

Department of Biotechnology

**Star College Scheme**

**Progress report by Stella Maris College (Autonomous) Chennai**

**For the academic year 2009-10**

1. **Name of the College :** Stella Maris College (Autonomous), Chennai

2. **Name of Departments supported :** **Botany, Zoology, Chemistry, Physics**

Name of the Principal : Dr. Sr.Jasinthra Quadras fmm  
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Name of Coordinator, designation, address, phone nos. Dr.Juliana Joe  
Associate Professor & Head  
Dept. of Zoology  
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044- 28111987/ 28111951

3. **No. of regular faculty with Ph.D. in each participating departments at the Undergraduate level**

S. No	Department	No. of Faculty	
		Aided	Management
1	Botany	5	-
2	Zoology	5	1
3	Chemistry	6	-
4	Physics	1 One pursuing Ph.D.	

4. **List of courses ( B.Sc./ M.Sc./ PG Diploma, certificate etc) run by different participating departments :**

S. No	Department	Regular Course	Certificate Course
1	Botany	B.Sc. Plant Biology and Plant Biotechnology	UGC Sponsored - Herbal Therapy and Beauty Care
2	Zoology	B.Sc. Advanced Zoology and Biotechnology	Medical Biotechnology
3	Chemistry	B.Sc. Chemistry	-
4	Physics	B.Sc. Physics	-

5. **Cut off percentage for admission in different courses in participating departments, positions in university, percentage of result in 2009-10 academic session :**

**Cut off percentage :**

Plant Biology & Plant Biotechnology : OC: 75, BC/MBC : 60, SC/ST: 57

Advanced Zoology & Biotechnology : OC : 76, BC/MBC: 62, SC/ST: 54

Chemistry: OC: 87 , BC/MBC : 65 , SC/ST: 56

Physics: OC : 88, BC/MBC : 65, SC/ST : 53

Results (April 2009) : B.Sc. Plant Biology & Plant Biotechnology – 94%

B.Sc. Advanced Zoology & Biotechnology - 90.5%

B.Sc. Chemistry - 93.1%

B.Sc. Physics - 86.5%

6. **List of projects undertaken by students, industrial visits by the students, summer training in last one year:**

**Department of Botany:**

**Projects**

**Microbiology**

- Ammonification in soil
- Detection of minerals in soil samples using Flame Photometry
- Microbiological analysis of soil samples of the campus
- Preparation of wine and estimation of Lactic acid in wine
- Effect of Temperature and pH on Microbial growth

### **Plant Physiology**

- Isolation of Chloroplast from Spinach and demonstration of Hill's reaction
- In vivo assay of Nitrate reductase in bean leaf
- Estimation of oil content from Groundnut using Soxhlet method
- Enzyme kinetics – amylase activity in Cicer ( Bengal gram)

### **Applied Biotechnology**

- Plant tissue culture – Induction of callus from leaf disc (*Solanum nigrum*) & Anther (*Datura*)

### **Industrial visit**

- Visit to Spirulina and Mushroom Farm, Nallayan Research Centre for Sustainable Development, Navaloor on August 1, 2009.
- Visit to Irula's Tribal Welfare society, Thandarai on August 20, 2009 as part of Service Learning programme (III Years), Phytotherapy and Ethnobotany and Plant Collection for Taxonomy) II Years.
- Visit to Ecotel, Raintree Hotel on September 25, 2010.
- Visit to Packaging and Printing Factory ITC (Imperial Tobacco Company), Wimco Nagar as part of their Food Packaging and Post Harvest Technology (Vocational Students) on December 14, 2009.
- Visit to Plant Tissue Culture Laboratory, Loyola College – January 12, 2010
- The Vocational Students (II Years) participated in a seminar on Opportunities for Biotechnologists in Food Processing industries organized by Loyola College in Collaboration with Lille Catholic University, France on February 9, 2010.
- Visit to plant Tissue Culture laboratory, Noni Biotech Pvt. Ltd., World Noni Research Centre, Sholinganallur on February 9, 2010.
- Visit to Lalit kala Academy – Exhibition, Lecture cum demonstration on Bonsai and Ikebana on February 25 & March 5, 2010.

## **Department of Zoology:**

### **Genetics:**

Following the conduct of workshop on “*Drosophila Culture Techniques*” the following projects have been carried out by III Year students.

- Verification of Mendel's monohybrid cross
- Verification of test cross ratio
- Verification of Sex – linked inheritance
- Effect of Copper sulphate on the development & morphology of *D. melanogaster*
- Effect of Opium poppy on the development of *D. melanogaster*
- Effect of the antibiotic (Levofloxacin) on the development of *D. melanogaster*
- Effect of corticosteroid (Betnesol tablet) on the development of *D. melanogaster*
- Study on resistance to ethanol

### **Developmental Biology**

- Chromatophoretic Study of Frog
- Regeneration of Tail and Limb in Tadpole
- Effect of Thyroxine and Iodine on Tadpole
- Development of Frog
- Protein Estimation in Egg Albumen of Different Bird Species

### **Industrial Visit:**

The First year students visited Siva Food Drinks, Poonamallee High Road, Chennai on 15 th January 2009. They gained experiential knowledge about Food Microbiology, Food Packaging and Sensory Evaluation of the Food Juices manufactured at the centre.

### **Laboratory Visit**

The III year B.Sc. students undertook a Study trip to Sri Ramachandra University Porur, Chennai

The laboratory visit included the following:

- Dept. of Human Genetics – Lecture on Genetic Disorders & Application of Karyotyping & FISH (Fluorescent In Situ Hybridisation)
- Molecular Genetics Laboratory – DNA isolation room, Cold centrifuge, PCR, Thermocycler, Electrophoresis & Karyotyping methodology
- Tissue Culture Room – CO<sub>2</sub> Incubator, Inverted microscope, Laminar air flow chamber
- Dosimetry Laboratory – Research on Biosensor probes to detect level of mutation on exposure to radio active substances
- Drosophila Laboratory – GFP mutant Drosophila was observed
- Central Research Facility
  - Nuclear Magnetic Resonance Imaging – to analyse the structural composition and details of samples
  - Chromatography – HPLC, GCMS, HPTLC
  - Inductively Coupled Plasma Mass Spectroscopy – to analyse inorganic compounds
  - Fluorescent Activated Cell Sorters
  - DNA Sequencer
  - Real Time PCR
  - Ultracentrifuge
  - Confocal Microscope – to visualize cell components and pathways using laser beam
  - Cold Room – maintained at 4°C to preserve reagents and chemicals

This visit has been an enriching learning experience for our students enhancing their practical knowledge and their awareness on advanced instrumentation techniques used in research.

### **Field Trip:**

The I year students visited the Livestock Research Station, Kattupakkam (TANUVAS) on 18<sup>th</sup> January 2010. The students were exposed to various practices relating to Poultry farming, Dairy Farming, breeding of rabbits, rearing of different varieties of sheep and goat. Ostrich Farming is the special feature of this farm as it is the only farm in India where Ostrich rearing is done.

## Department of Chemistry:

### Projects

- The students were trained to study the adulteration in essential food commodities like dhal, coffee powder, tea etc. Following the training, the students brought samples from home and neighbouring areas to study the presence or absence of adulteration for food chemistry practicals. The results of the analysis were communicated to their families and people of the neighbourhood.
- Ten students of II B.Sc. Chemistry were given special training in water analysis as part of Environmental Chemistry course. The students were trained to estimate TDS, pH, chloride, nitrite, nitrate, ammonia, sulphide, chloride, dissolved oxygen, BOD, COD etc. The students brought samples from different localities and analysed the potability of the water samples.

### Industrial visits:

- Visit to the polymer exhibition on plastics and polymers IPLEX 2009 by II B.Sc. Chemistry students at Chennai Trade Center, Nandambakkam from 4<sup>th</sup> to 7<sup>th</sup> September 2009.
- On August 21st 2009, an educational trip was organized for the students of the I B.Sc Chemistry to Diet Aqua, a packaged drinking water plant situated at Ulundai village in the Tiruvallur district. They visited the chemical labs where the packaged water at Diet Aqua is tested for 72 parameters of water quality on a daily basis using various instruments like the digital spectrophotometer, gas stripping apparatus, turbidity meter, conductivity meter and the pH meter.

### WINTER TRAINING:

The department of Botany conducted a Training programme on 'Bioinstrumentation' from January 25-28, 2010 for the I year students of B.Sc. Plant Biology & Plant Biotechnology.

### **SUMMER TRAINING conducted at Stella Maris College**

A batch of 30 students from Botany, Chemistry and Zoology were given intensive Hands on Training on ‘Analytical Instrumentation Techniques’ during summer from April 19-23, 2010. The students learnt the principle, procedure and application of various techniques / instruments like UV-Visible spectrophotometer, Flame photometer, Phtotocolorimeter, Electrophoretic techniques, Laminar air flow for microbial culture techniques, Chromatographic techniques, Advanced Binocular and Trinocular microscope with camera attachment. The training enhanced their practical skill and infused in them a yearning for scientific research.

### **Department of Physics:**

#### **Learning Electronics through Mini projects:**

- Automatic night alarm with morning alarm.
- Battery level indicator
- Automatic door bell
- Automatic low power emergency lamp
- Infrared music transmitter and receiver
- Optical smoke detector
- Traffic controller
- Automatic phase changer
- Water level indicator.

#### **Industial Visits:**

- Visit to Birla Planetarium Exhibition on “Science In Everyday Life”
- Visit to water purifying plant.

### 7. Training received by the faculty from participating departments:

Sl. No	Department	Name of the Faculty	Title	Organised by
1.	<b>Botany</b>	Dr. Nirmala kanagaraj Dr. Geradette Davey	Training programme on Mushroom Cultivation	The Urban Horticulture Development Centre, July 16, 2009
2.		Dr. Nirmala kanagaraj Ms. Immaculate	National Workshop on “Experiments in Bioprocess Technology”	Department of Plant Biology and Plant Biotechnology, Loyola College, November 30 –December 2, 2009
3.		Ms. Immaculate	Workshop on “Computing Techniques for Sciences”	Department of Chemistry, Stella Maris College, January 20-23, 2009
4.		Dr. Beulah Vijayakumar Dr. Priscilla Jebakumari	National Workshop on “Herbotech 2010”	Department of Pharmacy, Sri Ramachandra Medical University, January 21, 2010.
5.		Dr. Priscilla Jebakumari	Workshop on “Putting Principles into Practice towards Environmental Action in Higher Education”	The United Board Heber Partnership for Environmental Action, February 11-13, 2010.
6.	<b>Zoology</b>	Dr. Rita Jayaraj Dr. Miriam	Workshop on Use of PCR	Eppendorf Training Centre, Chennai, Dec 9, 2009
7.		Dr. Miriam Vassou Dr. P.J. Arokiya Mary Sashi Dr.Kalpana	Workshop on “Computing Techniques for Sciences”	Department of Chemistry, Stella Maris College (Autonomous), Chennai, January 20-23, 2010
8.		Dr. Chitralkha Ramachandran Dr. Annie Cherian Dr. Juliana Joe Dr. Rita Jayaraj Dr. Miriam Cecilia Vassou Dr. Kalpana	Workshop on “Immunological techniques”	Department of Zoology, Stella Maris College (Autonomous), Chennai, September 18-19, 2009
9.	<b>Chemistry</b>	Dr. Jesurietta Sathian Dr. Shiny John Vairamon Dr. Mary George Dr. N.L. Mary	Workshop on Computing Techniques for Sciences	Department of Chemistry, Stella Maris College (Autonomous), Chennai, January 20-23, 2010



10.	<b>Physics</b>	Ms. Anceila D Sr. Francisco Nirmala	National Conference on Energy Harvesting	Thiagarajar College of Engineering, Madurai., December 2-4, 2009
11		Ms. Anceila. D	National Conference on “Recent trends in Crystal Growth, Thin Films and Nano- Structured Materials”	Aditanar College of Arts and Science, Thiruchendur, August 5-6, 2009
12		Ms. Anceila D Sr. Francisco Nirmala	Workshop on “Computing Techniques for Sciences”	Department of Chemistry, Stella Maris College, January 20-23, 2009
13		Dr. Rajini. K.H	Workshop on “XV Annual Conference of Association of Medical Physicists of India”	Billroth Hospital Pvt. Ltd, September 20, 2009

### 8. List of exhibitions/seminars/training courses conducted by the College:

#### Botany:

##### Training:.

- Training programme on Kitchen Garden, Flower arrangement & Vegetable carving- February 5 and 15, 2010
- II year – Experimental work on preparation of Ayurvedic and Siddha medicine such as Decoction for ulcers, Thailam for premature greying, Churnam for blood pressure and Diabetes. – September 2009
- III Year – Training programme on Techniques on Molecular Biology & Genetic Engineering - February 17 and 25, 2010.

#### Zoology:

- A workshop on “*Drosophila* Culture Techniques for III year Students on 3<sup>rd</sup> July 2009. A manual was also published and released.
- A workshop on “Immunological techniques” for faculty of city colleges on 18<sup>th</sup> and 19<sup>th</sup> September 2009 in collaboration with Department of Zoology, University of Madras. A laboratory manual was also published and released
- A Workshop on Crocodile Biology for I year students on 18<sup>th</sup> February, 2010 at Crocodile Bank, Chennai.

- An exhibition titled '**EXZOOBITION**' on various facets of zoology was organised involving I, II & III year students on 22<sup>nd</sup> February 2010.

### Chemistry:

- Dr. Subramanian, retired Professor of Chemistry, Pachaiyappa's College, Demonstrated various lab techniques to the III B.Sc Chemistry students on the 29th June, 2009. He showed how counterfeit and forgery can be detected with UV light, endothermic and exothermic reaction experiments and the effect of UV light on dyes and drugs.
- Dr. J.N. Reddy, the director of Max Academy for excellence who is a scientist, Professor and a physiologist by practice, delivered a motivational lecture to the I, II and III B.Sc Chemistry students on July 10, 2009 titled "Discover the genius in you". He reviewed the importance of Chemistry and its scope. He gave tips to excel in learning skills and some super memory techniques that were inspirational yet simple. He emphasised that everyone can excel by Nurture if not by Nature.

### Training Programme:

- Workshop on Water analysis and hands on training by EXEL WATER SYSTEM PVT. LTD. For I B.Sc students at SMC on 14<sup>th</sup> and 15<sup>th</sup> Sept.2009.
- A workshop on crystal growth was conducted on **3rd September 2009** for the **I, II and III B.Sc Chemistry** students.
- Lectures on **crystal growth** and its growing importance, Applications of crystals ranging from semiconductors to acousto-optic, photo-sensitive materials and Non-Linear Optic (NLO) crystals, Preparation of crystals by Gel Method.
- Growing Potassium Chloride crystals.

## Physics:

### Exhibition

- Mini Electronic projects done by III year physics students were exhibited.

### Training Courses:

- Workshop on ‘Microprocessors and Interfacing Techniques’ – October 7, 2009
- Workshop on ‘Computer Hardware, Assembly and Installation’ - February 24, 2010
- Practical session on ‘Learning Electronics through mini projects’ With Workshop - August 28, 2009

## 9. Name, designation, host institute of guest faculty invited:

### Botany:

Name of the External Expert	Designation	Host Institute
Dr. A. Annamalai	Chief Conservator of Forest and Director, Dept. of Environment	Tamil Nadu Forest Department
Dr.Narasimhan	Associate Professor	Madras Christian College, Chennai
Dr.Bhavani	Associate Professor	Women’s Christian College, Chennai
Dr.Udayaprakash	Associate Professor	SRM University
Ms.Vaideki	Associate Professor	The Urban Horticulture Development Centre
Dr.Balusami	Associate Professor	Madras Christian College, Chennai
Ms.Rosaline Saverirayan	Faculty & Research Associate	University of Chicago Medical Centre
Dr. Agastian	Head, Dept. of Botany	Loyola College, Chennai
Dr. Velmurugan	Assistant Professor	Urban Horticulture Development Center, Anna Nagar
Chef. Vinodh	Chief Chef	Sai Institute of Carving

**Zoology:**

<b>Name of the External Expert</b>	<b>Designation</b>	<b>Host Institute</b>
Dr. Kalpana Gowrishanker	Genetic Consultant	Child's Trust hospital , Chennai
Ms. Megha Rajaram,	Research Scholar	Cold Spring Harbor lab, New York
Dr. V. Judia Harriet Sumathy	Assistant Professor, P.G. Dept. of Biotechnology	Women's Christian College, Chennai
Dr. Vetri Selvi	Lecturer, Dept. of Human Genetics	Sri Ramachandra University, Porur, Chennai
Mr. Preston Ahimaz	Head, Environmental Education	Pitchandikulam Forest Consultants, Adyar Poonga
Dr. Supraja Dharini	Chairperson	TREE Foundation

**Chemistry:**

<b>Name of the External Expert</b>	<b>Designation</b>	<b>Host Institute</b>
Dr. V.Subramanian	Retd. Professor of Chemistry	Pachaiyappa's College, Chennai
Dr. Reddy	Director	Max Academy, Chennai.
Mr. Hemakumar	Chief Analyst	Diet Aqua, Ulundai village, Thiruvallur district.
Ms. N.Shanmugapriya	Chief Analyst	EXEL Water Systems Pvt. Ltd. Guindy, Chennai.
Dr. Prema C. Thomas	Asst. Professor	Saveetha Engg. College, Chennai
Dr. Ambujam	Vice Principal	Queen Mary's college, Chennai
Dr. Sahayaraj	Associate Professor	Loyola College, Chennai.
Ms. Anita	Managing Director	EXEL Water Systems Pvt. Ltd. Guindy, Chennai.
Dr. K. Mangalasundar	Professor	I.I.T, Madras.
Dr. V.Subramanian	Scientist	CLRI, Chennai
Dr. Sanjay Kumar	Professor	I.I.T, Madras.
Ms. Manjusha Joshi	Lecturer	Bhaskacharya Research Institute in Mathematics, Pune.
Ms. Hemalatha	Research Scholar	I.I.T, Madras.

### Physics:

Name of the External Expert	Designation	Host Institute
Dr. Kumar Sathian	Head, Dept. of Physics (Retd.)	Madras Christian College, Chennai
Mr. Barnabas Tibertius	System Engineer	AMITHA Charitable Trust, Chennai
Dr. Sahayaraj	Reader, Dept. of Physics	Loyola College, Chennai
Dr. Joe Jesudurai	Reader, Dept. of Physics	Loyola College, Chennai
Mr. Paul Priyadoss	System Analyst, Dept. of Physics	Madras Christian College, Chennai

### Guest faculty for popular lecture series – Intercollegiate Programme

Dr. P. Aruna Professor, Dept. of Physics, Anna University	Medical Applications of Electromagnetic Spectrum	1 <sup>st</sup> February 2010	I, II and III B.Sc. Physics of many city colleges
Mr. Barnabas Tiberius System Engineer, AMITHA Charitable Trust, Chennai	Cosmos	5 <sup>th</sup> March 2010	I, II and III B.Sc. Physics of many city colleges
Dr. Gautham Menon I.I.M.Sc, Taramani	Schrodinger equation	5 <sup>th</sup> March 2010	I, II and III B.Sc. Physics of many city colleges
Dr. Vijayan Associate Professor, IIT, Chennai	Nano Crystallography	5 <sup>th</sup> March 2010	I, II and III B.Sc. Physics of many city colleges

**10. Date of advisory committee meeting:** 28/4/2009

**11. List of new practical/demonstrations introduced in different departments in last one year:**

#### Botany:

- Preparation of Yoghurt, Grape wine & Apple wine – Industrial Microbiology
- Production of Citric acid – Fungal Biotechnology
- Bonsai technique – Demonstration – Horticulture
- Kitchen Garden – Laying out – Horticulture
- Vegetable carving – Techniques – Horticulture
- Grafting & Budding – Demonstration - Horticulture
- Preparation of Ayurvedic and Siddha medicines:  
(a) Decoction for ulcers

- (b) Thailam for premature graying
- (c) Churnam for blood pressure and Diabetes.
- (d) Herbal Tooth powder

### Zoology:

- Coliform count in Drinking water samples by Membrane filtration technique
- Demonstration of bacterial growth curve
- Widal Slide agglutination test for Typhoid
- VDRL Slide Flocculation test for Syphilis
- Anti-A and Anti-B titration test
- Direct Coombs test
- ELISA – Qualitative test for pregnancy
- Passive agglutination – Agglutination inhibition method for Detection of HCG in Urine
- Isolation of Lymphocytes
- DNA extraction -RNA extraction
- **Demonstration of :**
  - PCR technique
  - Blotting techniques - Southern blot
  - Electrophoresis

### Chemistry:

- Water analysis using pH meter, colorimeter, Nephelometer, TDS meter, volumetric and spectroscopic techniques [I &II B.Sc. Chemistry Students].
- Demonstration of analysis of functional groups and derivative preparation of organic compounds [II B.Sc. Chemistry Students].
- Demonstration of basic analytical operations like solvent extraction and chromatographic techniques- TLC & Column chromatography [III B.Sc. Chemistry Students]
- Demonstration of detection of counterfeit currency notes using UV light, effect of UV light on dyes and drugs [III B.Sc. Chemistry Students].
- Demonstration of growth of potassium chloride crystals.
- Demonstration of analysis of physical chemistry experimental results using Microsoft Excel [III B.Sc. Chemistry Students].

## Physics:

The list of new experiments introduced was:

1. Laser: Determination of thickness of a thin wire
2. Using the Abbe Refractometer demonstration was carried out to determine the refractive index of a given solution .

## 12. Details of equipments purchased from DBT Grant

### Botany:

S No	Item	Number	Cost	Date of purchase
1.	Muti-parameter pH/conductivity/Tem.	1	Rs.12,950.00	01.08.2009
2.	Student Microscope "Olympus"	6	Rs.36,332.40	01.08.2009
3.	Miniplast HEPA Filter, UV Lamp for Laminar Flow Bench	1	Rs.4,380	11.08.2009
4.	Dissecting Microscope	5	Rs.2,550	11.08.2009
5.	Bind Microscope with 4 Mega Pixel	2	Rs.47,420	14.08.2009
6.	Sigma Incubator with Controller & Fan	1	Rs.13,300	14.08.2009
7.	Remi Homogenizer RQ 127 A/D	1	Rs.8,800	14.08.2009
8.	Accessories for TRINO Microscope	1	Rs.6,300	14.08.2009
9.	Preethi Mixer Blue Leaf	1	Rs.3,600	19.08.2009
10.	Colony Counter (4 Digit D (9999 Max)	2	Rs.7,000	24.08.2009
11.	Digital Colorimeter & Filter	2	Rs.16,500	24.08.2009
12.	LAPTOP	1	Rs.37,000.00	16.10.2009
13.	Finnpipette F2-GLP	1	Rs.19,800	16.12.2009
14.	Electronic Balance 210 gm capacity, 0.01 gm accuracy	1	Rs.20,000.00	16.12.2009
15.	Vertical Gel Electrophoresis (8x7) (1 Gel)	1	Rs.5,950	24.12.2009
16.	Submarine(Horizontal) Gel Electrophoresis ( 7x4cm Gel)	7	Rs.19,635	24.12.2009
17.	Electrophoresis Power supply 100V	7	Rs.18,445	20.01.2010
18.	Mini Micro centrifuge	1	Rs.16,300.00	25.02.2010
19.	LCD	1	Rs.45,000	26.03.2010

**Zoology:**

S No	Item	Number	Cost	Date of purchase
1	Laminar Flow –“Clean Air Sys tem’ Cat No. CAV 0900 Vertical Model Working size 3x2x2’ with S.S Table, Poly Carbonate front door Gas inlet monometer complete unit	1	47,250	11/8/2009
2	Trino Microscope with Camera attachment-Olympus	1	46,800	14/8/2009
3	a) Haemocytometr GDR b) Ocular micrometer c) Stage micrometer	10 nos 20 nos 10 nos	25,480	19/8/2009
4	Submarine Gel Analytical Model 03-03 with STD Accessories’B”	2	16,640	2/9/2009
5	Binocular Microscope- Labomed Lx 300LED (2 Nos)	2	53,196	12/9/2009
6	a)Remi Hi- Speed homogenizer Mode L RQT 127 A/D with 1/8 H.P (2Nos.) b) Remi Cyclo Mixer Model CM 101 (2 Nos.)	2 2	26,312	15/9/2009
7	Lenovo G450 Laptop (1No)	1	37,000	30/9/2009
8	Digital balance PGB 200 GM Accuracy 1 MG -(1No)	1	18,200	10/10/2009
9	B.O.D incubator 845x500x400 mm,6 Cuft - (1No)	1	46,800	8/1/2010
10	a) Accupipet, T-10, 1-10UL, S.No 36296 b) Accupipet, T-200, 20-200UL, S.No 36281,38 c) Accupipet, T-1000, 1000-200UL, SNo 36641		14,439	24/2/2010
11	a) Membrane Filt. Holder 250/250ML b) Vacuum pump, Oil-Free 25 LPM, 22 “ HG S #911295	3 1	13,791	24/2/2010
12	a) Levo Plus Pipetting Aid b) Vacuum Pump, Oil-free 15 LPM, 27” HG c) Membrane Filt.Holder 250/250 ML	2 1	31,656	11/3/2010



**Chemistry:**

S No	Item	Number	Cost Rs.	Date of purchase
1	Digital Conductivity Meter	1	5,113.00	30.03.2010
2	Digital Potentiometer	1	4,500.00	30.03.2010
3	Liberty vision 295 OHP24V250A Twin lamps 2850-Luminous light output 285mmX285mm projection stage	1	8,200	30.03.2010
4	Ceasefire fire extinguisher ABC , 5KG	2	9,599.00	30.03.2010
5	Colorimeter ERMA Japan A22 with filters[one set]	1	19,800.00	24.03.2010
6	Laserjet 1007	1	5,500.00	23.03.2010
7	Vacuum pump 600L- double stage with all accessories	1	43,500.00	23.03.2010
8	Digital Top pan balance, Table top model, capacity 500g, model no. IN-500	1	10,800.00	23.10.2009
9	Lenova G450 Laptop[949-9JQ]	1	37,000.00	30.10.2009
10	TDS meter pocket range1-9999	1	1,040.00	12.09.2009
11	Microwave oven 19L	1	4,000	24.08.2009
12	Premier Fridge stabilizer -50KVA	1	1,000.00	24.08.2009
13	Digital pH meter infra make	1	4,500.00	05.09.2009
14	Panasonic hair dryer	1	1,000.00	24.08.2009
15	Philips juicer	1	1,780.00	24.08.2009
16	Doctor's Centrifuge Model303 with 8X15 mL cap	1	4,300.00	24.08.2009
17	R-4C compct centrifuge laboratory model with 8X15 mL head	1	26,000.00	24.08.2009
18	Electronic digital weighing balance "Shimadzu" Model no. BL220H	1	27,000.00	11.08.2009
19	Digital pH meter "Elico" Model no. LI-120 with combined electrodes	1	5784.48	11.08.2010
20	Magnetic stirrer "Remi"Model no. 2MLDX	1	4256.72	11.08.2009
21	Dhona balance 200g Model 200D	3	26,700.00	05.08.2009
22	Digital Spectrophotometer 340- 960nm	1	30,000.00	05.08.2009
23	Hot air oven 18X18X18 S.S. Temperature controller	1	26,200.00	18.07.2009
24	Conductivity meter digital with cell	1	6,280.00	18.07.2009

**Physics:**

S No	Item	Number	Cost Rs.	Date of purchase
1	Potentiometer	4	8860.00	19.08.09
2	Battery eliminator VAT	3	2940.00 472.00	19.08.09
3	OPAMP mini trainer kit VAT	5	15000.00 600.00	20.08.09
4	Musical calling bell	5	500.00	22.08.09
5	Automatic night lamp	5	500.00	22.08.09
6	Battery voltage level indicator	5	500.00	22.08.09
7	Automatic low power emergency light	5	600.00	22.08.09
8	Automatic traffic signal controller	5	750.00	22.08.09
9	Automatic water tank motor	5	800.00	22.08.09
10	Kitchen smoke detector	5	900.00	22.08.09
11	Security alert	5	850.00	22.08.09
12	IR Music transmitter	5	1200.00	22.08.09
13	Automatic phase changer VAT	5	1400.00 320.00	22.08.09
14	Canon A 1100 – Digital Camera	1	9500.00	10.09.09
15	Harrison WT-3760 - Tripods	1	1400.00	10.09.09
16	Spectrometer VAT	2	16700.00 668.00	10.09.09
17	Lenova laptop	1	37000.00	30.09.09
18	Ammeter Galvanometer VAT	12	8940.00 8940.00 715.00	07.10.09
19	Multimeter (Var tech model)	10	4650.00	8.10.09
20	Multimeter (Metran model)	2	5190.00	8.10.09
21	Abbe Refractometer VAT	1	8150.00 326.00	25.01.10
22	Conductivity Bridge VAT	1	3250.00 130.00	26.02.10

23	AC Voltmeter AC Ammeter Metal Bar VAT	1 1 1	450.00 450.00 350.00	24.02.10
24	Conductivity bridge	1	3718.00	06.03.10
25	Audio oscillator	2	7904.00	15.03.10
26	Visible Spectrophotometer	1	50000.00	15.03.10
27	Glass cuvettes for spectrophotometer	1	3376.00	15.03.10
28	Panasonic PT-LB 51EA	1	45000.00	15.03.10

### 13. Details of Books & Journals subscribed from DBT grant

#### Botany:

S No	Name of the Book / Journal	Number of Books
1.	Essentials of Biotechnology - Patil	2
2.	Plant Physiology – Salisbury	1
3.	Molecular Biology – Vidvavathi	1
4.	Taxonomy of Angiosperms – Sambamurty	1
5.	Introduction to Genetic Engineering – Rashid	1
6.	Algal Biology and Biotechnology – khattar	1
7.	Textbook of Biotechnology – T.T.Pandiyan	1
8.	Environmental Studies – Gouri Suresh	1
9.	Medicinal Plants Traditional knowledge – P.C.Trivedi	1
10.	Elements of Biotechnology – P.K.Gupta	5
11.	Ecology and Enviroment – P.D.Sharma	3
12.	Taxonomy of Angiosperms - Singh	5
13.	Anatomy of Seed Plants – Singh, Pandey & Jain	2
14.	Industrial Microbiology – A.H.Patel	1
15.	Environment and Ecology – Dasmohapatra	3
16.	Horticulture – George	1
17.	Experiments in Microbiology, Plant Pathology and Biotechnology – Aneja	1
18.	Molecular Biology – H.D.Kumar	1
19.	Plant Physiology – Pandey & Sinha	1
20.	Plant Anatomy and Embryology – Pandey & Ajantha	1
21.	Introduction to Fungi – H.C.Dubey	1
22.	An Introduction to Pteridophyta - Rashid	1

23.	Genetics – Strickberger	1
24.	Horticultural Crops Varietal Health – Singh	1
25.	A text book of Genetics – Rastogi	1
26.	Cytology, Genetics, Evolution and Ecology – Gupta	1
27.	Cytology, Genetics and Molecular Biology - Gupta	1
28.	Microbiology - Walker	1

### Zoology:

S No	Name of the Book / Journal	Number of Books
1	Biomedical Instrumentation by M. Arumugam	1
2	Handbook of Biomedical Instrumentation by Khandpur	1
3	A practical Manual for Basic Immunotechniques by Ravi& Solomon F D	1
4.	Medical Laboratory Technology by Kanai L Mukherjee Vols I,II & III	3+3
5.	General Microbiology by Powar & Daginwala Vols .I & II	2
6.	Scientific American ,October'09- September'10	12 issues

### Physics:

S No	Name of the Book	Number of Books
1.	Introduction to Condensed Matter Physics	1
2.	Principles of Modern Physics	1
3.	Quantum Mechanics	1
4.	Solid state Physics : Structure and Properties of Materials	1
5.	A Textbook of Mathematical Physics	1
6.	University Physics	1
7.	Modern Physics: Concepts and Applications	1
8.	Architecture, Programming and Applications of Advanced Microprocessors	1
9.	Basic Thermodynamics	1
10.	Celestial Mechanics	1
11.	Circuit Analysis	1
12.	Computer Applications in Physics	1
13.	Electronics : Circuits and Analysis	1
14.	Elementary Biophysics: An Introduction	1
15.	Feynman Lectures on Physics	1

	Volume :I	
16.	Feynman Lectures on Physics Volume :II	1
17.	Feynman Lectures on Physics Volume :III	1
18.	Introduction to Atomic and Molecular Spectroscopy	1
19.	Nano technology	1
20.	Modern Physics	1
21.	Applied Physics	1
22.	Electrical workshop	1
23.	Robotics	1
24.	Semiconductor Devices	1
25.	Physics Vol-I	1
26.	Physics Vol-II	1
27.	Physics	1
28.	Physics Vol-I	1
29.	Physics Vol-I	1
30.	A collection of questions & problems in Physics	1
31.	Concepts of Physics - I	1
32.	Concepts of Physics - II	1
33.	Lab Manual	1
34.	Physics can be fun	1
35.	Practical Physics	1
36.	Optics	1
37.	Electricity and Magnetism	1
38.	Mechanics	1
39.	A Text Book of Optics	1
40.	Objective Physics	1
41.	Principles of Electrodynamics	1

### Chemistry:

No..	Title	Number of Books
1)	A Text book of organic chemistry, 3 <sup>rd</sup> Edition	1
2)	A Text book of organic chemistry, 3 <sup>rd</sup> Edition	1
3)	Essentials of Crystallography	1
4)	Satya Prakash's Modern Inorganic Chemistry	1
5)	Satya Prakash's Modern Inorganic Chemistry	1
6)	Pharmaceutical Organic Chemistry	1
7)	Vogel's qualitative inorganic analysis, 7 <sup>th</sup> Edition	1
8)	Vogel's qualitative inorganic analysis, 7 <sup>th</sup> Edition	1
9)	Text book of Polymer Science, 3 <sup>rd</sup> Edition	1
10)	Polymer Science. A Text book Ane's Student Edition	1
11)	Polymer Science. A Text book Ane's Student Edition	1
12)	Polymer Science	1
13)	Polymer Science	1

14)	Polymer Science	1
15)	Principles of Inorganic Chemistry	1
16)	Elements of Analytical Chemistry	1
17)	Text book of Polymer Science, 3 <sup>rd</sup> Edition	1
18)	Nano Materials	1
19)	Composite Materials Production, properties, testing and applications	1
20)	Computers and their applications to chemistry	1
21)	Principles of Polymer Science	1
22)	Organic Chemistry through solved problems	1
23)	Fundamental Concepts of Environmental chemistry	1
24)	Green solvents for organic synthesis	1
25)	Organic named reactions. A unified approach	1
26)	Computers and their applications to chemistry 2 <sup>nd</sup> Edition	1
27)	Computers and their applications to chemistry 2 <sup>nd</sup> Edition	1
28)	Essentials of Environmental Science	1
29)	Environmental Studies	1
30)	Biochemistry	1
31)	Principles of Polymer Science 2 <sup>nd</sup> Edition	1
32)	Laboratory techniques in organic chemistry	1
33)	Introduction to Organic Chemistry	1
34)	Organic Chemistry 8 <sup>th</sup> Edition (2007)reprint	1

#### 14. Qualitative improvement due to DBT support:

##### Botany:

- Through this programme, the students **were enriched in scientific knowledge** and motivated to understand and appreciate the importance of biology.
- Students had '**Hands on Experience**' in performing **practicals individually** through equipments purchased such as Micropipette, Electrophoresis units, Electronic balance in Molecular Biology practicals- Plasmid DNA isolation, Restriction Digestion Enzyme, SDS-PAGE (Protein). The microscopes added to the existing number enhanced the students to carry out individual microscopic analysis of various experiments.
- Students were exposed to the **current trends in biology** through guest lectures by experts from different institutions.
- The scheme enabled the department to enumerate on the flora (trees and herbs) of the campus and this has been photographed and **documented in the Green Initiatives** Booklet, which enabled the students to learn about the biodiversity of the college campus. .

- Students were given **entrepreneurial skills** through various lectures cum demonstration such as kitchen Garden, Vegetable Carving, Ikebana, Bonsai, Wine and Yoghurt preparation.
- The Laptop and LCD provided by the funds enabled the teachers and the students to **enhance the teaching learning process.**

### Zoology:

- Financial assistance provided by the Scheme helped in the purchase of several new Equipments in more numbers. This made it possible for every student to handle the equipment and **perform the experiments individually.** It has enhanced our practical curriculum and broadened the scope of our studies.
- Conduct of Workshops and Seminars for both students and faculty was feasible and has helped in **upgrading our knowledge**
- It has also made possible the **publication of Practical Manuals**, which serve as ready reckoners to both students and faculty.
- We have been able to **update our Department Library** by purchasing relevant books for the new courses
- This grant has also enabled us to organize more Field Trips to enrich the **Teaching-Learning process.**

### Chemistry:

- Procure equipments, chemicals and glass-wares to enhance **individual ‘Hands on Experience’**
- Learn through demonstrations
- Participation in exhibition, workshops, field visits and seminars for **experiential learning**
- Enabled purchase of more books in chemistry for reference and **use by economically weak students.**
- **Environmental awareness** through water analysis, soil analysis and food analysis.
- **The timely intervention of the Ministry of Science and Technology, Govt. of India has facilitated to rekindle the passion to study basic sciences through the Star College Scheme.**

### Physics:

- The departmental library saw an increase in the purchase of books with the grant provided. The books bought are relevant to the course and has provided **necessary reading material to the students.**
- A number of **new equipments** were bought.
- A number of workshops were arranged for the students to gain hands on experience so that the **basics of the subject was strengthened**
- The seminars conducted made the students aware not only of the importance of learning the fundamentals of physics but also the **immense scope of the subject.** This has motivated several students **to pursue higher studies in physics.**
- Field trips were organized in order to provide hands on experience of the **applications of the subject.**

### **15. Problems faced, if any, in implementation of the programme and utilization of DBT grant**

Since the upper limit for purchase of equipment has been fixed at Rs. 50,000/- , costly equipment like PCR which exceeds this budget could not be purchased.

The amount allocated for the summer implant training was not used to the full capacity, since the first installment of the grant was received in June 2009 (i.e. after the summer break) and the financial year closed on March 2010. However, the most suitable time for Training Programmes is only during the summer vacation.

Hence release of the grant at an early date will assist in the conduct of the workshops and training programmes.

### **ACKNOWLEDGEMENT:**

**The college places on record its sincere thanks to the Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India, for the financial support and opportunity given to strengthen the Basic Sciences. This scheme has benefited nearly 500 undergraduate students and we are sure that similar financial assistance will help the young scientists to pursue higher studies and research which will benefit the society at large.**