESCRIPTION OF RESEARCH AND OTHER INFRASTRUCTURE FACILITIES DEVELOPED BY THE UNIVERSITY

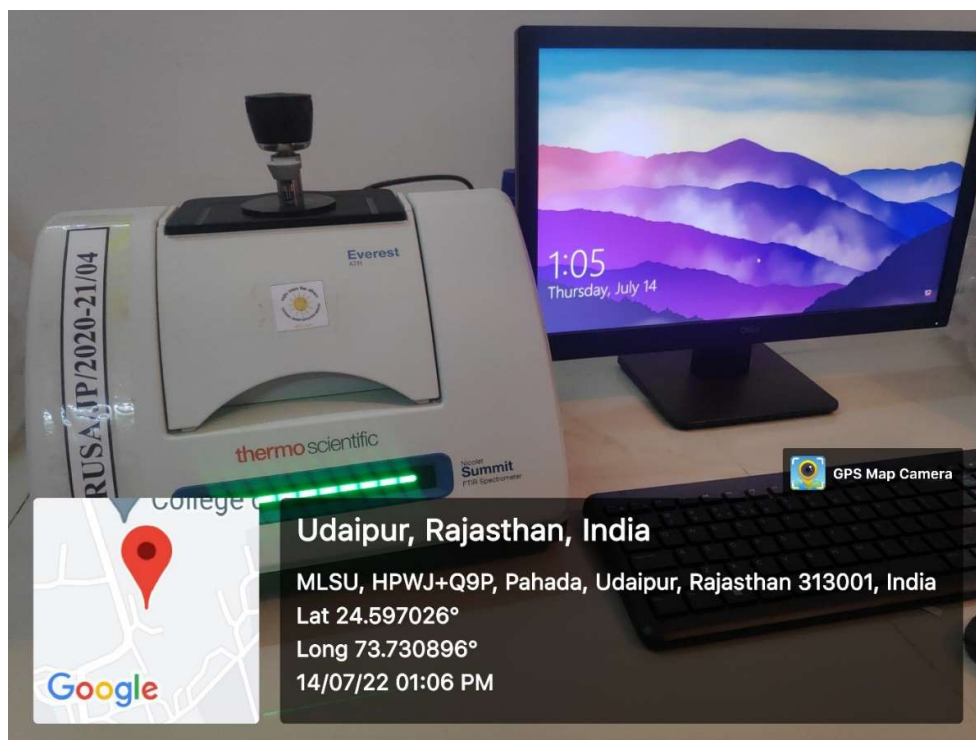
1. **Broad Band Seismic Station Udaipur:** Sponsored by the Ministry of Earth Sciences, a broadband seismic station has been established at the department of Geology in the year 2017 along with three substations at Jaisalmer, Kota and Bikaner. This facility serves the purpose of study of internal movements of Earth and determination of velocity and direction of movements of plates.
2. **Central Instrumentation Lab 1_Botany:** Established in the year 2015 at the department of Botany, the central instrumentation lab contains various instruments like HPLC, Bioreactor, Atomic Absorption Spectrophotometer (AAS), Lyophilizer, Rotary vacuum evaporator, Cooling Centrifuge, Phase contrastmicroscope, Fluorescent

microscope, polymerize chain reaction (PCR) etc. to facilitate the research and development in the area of botany and biotechnology.

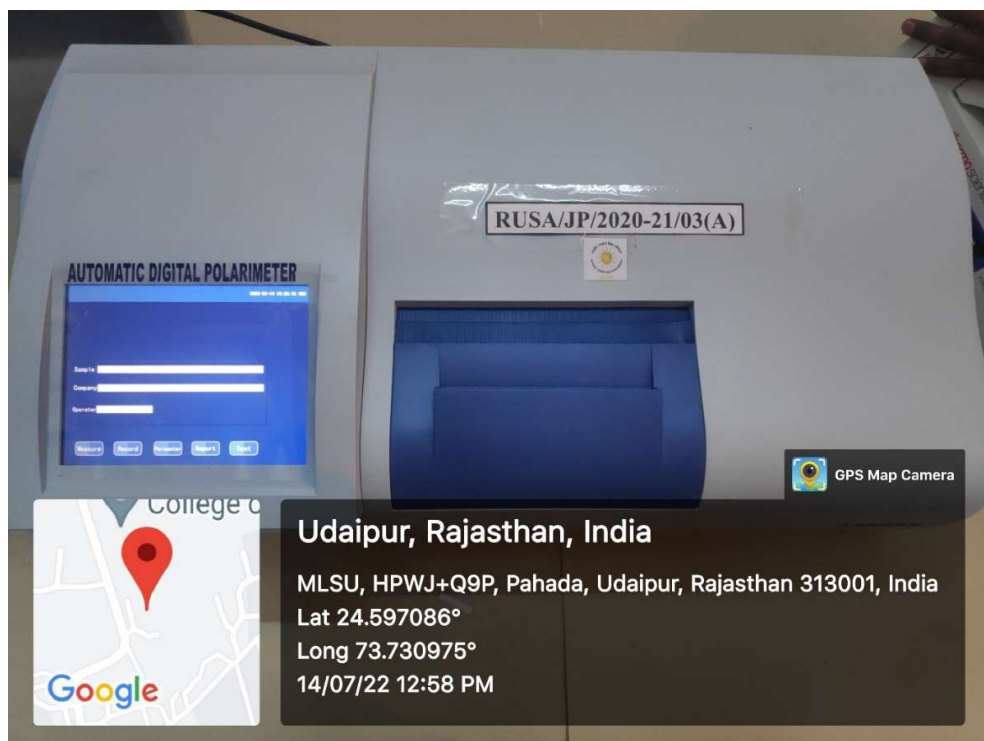
3. **Central Instrumentation Lab_Pharmacy:** Established in the year 2012, the central instrumentation at the Department of Pharmaceutical sciences has various instruments for advanced research in the field of pharmaceutical sciences. The laboratory is facilitated with High performance liquid chromatography (HPLC), UV-Visible Spectrophotometer, Ostwald's Viscometer, Polarimeter, 6 basket dissolution test apparatus, Rotary vacuum evaporator, and other sophisticated instruments to serve the purpose of Research and Development.
4. **Instrumentation facilities- Physics:** The department of Physics is enriched the various high efficiency sophisticated instruments like X-Ray Powder Diffractometer, High energy mixer mill, Vibrating Sample Magnetometer (VSM), Mössbauer Spectrometer, Table top model basic AFM, SPM:AFM, ac-Susceptometer, etc. to excel the research in the area of Physics and related fields.
5. **Central Instrumentation Lab 2 (CIL -2) supported by DST-FIST:** Established in the year 2017 at the department of Zoology, The instrument lab contains High performance liquid chromatography (HPLC), UV-Visible Spectrophotometer, Thermocycler, Stereoscopic microscope, Refrigerated Centrifuge, Fluorescent Microscope, BOD Incubator etc. to support good quality research in the basic and applied sciences.
6. **E-Library (Law):** Established in the year 2019, under an MOU between All India Reporter (AIR) and Mohanlal Sukhadia University, the E-Library at the Faculty of Law is the first to be opened at any of the state Universities. The library provides free access to thousands of Reference books and case studies. Students can judgments from past 50 years in just a single click.
7. **Drug Museum at Department of Pharmaceutical sciences:** Established in the year 1994 and upgraded in the year 2018, the Department has well organized and beautiful drug museum at the entrance of the premises. The museum contains various drugs classified broadly as synthetic and crude drugs; further under these categories various dosage forms viz. tablets, capsules, injectables, syrups, ointments powders etc are placed to help understand students as well as visitors of the department about these dosage forms.

- 8. Rock Museum _Geology:** The RODE Museum, established in the year: 1956 after the name of famous geologist K. P. Rode at the Department of Geology displays minerals and fossils from all over the country. Various crystallographic models along with semi precious and precious stones and building materials like marble and granite are also displayed here.
- 9. Museum of fossil impression and botanical models:** Established in the year 2013 under Govt. funded project, the Museum of fossil impression and botanical models at the Department of Botany contains the specimens, photographs of fossil impressions and models of plants and their sections according to anatomical and morphological classification of different plant species from lower to higher.
- 10. Museum named 'Virasat' :** Established in the year 2015 at the department of Geography with the purpose of exhibiting traditional instruments, models of geographical features, various types of rocks, soils etc.
- 11. Departmental Museum_Zoology:** Established in the year 1965 the Museum at the Department of Zoology contains animal specimens and models on the basis of taxonomic description of fauna, zoogeography, variations, comparative morphology and anatomy, and evolution, that is, historical development. Consultations on zoological problems of hunting, agriculture, forestry, and medical zoology are conducted.
- 12. Central Computer Lab:** Established in the year 2016 at the department of Zoology, there is a central computer lab for Staff and student supported by DST- FIST and RUSA, and at the department of Geography having a network of 20 computer systems with floating licenses of GIS and statistical softwares, scanning & printing facility.
- 13. Media laboratory/ Culture lab:** Established in the year 2014 at the department of zoology, the media/ culture lab provides facility to prepare Culture medium or growth medium to support the growth of microorganisms, such as bacteria or yeast and testing the effect of various experimental agents on their growth.

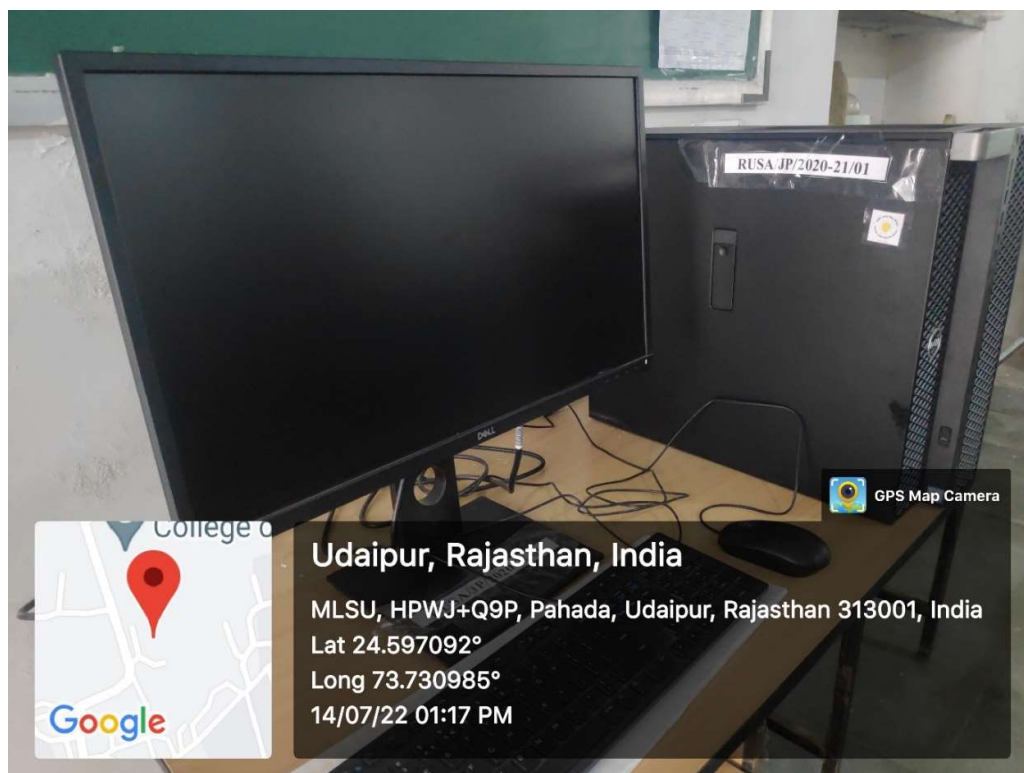
MAJOR RESEARCH EQUIPMENTS AT MLSU



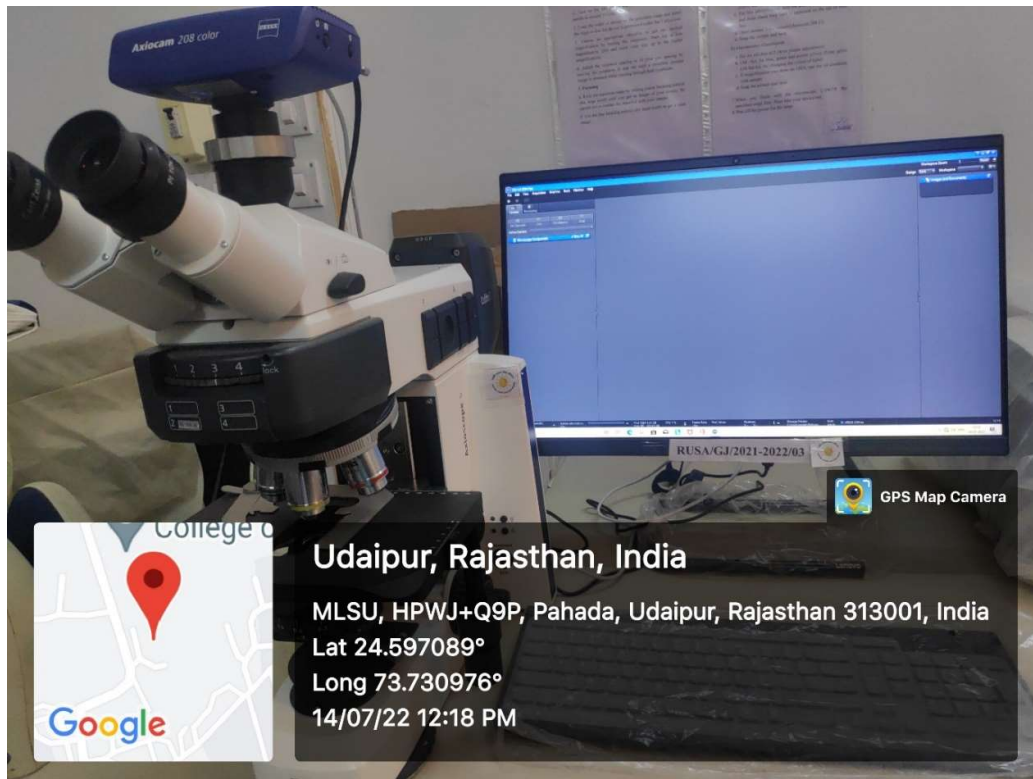
FT-IR Spectrophotometer (Model: Nicolet Summit; Make: Thermofisher Scientific)



Automatic Digital Polarimeter (Model: ADP 90; Make: Labman)



High End computer workstation for Computer Aided Drug Design Studies with printer (Make: Dell)



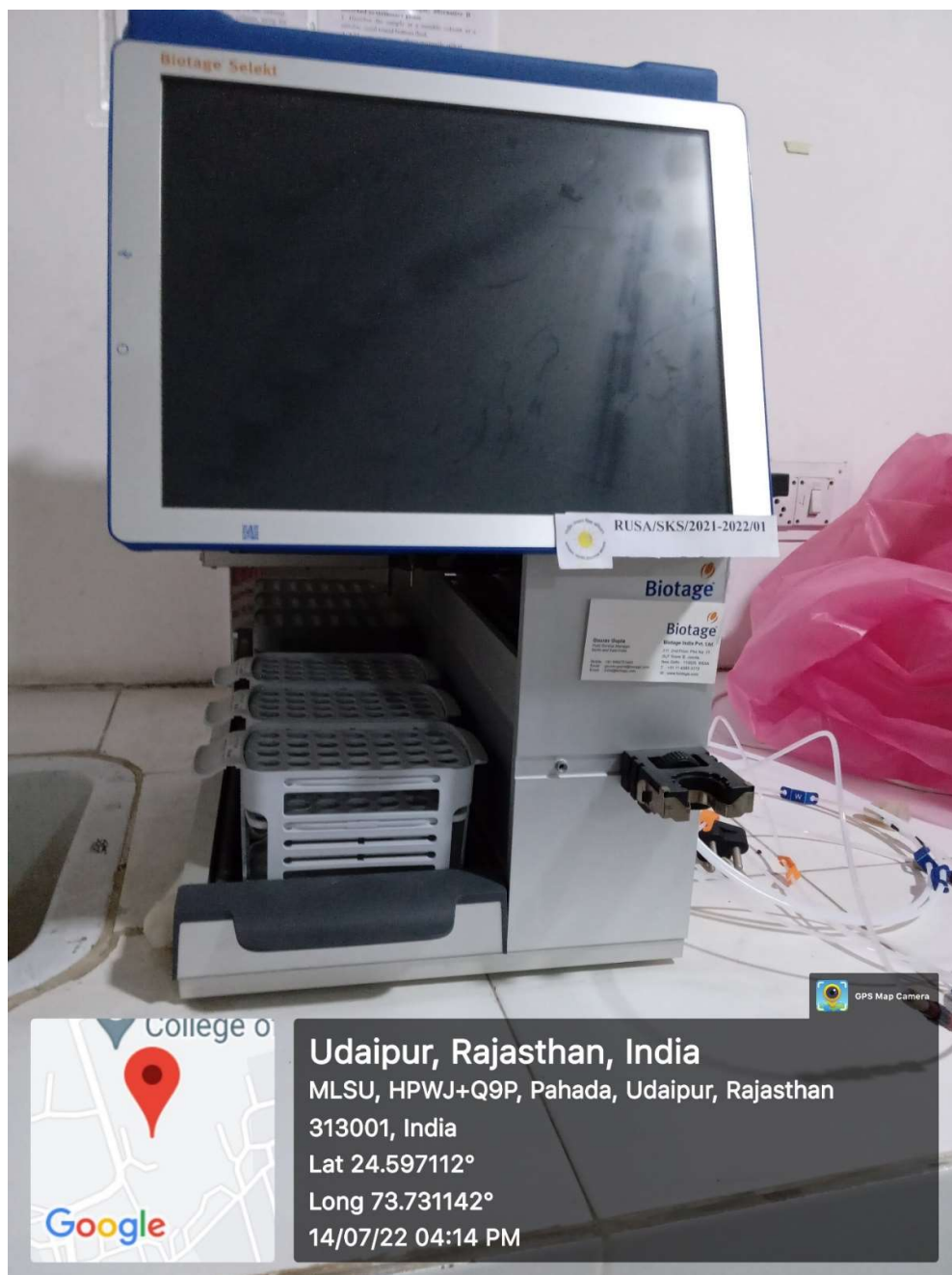
Fluorescent Microscope (Axioscope 5, Carl Zeiss, Germany)



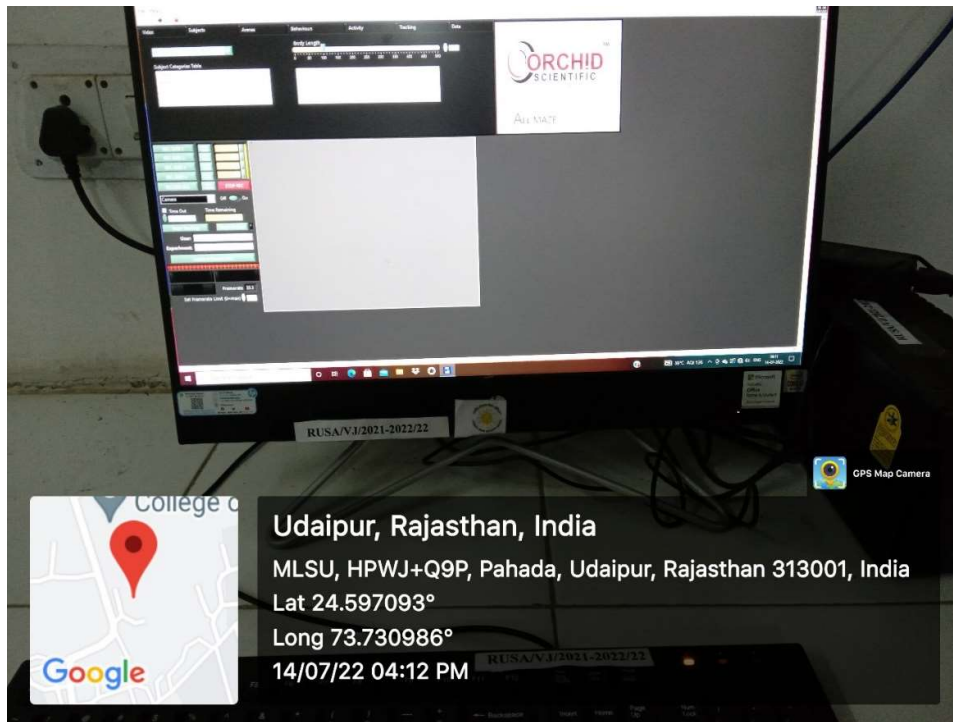
Refrigerated Centrifuge (Versatile Dynamica, Singapore)



Homogenizer (T 25 Digital Ultra Turrex , USA)



Flash Chromatography system (Select Systems, Biotage, Sweden)



Computer : For Video tracking Software



Radial arm Maze an accessory item of Video tracking Software



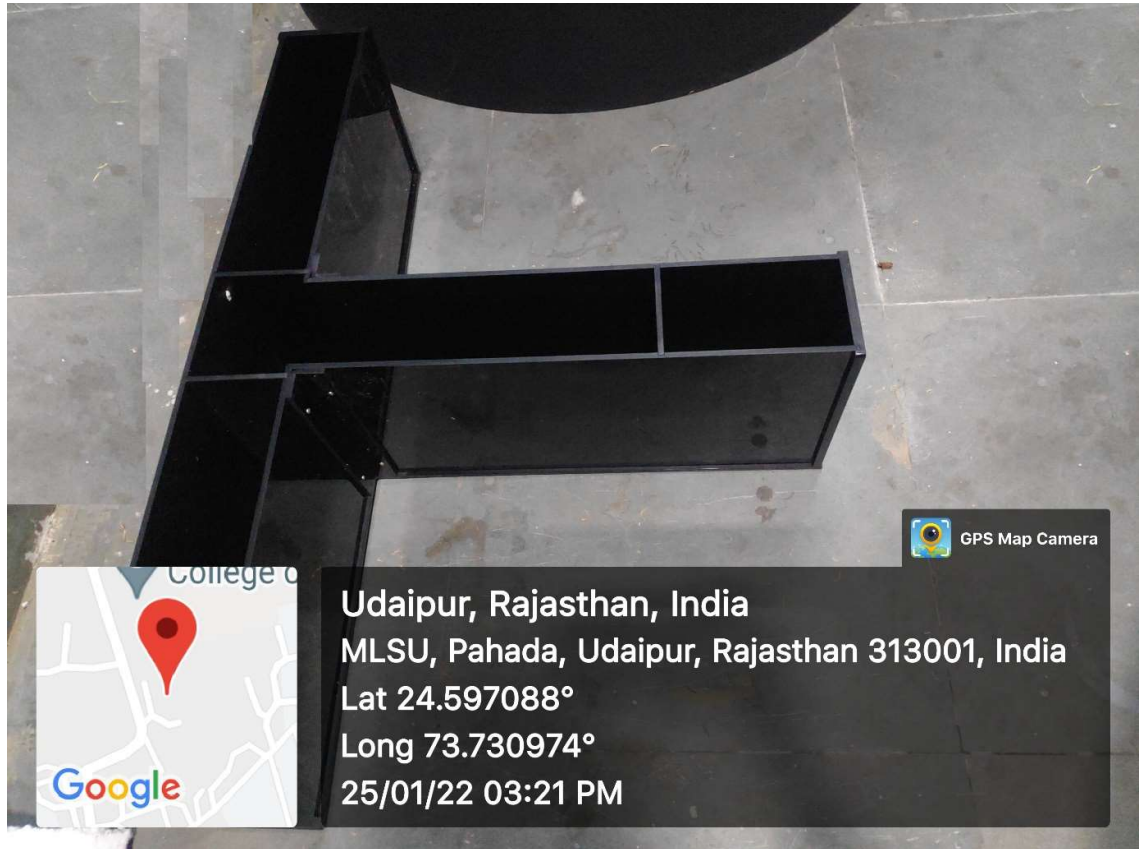
Y Maze an accessory item of Video tracking Software



Elevated Plus Maze an accessory item of Video tracking Software



Morris water Maze an accessory item of Video tracking Software



T Maze an accessory item of Video tracking Software

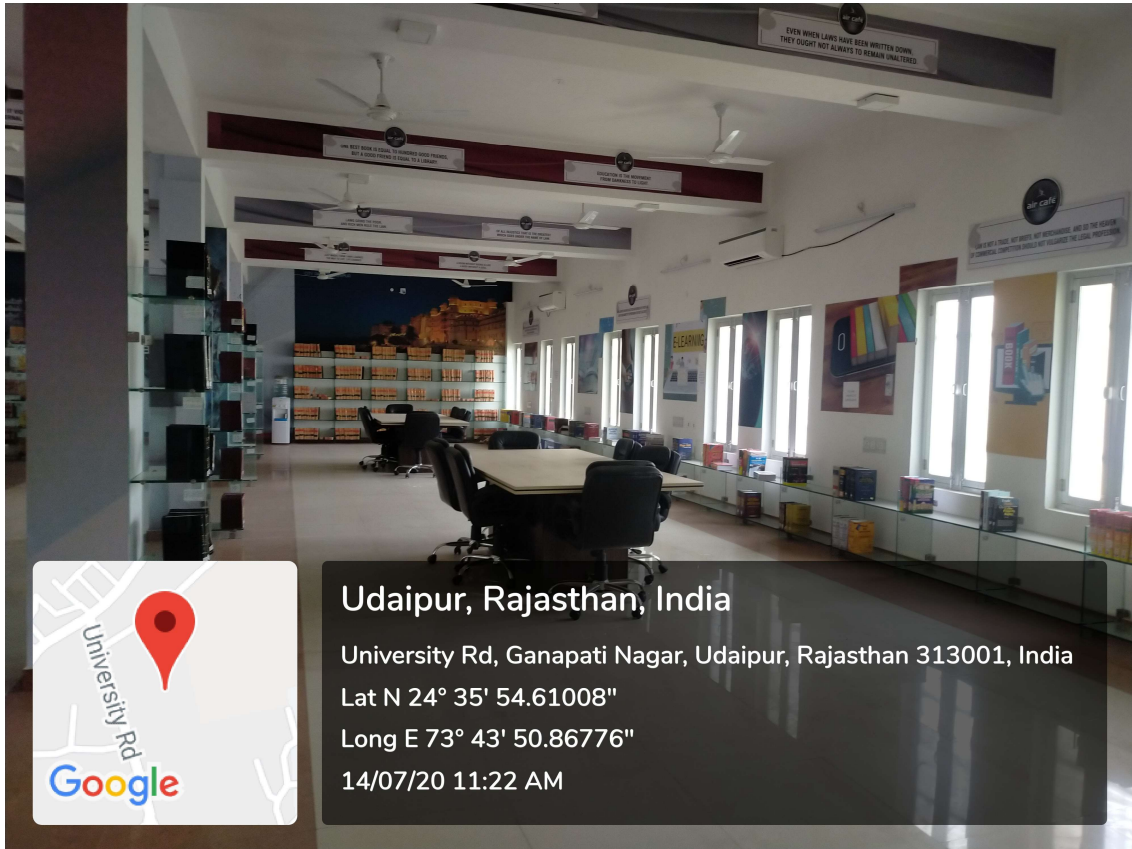


Seismic Station, Udaipur



Udaipur, Rajasthan, India
J-1, Shakti Nagar, Udaipur, Rajasthan 313001, India
Lat N 24° 35' 0.6198"
Long E 73° 42' 6.33996"
14/07/20 02:37 PM

Central Instrumentation lab_Zoology



E- Library Law



Media and Culture Lab