

# GOVERNMENT ARTS COLLEGE, UDHAGAMANDALAM

REPORT SUBMITTED TO RUSA

FOR THE F Y: 2015-16



GOVERNMENT ARTS COLLEGE, STONE HOUSE HILL PO

UDHAGAMANDALAM 643 002

TAMILNADU

# REPORT

Government Arts College Udhagamandalam is a reputed institution located in the higher altitude of Nilgiris. RUSA has sanctioned Rs 2 crores for the infrastructure development of this institution. Out of which the college has received Rs 1 crore as first instalment. Out of the 1 crore Rupees 40 lakhs was sanctioned for the procurement of equipments by the science research departments.

The money sanctioned under the construction of new building as well as Extension and repairing of buildings is ready to be disbursed to PWD soon after getting the detailed plan of the building from the authorities concerned




The advanced equipments including AAS and accessories purchased by the financial assistance of RUSA really added feather on the departments. The Zoology Department has purchased equipments to carryout advanced ecological studies. The equipments procured is installed in good condition and necessary hands on training was provided to the M. Sc ., M. Phil and PhD Scholars to do better research. The botany Department has purchased Fluorescent microphotography unit which is well utilized by the scholars.




The physics and Chemistry Departments purchased equipments to meet the basic requirements of UG and PG practical of the department. This is much useful in helping the students hands on experience in advanced research equipments.



The facilities added will be helpful to bring out research findings in the form of research papers in reputed journals and dissertations in near future, The College expresses its sincere gratitude to the authorities of RUSA in the state and National level for the financial assistance provided.



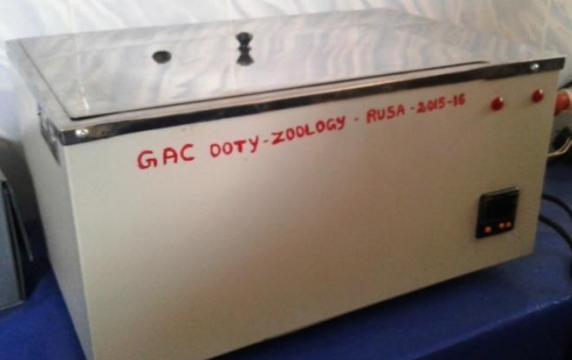
The detailed report with photographs and description of uses of the equipments is attached herewith.

**DEPARTMENT OF ZOOLOGY**

S.No.	Image of the Equipment	Specifications & Applications
1	 <p>Main Unit Cost Rs 9,35,000</p>	<p>Atomic Absorption Spectrophotometer with hood and accessories including bulbs of different wavelengths specific for estimating different elements</p> <p>Widely used by M. Sc students for dissertation works, M. Phil and PhD research works for estimating heavy metals in the water samples, sediments, soil and plant matter and bioaccumulation of heavy metals in the animal samples.</p>
	 <p><b>Accessories</b>  <b>Fume Hood – Rs. 36,000</b>  <b>Lamps for 13 different Elements -3,65,500</b></p>	<p>Accessories for AAS</p> <p>Fume Hood for exhaust of gases released during estimation</p> <p>Each lamp is meant for estimation of a specific element</p> <p>The lamps for the estimation of the following elements were purchased</p> <p>Cadmium, Cobalt, Mercury, Nickel, Lead, Zinc, Manganese, Sodium, Magnesium, Potassium, Calcium, Aluminium, Chromium</p>
	 <p>Acetylene cylinders (2Nos) –Rs 52,600</p>	<p><b>Acetylene cylinders</b></p> <p>Acetylene is used as fuel for the estimation of heavy metals in atomic absorption spectroscopy.</p> <p>The cylinders may be refilled regularly to provide acetylene without interruption for estimations using AAS.</p>

	 <p>Cost Rs 11,800</p>	<p><b>Digital salinity meter (Portable)</b></p> <p>Digital salinity meter Deep vision make used to analyse salinity of water samples both for practical demonstrations for PG students and also for research purpose</p>
	 <p>Cost Rs 24,000</p>	<p>RANGE FINDER HAWKE PRECISION LASER RANGE FINDER MODEL LRF 600/RF5400 –</p> <p>Used for judging distance and angle of elevation in the field. Used in the field studies especially for the B.Sc and M.Sc Wildlife biology practical.</p>
	 <p>Cost Rs. 18,800</p>	<p><b>DIGITAL NEPHELO TURBIDITY METER "ELICO" MAKE MODEL : CL52D</b></p> <p>It is used for estimating turbidity level of water samples of both effluents and other water bodies.</p> <p>It is also used for estimation of microbial and plankton populations in water samples.</p>

	 <p>Cost Rs. 1,58,000</p>	<p><b>OLYMPUS MICROPHOTOGRAPHIC UNIT WITH TRINOCULAR MICROSCOPE "OLYMPUS" MAKE</b> MODEL : CX21ITR and high resolution camera</p> <p>It is used for analysing and documenting plankton samples from the upper Nilgiris. It is also used to document. It is also used to explain the live microscopic organisms to UG and PG students.</p>
	 <p>Cost Rs. 29500</p>	<p><b>INCUBATOR "SCIENTEK"</b> MAKE(ELEMENTS ON 0 THREE SIDES)ELEMENTS ARE PLACED AT THE SIDES AND BOTTOM TEMPERATURE 5C ABOVE AMBIENT TO 60C. THERMOSTATIC CONTROL WITH A SENSITIVITY OF +/- 1C. TRIPLE WALLED INSIDE S.STEEL AND OUTSIDE MILD STEEL SHEET. WORKING CHAMBER SIZE: ----- 455 X 455 X 455MM Used for microbial incubation and for MPN and other microbial techniques for M. Scpracticals</p>

	 <p>Cost Rs 29500</p>	<p><b>HOT AIR OVEN "SCIENTEK" MAKE(MEMMERT TYPE).</b></p> <p>ELEMENTS ARE PLACED AT THE SIDES AND BOTTOM TO OBTAIN UNIFORM TEMPERATURE INSIDE THE CHAMBER TEMPERATURE RANGE 250 DEG.C. INSIDE CHAMBER (S.STEEL)</p> <p>455 X 455 X 455MM</p> <p>Used for drying samples to find out the moisture content and dry weight and also for sterilising glasswares for microbiology practicals for PG students</p>
	 <p>Cost Rs 98500</p>	<p><b>ROTARY VACUUM EVAPORATOR "SUPERFIT" MAKE MODEL:PBV 7D VERTICAL R-171</b></p> <p>Used for preparing plant extracts for assessing the mosquitocidal effects of herbal extracts and also the antimicrobial properties of plant extracts.</p>
	 <p>Cost Rs 16,500</p>	<p><b>Temperature controlled Water bath (Digital)</b></p> <p>It is used for determining the effect of temperature on enzyme activity and Q10 which is widely used in enzyme assays used for M.Sc practical</p>



Cost Rs. 64,500

**LEAF AREA METER  
"SYSTRONICS" MAKE  
MODEL:211**  
Widely used of assessment of crop damage by insect pests. It is also used for estimating leaf utilisation by silk worm and other insect larvae in conversion efficiency and feeding rate studies.





Cost. Rs. 9,800

**Digital pH meter  
ELICO MODEL 120 WITH  
COMBINED ELECTRODE**





Cost Rs 18500



**Garmin GPS E Trex 10**  
  
Used for field studies in determining Geographical position

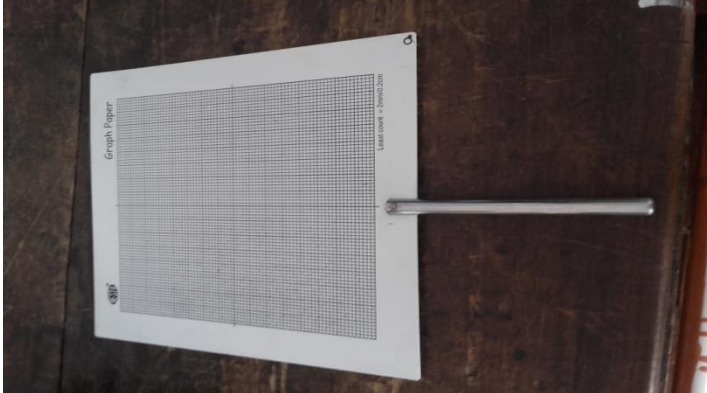



		<p>Dissolved Oxygen analyser</p> <p>Used for determining dissolved oxygen content of the water samples and also for oxygen consumption by aquatic organisms both for PG practical and for research purpose.</p>
<p>Cost Rs 16500</p>		<p>Digital balance with high sensitivity</p> <p>It is widely used for reagent preparations and weighing small organisms both for practical and research purpose. 0.1g</p>

DEPARTMENT OF BOTANY




S.No.	Image of the Equipment	Specifications & Applications
	 <p>Cost Rs 600780</p>	<p>Magnus fluorescence microscope with image transfer system</p> <p>It is widely used for research purpose and demonstration to PG students in tissue experiments to test the viability of cybrids and also for determining cell wall and inclusions</p>
	 <p>Cost Rs 18500 x 19 = 351500</p>	<p>Magnus monocular inclined light microscopes -19 numbers used for PG students for practicals in demonstrating root, leaf and stem structures, planktons and microbes. Also used for research purpose.</p>




DEPARTMENT OF PHYSICS – RUSA 2015-2016




S.No.	Image of the Equipment	Specifications & Applications
1.		<p>HE-NE LAZER (RANDOM/UNPOLARISED) RED BESTO MA (1650) Rs:31,000 Applications: Helium neon lasers have good coherence property, they can produce three wave lengths that are <math>1.152\mu\text{m}</math>, <math>3.39\mu\text{m}</math> AND <math>632.3\text{nm}</math> is most common because it is visusually in red colour</p>
2.		<p>OPTICAL BENCH BESTO MAKE 1656 Rs:18400 Applications : Holders for light sources, lenses and screens are placed on the apparatus so that image formation can be observed.</p>




3.		<p>SCREEN BESTO MAKE 1658 Rs:750 APPLICATIONS: TO CAPTURE THE PARTICLE SIZE OF THE GIVEN MATERIAL USING LASER SOURCE</p>
4.		<p>SINGLE SLIT BESTO MAKE 1660 Rs:2100 APPLICATIONS: Light bends around obstacles like waves do and it is this bending which causes the single slit diffraction pattern.</p>
5.		<p>GRATING HOLDER BESTO MAKE 1662 Rs: 2100 It holds grating lens used in spectrometer experiments</p>
6.		<p>ULTRASONIC INTERFEROMETER (BL-02) RS: 28,500 Applications: Used to measure velocity on the accurate determination of the wavelengths in the medium.</p>




7.	 <p>A cylindrical electro-magnet assembly with a blue metal frame and two large yellow cylindrical coils. Red and black wires are connected to the coils. Handwritten text on the right coil reads "007Y RUSA 2015-2016".</p>	<p>ELECTRO MAGNET 60HMS PICO MAKE 39EM Rs:38500 Applications: These are widely used as components of other electrical devices such as motors,generators,etc.</p>
8.	 <p>A black rectangular power supply unit. The top surface has handwritten text: "GAC. 007Y PHYSICS RUSA 2015-2016". The front panel features a red digital display showing "0.00", a red power switch labeled "ON", and a rotary knob labeled "CURRENT ADJUST". Text on the front panel includes "CONSTANT CURRENT POWER SUPPLY", "5 AMPS", "MODEL - 39PS", "AMPS", and "PICO-CHENNAI-32".</p>	<p>CONSTANT CURRENT POWER SUPPLY PICO -39PS Rs:12100 Applications: It is a device whose output power never varies.</p>
9.	 <p>A black rectangular digital gaussmeter. The top surface has handwritten text: "GAC. 007Y PHYSICS RUSA 2015-2016". The front panel features a red digital display showing "3888", a red power switch labeled "ON", and a rotary knob labeled "RANGE MULTIPLIER" with settings "x1" and "x10". Text on the front panel includes "DIGITAL GAUSSMETER", "GAUSS", "PICO-CHENNAI-32", and "ZERO".</p>	<p>DIGITAL GAUSS METER 39GM Rs:10400 Applications: These are magnetometers that measures the values greater than 1mT</p>
10.	 <p>A blue rectangular high voltage power supply unit. The top surface has handwritten text: "GAC. 007Y PHYSICS RUSA 2015-2016". The front panel features a red digital display showing "0.00", a red power switch labeled "ON", and a rotary knob labeled "CURRENT ADJUST". Text on the front panel includes "HIGH VOLTAGE POWER SUPPLY", "Model: 39HEA", "AMPS", and "PICO-CHENNAI-32".</p>	<p>CONSTANT CURRENT POWER SUPPLY PICO 39 HEA Rs.: 6050 Applications: It is a device whose output power never varies.</p>

11.		<p>HALL PROBE IN AS PICO MAKE 39HPR  Rs:5500  Applications:  Probe used in hall effect.</p>
12.		<p>SIX POSITION VERNIER MICROSCOPE(X&amp;Z MOTIO)  BESTO MAKE 1570  Rs 13500  Applications:  They are used for accurate measurement of the diameters of different objects</p>
13.		<p>SODIUM VAPOUR LAMP WITH BOX AND TRANSFORMER  RS : 4250  Applications:  Light source for spectrometer experiments.</p>

14.		<p>STAND Rs: 650 Applications:</p>
15.		<p>SLOTTED WEIGHTS 5*50 GRAMS RS: 180 Applications: Slotted weights used in Young's modulus to determine elasticity.</p>
16.		<p>WODDEN BENCH RS: 1500 Applications: used in air-wedge method and newton's rings method to mount travelling vernier microscope.</p>

17.		<p>CONVEX LENS  RS:110  Applications: optical component used in light experiments.</p>
18.		<p>MICROWAVE OVEN LG MAKE  24 LTR CAPACITY  RS:14,500  Applications:  Microwave ovens heat foods quickly and efficiently because excitation is fairly uniform in the outer 25–38 mm (1–1.5 inches) of a <u>homogenous</u> (high water content) food item; food is more evenly heated throughout (except in heterogeneous, dense objects) than generally occurs in other cooking techniques.</p>
19.		<p>VARIABLE VOLUME MICRO PIPETTE(SARTORIUS)(GERMAN MAKE)2-20 UL  RS: 9500  Applications: built in tip ejector autoclavable tip cones offered in 9 volume ranges.</p>



20.		<p>HOT PLATE - DIA SIGMA MAKE M.S.TOP WITH ENERGY REGULATOR RS: 4300 Applications: Important tools in laboratory, cytology etc to heat samples.</p>
21.		<p>VISCOSITY OF WATER USING AS OSCILLATING DISC BESTO MAKE 2369 RS: 10,500 Applications: to find the viscosity of the given liquids by Lee's disc method</p>
22.		<p>LAMP AND SCALE ARRANGEMENT BESTO MAKE 436 RS : 6500 Applications: Equipments used in lee's disc method.</p>




23.		<p>ELECTRONIC BALANCE WENSAR MAKE CAPACITY 600GM ACCURACY 0.01 GM RS: 9800 Applications: To measure the given samples lesser than 0.1mg</p>
24.		<p>TWO PROBE METHOD FOR RESISTIVITY (TPX-200) RS: 66,000 Applications: To measure the resistivity of very high resistivity nsamples.</p>
25.		<p>DIGITAL THERMOMETER RS: 1500 Applications: To measure the temperature automatically in digital means.</p>
26.		<p>SIGNAL GENERATOR PICO 415AF RS: 14,850S Applications: the output form of a signal generator is a repeating waveform whose characteristics are set by the user</p>
27.		<p>CATHODE RAY OSCILLOSCOPE 30MHZ Rs:84000 Applications: it is a type of electronic test instrument that allows observation of constantly varying signal voltage.</p>

28.		<p>HEX KEY MICRO CONTROLLER  Rs:32400  Applications:  These are used in embedded control applications .</p>
29.		<p>DC POWER SUPPLY "PICO"  MAKE 605D  Rs:14940  Applications:  It is a device whose output power never varies.</p>
30		<p>CONSTANT CURRENT POWER SUPPLY PICO 39 HEA  Rs : 6050  Applications:  It is a device whose output power never varies.</p>

RUSA 2015 – 2016

DEPARTMENT OF CHEMISTRY

S.No	Image of the Equipment	Specifications & Applications
		<p><b>Conductivity Bridge</b> ( EQUIPTRONICS MAKE ) ( EQ 665 model ) ( 12 nos ) The digital conductivity meter directly reads conductance in MHOS Range of measurements .01 M to 200mM in six ranges Accuracy +1% + last 2 digits Cost Rs. 8912/- each Including VAT @ 5%</p> <p><b>Total : Rs. 106949/-</b></p>
		<p><b>Digital pH meter with electrodes</b> ( SYSTRONICS MKVI model ) ( 2 nos )</p> <p>It is a precise and compact instrument using solid state devices for direct measurements of pH. It is also used in chemical measurements with outstanding precision and reproducibility. pH range 0-14</p> <p>Cost Rs. 8505/- each including VAT @ 5%</p> <p><b>Total : Rs. 17010/-</b></p>

		<p><b>Electronic Balance Three Decimal ( INFRA MAKE ) ( 5 nos )</b></p> <p><b>For accurate weighing of samples for UG and PG. Qualitative and Quantitative analysis.</b></p> <p><b>Cost Rs. 13081/- each Including VAT 5%</b></p> <p><b>Total : Rs. 65405/-</b></p>
		<p><b>Electric Centrifuge Apparatus ( 8 nos ) (REMI – C 854 / 6 ) ( 6 * 15 ml )</b></p> <p><b>For Inorganic Qualitative analysis, group separation of basic radicals both UG and PG.</b></p> <p><b>Cost Rs. 6300/- each Including VAT 5%</b></p> <p><b>Total : Rs. 50400/-</b></p>
		<p><b>Mechanical Shaker ( KHAN SHAKER LABTECH make ) ( 2 nos )</b></p> <p><b>For Adsorption Experiments PG ( Adsorption of Acetic Acid and Oxalic Acid on Activated Charcoal )</b></p> <p><b>Cost Rs. 25200/- each Including VAT 5%</b></p> <p><b>Total : Rs. 50400/-</b></p>

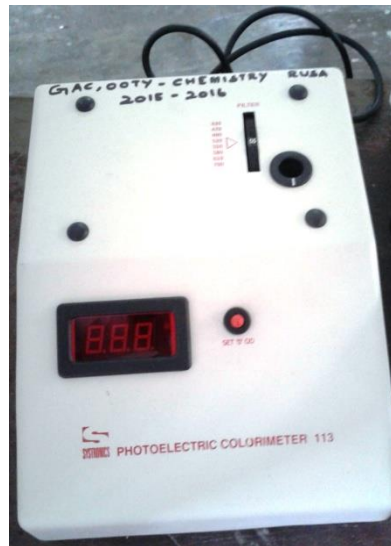


**Electric Centrifuge Apparatus ( Compact )  
Speed 4000 rpm, Regulator  
( 8 \* 15 ml ) ( 1 no )**

**For Inorganic Qualitative Analysis, group separation of basic radicals for both UG and PG**




**Cost Rs. 18375/- each**

**Total : Rs. 18375/-**



**Photoelectric Colorimeter ( SYSTRONICS make )  
113 model and filter 1 ml  
To conduct colourimetric estimation for UG, PG and Research purpose  
Cost Rs. 9135/- each  
Including VAT @ 5%**

**Total : Rs. 9135/-**

		<p><b>Digital Potentiometer Dual channel ( PICO make ) ( 13 nos )</b></p> <p><b>To measure the EMF for UG and PG practicals ( used for Potentiometric titrations )</b></p> <p><b>Resolution 1mv, Accuracy 0.5 %</b></p> <p><b>Cost Rs. 4030/- each Including VAT @ 5%</b></p> <p><b>Total : Rs. 52390/-</b></p>
		<p><b>Platinum Electrode ( 10 nos )</b></p> <p><b>Accessory to potentiometer to measure the EMF ( Potentiometric titrations )</b></p> <p><b>Cost Rs. 935/- each Including VAT @ 5%</b></p> <p><b>Total : Rs. 9350/-</b></p>
		<p><b>Calomel Electrode ( 13 nos )</b></p> <p><b>Accessory to potentiometer to measure the EMF ( Potentiometric titrations )</b></p> <p><b>Cost Rs. 467/- each Including VAT @ 5%</b></p> <p><b>Total : Rs. 6071/-</b></p>



**Electrical Water Bath 12 Holes ( SIGMA make ) ( 3 nos )**

**For Organic Synthesis and to evaporate solvents**

**Cost Rs. 6950/- each  
Including VAT @ 5 %**

**Total : Rs. 20850/-**



**Hot Air Oven ( 3 nos )**

**For drying the precipitate in Gravimetric Analysis and Organic, Inorganic preparations**

**Cost Rs. 19257/- each  
Including VAT @ 5 %**

**Total : Rs. 57771/-**



**Refrigerator Double Door ( 240 lits ) ( Godrej ) ( 1 no ) ( with Stand and Stabiliser )**

**For storing Chemicals maintained at low temperature**

**Cost Rs. 29800/- each  
Including VAT 5 %**

**Total : Rs. 31290/-**