

**PROFORMA FOR SUBMISSION OF APPLICATION FOR
STAR COLLEGE**

PART – A

Information about existing facilities and Programmes

S.No	Parameter	Sub-Parameter
Section – A : General Information		
A-1	Name of the College	NEHRU MEMORIAL COLLEGE (Autonomous) (Accredited with ‘A’ grade by NAAC) Puthanampatti, Tiruchirappalli – 621 007, TAMILNADU
A-2	Nature of the College (Government, Private, Autonomous)	Grant – in - Aid Autonomous College
A-3	Whether registered under 12(b) and 2(f) of the UGC? Please enclose Documentary Evidence.	Yes, Enclosed in Annexure I (Page No.51)
A-4	If Private/ NGO/Autonomous – Darpan ID to be provided (as per details of NITI Aayog)	TN/2017/0154186
A-5	Application Status	<p>a) Fresh <input checked="" type="checkbox"/></p> <p>b) Rejected after Screening (date of rejection letter) <input type="checkbox"/></p> <p>c) Rejected after Presentation (date of rejection letter) <input type="checkbox"/></p> <p>d) Completion of One Tenure of Support (date of discontinuation) <input type="checkbox"/></p> <p>e) Addition of New Departments <input type="checkbox"/></p> <p>If, (d) and (e) above is applicable then, <input type="checkbox"/></p> <p>i) Whether the college has dedicated wing For Biotechnology. <input type="checkbox"/></p> <p>ii) No. of specialized training programme for faculty <input type="checkbox"/></p>

		iii) No. of faculty participated iv) No. of students opting/opted for PG courses <input type="checkbox"/> v) No. of SOPs created/ kits for practical <input type="checkbox"/>
A-6	Complete Postal Address with Pin-Code	Nehru Memorial College (Autonomous) Puthanampatti Tiruchirappalli – 621 007 Tamil Nadu
A-7	Name of the Principal Telephone No. with STD Code, Mobile Number, Fax No., E-mail, website(URL)	Dr.A.R.PONPERIASAMY Phone : 04327- 234227 Mobile: 09486165596 Fax : 04327- 234811 E-mail: principalnmc@nmc.ac.in Website: www.nmc.ac.in
A-8	Location of College	a) Urban <input type="checkbox"/> b) Rural <input checked="" type="checkbox"/> c) Tribal <input type="checkbox"/>
A-9	Age of the College	a) 10-25 years <input type="checkbox"/> b) 26-50 years <input type="checkbox"/> c) 51-75 years <input checked="" type="checkbox"/> d) 76-100 years <input type="checkbox"/>
A-10	Affiliated to which University	Bharathidasan University, Tiruchirappalli -620024 Tamilnadu.
A-11	Status about affiliation	a) Permanent <input checked="" type="checkbox"/> b) Temporary <input type="checkbox"/>

A-12	Name of the Departments (Subject wise)	
1	Name of the Department	ZOOLOGY
	a) Name of the Program	UG, PG, M.Phil, Ph.D
	b) Date of Start of the program	B.Sc., Zoology - 1982 M.Sc., Zoology - 2003 M.Phil., Zoology - 2005 Ph.D. Zoology - 2005
	Name of Contact Person	Dr. M. P. Santhi
	a) Designation	Associate Professor & Head Department of Zoology
	b) Complete Address	Nehru Memorial College (Autonomous) Puthanampatti, Tiruchirappalli – 621 007, Tamilnadu
	c) Mobile No.	09842443022
	d) Email	mpsnmc@gmail.com
2	Name of the Department	PHYSICS
	a) Name of the Program	UG, PG, M.Phil, Ph.D
	b) Date of Start of the program	B.Sc., Physics - 1970 M.Sc., Physics - 1983 M.Phil., Physics - 2000 Ph.D. Physics - 2000
	Name of Contact Person	Shri. K. Nagarajan
	a) Designation	Associate Professor & Head Department of Physics
	b) Complete Address	Nehru Memorial College (Autonomous) Puthanampatti, Tiruchirappalli – 621 007, Tamilnadu.
	c) Mobile No.	09443879116
	d) Email	venkatahan@gmail.com

3	Name of the Department	CHEMISTRY
	a) Name of the Program	UG, PG, M.Phil, Ph.D
	b) Date of Start of the program	B.Sc., Chemistry - 2005 M.Sc., Chemistry - 2007 M.Phil., Chemistry - 2010 Ph.D. Chemistry - 2007
	Name of Contact Person	Dr. A. Sekar
	a) Designation	Associate Professor & Head Department of Chemistry
	b) Complete Address	Nehru Memorial College (Autonomous) Puthanampatti, Tiruchirappalli – 621 007, Tamilnadu
	c) Mobile No.	09486968387
	d) Email	alagansek66@gmail.com
4	Name of the Department	MATHEMATICS
	a) Name of the Program	UG, PG, M.Phil, Ph.D
	b) Date of Start of the program	B.Sc., Mathematics - 1978 M.Sc., Mathematics - 2003 M.Phil., Mathematics - 2007 Ph.D. Mathematics - 2009
	Name of Contact Person	Dr. V. Saavithri
	a) Designation	Assistant Professor & Head Department of Mathematics
	b) Complete Address	Nehru Memorial College (Autonomous) Puthanampatti, Tiruchirappalli – 621 007, Tamilnadu
	c) Mobile No.	09443856955
	d) Email	saavithriramani@gmail.com

5	Name of the Department	COMPUTER SCIENCE
	a) Name of the Program	UG, PG, M.Phil, Ph.D
	b) Date of Start of the program	B.Sc., Computer Science - 1983 M.Sc., Computer Science - 1994 M.Phil., Computer Science - 2007 Ph.D. Computer Science - 2007
	Name of Contact Person	Dr.M.Muralidharan
	a) Designation	Associate Professor & Head Department of Computer Science
	b) Complete Address	Nehru Memorial College (Autonomous) Puthanampatti, Tiruchirappalli – 621 007, Tamilnadu
	c) Mobile No.	09486646708
	d) Email	mm_nmc@yahoo.com
A-13	Name of Programme Coordinator	Dr. D. Viji Saral Elezabeth
	a) Designation	Associate Professor of Chemistry
	b) Complete Address	Nehru Memorial College (Autonomous) Puthanampatti, Tiruchirappalli – 621 007, Tamilnadu
	e) Mobile No.	08220068958
	d) Email	vijisarastarcollege@gmail.com
Section-B: Infrastructure		
B-1	Laboratories (Details for proposed department)	DEPARTMENT OF ZOOLOGY DEPARTMENT OF PHYSICS DEPARTMENT OF CHEMISTRY DEPARTMENT OF MATHEMATICS DEPARTMENT OF COMPUTER SCIENCE Details are enclosed in Annexure II (Page No.53)

B-2	Library	
a)	Are there separate departmental libraries other than central library	No
b)	Indicate the total amount spent during the last three years	We have central library housing more than 52,000 books.
B-3	Computer Internet Facility	Yes (A speed of 35MBPS-50MBPS)
a)	Department of Zoology	Yes
b)	Department of Physics	Yes
c)	Department of Chemistry	Yes
d)	Department of Mathematics	Yes
e)	Department of Computer Science	Yes
B-4	a) No. of Lecture Halls	
a)	Department of Zoology	3
b)	Department of Physics	5
c)	Department of Chemistry	3
d)	Department of Mathematics	3
e)	Department of Computer Science	3
	b) No. of Laboratories	
a)	Department of Zoology	3
b)	Department of Physics	3
c)	Department of Chemistry	2
d)	Department of Mathematics	1
e)	Department of Computer Science	4

SECTION-C

FACULTY

C -1) Details about teachers in each Science Department (a to g)

Department of Zoology

: 05 Aided Staff

06 Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
1	Dr. M.P.Santhi Head & Associate Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Entomology	31 Years
2	Dr. P.Neelanarayanan Associate Professor Department of Zoology	M.Sc., Ph.D.	Vermi-Biotechnology	19 Years
3	Dr. C .Sasikumar, Associate Professor Department of Botany	M.Sc., M.Phil., Ph.D.	Environmental Biotechnology	19 Years
4	Dr. K.Saravanan Assistant Professor Department of Zoology	M.Sc., Ph.D.	Environment & Natural Drug research	8 Years
5	Dr. V.Ramesh, Assistant Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Toxicology, Taxonomy	5 Years

Details of Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
6	Dr.N.Ramesh Assistant Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Ornithology	11 Years
7	Dr. G. Revathi Assistant Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Photo therapy	3 Years
8	Dr.A.Boopathiraja Assistant Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Bhytomedicine	9 Years

9	Dr.R.Sudha Assistant Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Micro Biology	8 Years
10	Dr.C.Renuka Assistant Professor Department of Zoology	M.Sc., M.Phil., Ph.D.	Herbal plant Evolution	6 Years
11	Dr.M.Meenashisundaram Assistant Professor Department of Botany	M.Sc., M.Phil., Ph.D.	Micro Biology	10 Years

h) Publications over last five years by the department:

Number of papers published in peer reviewed journals (international/national):

12

List of publications over the last five years by the staff are enclosed in **Annexure III (Page No.56)**

i) R&D Projects Received from different funding agencies indicating title, cost, duration, date of sanction, name of funding agencies.

S.No	Funding Agency	Title of the Project	Principal Investigator	Amount (Rs.) Lakhs	Duration
1	UGC	Biodegradation of polycyclic aromatic hydrocarbons (PHAs) by mixed cultures of wild basidiomycetes fungi and bacterial isolates from petroleum contaminated soil: an in vitro and in silico comparative approach.	Dr. C.Sasikumar	10.29	2012 - 2014
2	DST-Fast Track Young Scientist Award	Evaluation of antidiabetic effect of <i>Bougainvillea glabra</i> flower extract and Mg doped ZnS nano particle in different cell line.	Dr. A. Boopathi Raja	21.46	2012-2015
3	DST-Fast Track Young Scientist Award	Isolation, characterization and antidiabetic evaluation of flavonoid compound of <i>Biophytum sensitivum</i> in	Dr. C. Renuka	18.00	2012-2014

		pancreatic cell line			
4	ICAR, New Delhi	All India Network Project on Vertabrates Pest Management. Specialisation of Agricultural Ornithology.	Dr.P.Neelanarayanan	23.30	2015-2020
5	DST-SERB	Home Range and Habitat Use of Indian Eagle Owl (Bubo bengalensis FRANKLIN, 1831) - a Potential predator of Rodent and Insect Pests	Dr.P.Neelanarayanan	36.00	2017-2020

C 2) Details about in service training for teachers:

Number attended during last Five Years

- a) Orientation Course : 16
- b) Refresher Course : 01
- c) Conferences/ Symposia/ Seminar/workshop : 61

Details are enclosed in **Annexure IV (Page No.68)**

C -1) Details about teachers in each Science Department (a to g)

Department of Physics : 12 Aided Staff

: 01 Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
1	Thiru. K. Nagarajan Head & Associate Professor	M.Sc., M.Phil.	Nano Science	33 Years
2	Dr. S. Kumararaman Associate Professor	M.Sc., M.Phil., Ph.D.	Crystal Growth	33 Years
3	Dr. A. Venkatesan Associate Professor	M.Sc., M.Phil., Ph.D.	Nonlinear Dynamics	19 Years
4	Dr. A. Rajendran Associate Professor	M.Sc., Ph.D., PGDMCH.,	Instrumentation and Embedded	19 Years

			systems	
5	Dr. P. Palaniyandi Assistant Professor	M.Sc., Ph.D.	Nonlinear Dynamics	12 Years
6	Dr. R. Sangeetha Assistant Professor	M.Sc., M.Phil., Ph.D.	Spectroscopy	12 Years
7	Dr. P.R. Venkatesh Assistant Professor	M.Sc., M.Phil., Ph.D.	Nonlinear Dynamics	12 Years
8	Dr. V. Pandiyan Assistant Professor	M.Sc., Ph.D.	Nano Science	7 Years
9	Dr.K.Srinivasan Assistant Professor	M.Sc., M.Phil., Ph.D.	Nonlinear Electronics	5 Years
10	Thiru. A.Jagadeesan Assistant Professor	M.Sc., M.Phil., NET	Polymer Science	4 Years
11	Dr. S. Balamurugan Assistant Professor	M.Sc., M.Phil., Ph.D.	Crystal Growth	4 Years
12	Dr. G. Thilagavathy Assistant Professor	M.Sc., M.Phil., Ph.D.	Spectroscopy	2 Years

Details of Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
13	Mr.R.Kabilan Assistant Professor	M.Sc., M.Phil., SET.	Nonlinear Dynamics	14 Years

h) Publications over last five years by the department:

Number of papers published in peer reviewed journals (international/national):

43

List of publications over the last five years by staff are enclosed in **Annexure III**

i) R&D Projects Received from different funding agencies indicating title, cost, duration, date of sanction, name of funding agencies.

S.No	Funding Agency	Title of the Project	Principal Investigator	Amount (Rs.) Lakhs	Duration
1	UGC	Kinetics Nucleation and Growth of amino acid based Bimetallic NLO crystals	Dr. S. Kumararaman	11.78	2013 - 2016

2	DST-SERB	Design and study of regular and delayed chaotic circuits for emergent nonlinear phenomena	Dr. K. Srinivasan	24.65	2014 - 2017
3	UGC	Synthesis, Characterization and Photophysical Properties of Novel Perylene Bisimide/ Porphyrin derivatives activated Inorganic Semiconductors for Effective Environmental Remediation	Dr. V. Pandiyan	2.95	2016-17
4	DST-SERB	Highly Visible Active Surface Functionalized Mesoporous XTiO ₃ /NiS,(X=Ba,Sr) Perovskite Nanomaterials	Dr. V. Pandiyan	20.04	2017-2020
5	DST-SERB	Design and implementation of fundamental logic elements and memory device using nonlinear dynamical systems	Dr.A.Venkatesan	18.86	2017-2020

C 2) Details about in service training for teachers:

Number attended during last Five Years

a) Orientation Course : 10

b) Refresher Course : 06

c) Conferences/ Symposia/ Seminar/workshop : 14

Details are enclosed in **Annexure IV**

C -1) Details about teachers in each Science Department (a to g)**Department of Chemistry :06 Aided Staff****:03 Temporary Staff**

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
1	Dr.A.Sekar Head & Associate Professor	M.Sc., M.Phil., Ph.D.	Biological oxidation & computational chemistry	23 Years
2	Dr. D.Viji Saral Elezabeth Associate Professor	M.Sc., M.Phil., Ph.D.	Phytochemistry & Adsorption dynamics	19 Years
3	Dr. M. Uma Devi Assistant Professor	M.Sc., M.Phil., Ph.D.	Coordination Chemistry & Bio-inorganic chemistry	7 Years
4	Dr. M.Ramesh Assistant Professor	M.Sc., M.Phil., Ph.D.,	Bio-inorganic chemistry	5 Years
5	Dr. A.Idhayadhulla Assistant Professor	M.Sc., M.Phil., Ph.D.	Organic synthesis	4 Years
6	Dr. R.Surendrakumar Assistant Professor	M.Sc., M.Phil., Ph.D.	Medicinal chemistry	4 Years

Details of Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
7	Dr.A.Kasthuri Assistant Professor	M.Sc., M.Phil., Ph.D.,NET.	Adsorption and Corrosion studies	10 Years
8	Dr.P.Johnraj Assistant Professor	M.Sc., M.Phil., Ph.D.	Corrosion studies	11 Years
9	Dr.S.Arumugam Assistant Professor	M.Sc., M.Phil., Ph.D.	Phyto chemistry	10 Years

h) Publications over last five years by the department:

Number of papers published in peer reviewed journals (international/national):

49List of publications over the last five years by staff are enclosed in **Annexure III**

i) R&D Projects Received from different funding agencies indicating title, cost, duration, date of sanction, name of funding agencies.

S.No	Funding Agency	Title of the Project	Principal Investigator	Amount (Rs.) Lakhs	Duration
1	DST	Studies on the degradation of Industrial Effluent Using Nano size Metal oxide as photo catalyses –A green chemistry approach	Dr.M.Umadevi	6.00	2013 - 2014

C 2) Details about in service training for teachers:

Number attended during last Five Years

a) Orientation Course :13

b) Refresher Course :05

c) Conferences/ Symposia/ Seminar/workshop :37

Details are enclosed in **Annexure IV**

C -1) Details about teachers in each Science Department (a to g)

Department of Mathematics : 05 Aided Staff

02 Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
1	Tmt.T.Jayasankari Associate Professor	M.Sc., M.Phil. SET	Mathematical Modeling	19 Years
2	Dr.V.Saavithri Head & Assistant Professor	M.Sc., M.Phil., Ph.D.	Stochastic Process	12 Years
3	Dr.J.Geetha Assistant Professor	M.Sc., M.Phil., Ph.D.	Stochastic Process	12 Years
4	Dr.V.Mohanaselvi Assistant Professor	M.Sc., M.Phil., Ph.D.	Graph Theory	5 Years
5	Tmt.P.Kavitha Assistant Professor	M.Sc., M.Phil., SET	Graph Theory	5 Years

Details of Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
6	Ms.M.Nirmala Assistant Professor	M.Sc., M.Phil., NET.	Number Theory	8 Years
7	Dr.N.Thiruniraiselvi Assistant Professor	M.Sc., M.Phil., Ph.D.	Number Theory	1 Year

h) Publications over last five years by the department:

Number of papers published in peer reviewed journals (international/national):

04

List of publications over the last five years by staff are enclosed in **Annexure III**

C 2) Details about in service training for teachers:

Number attended during last Five Years

a) Orientation Course : 07

b) Refresher Course :04

c) Conferences/ Symposia/ Seminar/workshop :24

Details are enclosed in **Annexure IV**

C -1) Details about teachers in each Science Department (a to g)

Department of Computer Science : 06 Aided Staff

:04 Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
1	Dr.M.Muralidharan Associate Professor	M.Sc., PGDCA., Ph.D.	Data Mining	32 Years
2	Dr.A.R.Ponperiasamy Associate Professor	M.Sc., M.Phil., PGDCA., Ph.D	Artificial Neural Networks	31 Years
3	Dr.S.Murugan Associate Professor	M.Sc., M.Phil., Ph.D.	Data Mining	31 Years

4	Dr.K.Mani Associate Professor	MCA., Ph.D.	Cryptography	30 Years
5	Thiru.S.Charles Britto Associate Professor	MCA., M.Tech.	Data Mining	30 Years

Details of Temporary Staff

S. No.	Name & Designation	Educational Qualification	Specialization	Experience
6	Tmt.K.Ponvelalazhagulakshmi Assistant Professor	B.E.,M.B.A.,NET	Python, Simulation & Modeling	19 Years
7	Dr.D.Jayachitra Assistant Professor	M.Sc., M.Phil., Ph.D.	Data Mining, Database system,	19 Years
8	Dr. K.Sridevi Assistant Professor	M.Sc., M.Phil., Ph.D.	Web Mining,	18 Years
9	Ms.P.Kalpana Assistant Professor	M.Sc., M.Phil., MBA., SET., NET	Data Mining,	18 Years

h) Publications over last five years by the department:

Number of papers published in peer reviewed journals (international/national):

10

List of publications over the last five years by staff are enclosed in **Annexure III**

C 2) Details about in service training for teachers:

Number attended during last Five Years

a) Orientation Course : **04**

b) Refresher Course : **03**

c) Conferences/ Symposia/ Seminar/workshop : **64**

Details are enclosed in **Annexure IV**

SECTION-D: STUDENTS**(Aided Section) Academic Year 2014-2019****Department of Zoology****Mode of Selection as a Merit**

Department	Academic Year	Sanctioned Strength	Admitted		OBC/BC	MBC	SC/ST	No. of Students passed out/ Percentage
			M	F				
Zoology	2014-2015	50	01	49	10	20	20	37/41=90.24
Zoology	2015-2016	50	05	45	07	20	23	34/47=72.34
Zoology	2016-2017	50	08	40	11	16	20	32/41=78.05
Zoology	2017-2018	50	05	45	10	25	15	-
Zoology	2018-2019	50	05	42	09	16	22	-

SECTION-D: STUDENTS**(Aided Section) Academic Year 2014-2019****Department of Chemistry****Mode of Selection as a Merit**

Department	Academic Year	Sanctioned Strength	Admitted		OBC/BC	MBC	SC/ST	No. of Students passed out/ Percentage
			M	F				
Chemistry	2014-2015	40	04	36	15	16	09	28/40=70.00
Chemistry	2015-2016	40	10	26	17	10	09	37/39=94.87
Chemistry	2016-2017	40	11	28	09	18	12	32/35=91.43
Chemistry	2017-2018	40	10	27	12	15	09	-
Chemistry	2018-2019	40	13	21	09	18	07	-

SECTION-D: STUDENTS**(Aided Section) Academic Year 2014-2019****Department of Physics****Mode of Selection as a Merit**

Department	Academic Year	Sanctioned Strength	Admitted		OBC/BC	MBC	SC/ST	No. of Students passed out/ Percentage
			M	F				
Physics	2014-2015	40	02	38	18	14	08	35/39=89.74
Physics	2015-2016	40	06	34	17	15	08	29/34=85.29
Physics	2016-2017	40	06	34	15	13	12	35/40=87.05
Physics	2017-2018	40	11	29	11	18	11	-
Physics	2018-2019	40	09	31	15	13	12	-

SECTION-D: STUDENTS**(Aided Section) Academic Year 2014-2019****Department of Mathematics****Mode of Selection as a Merit**

Department	Academic Year	Sanctioned Strength	Admitted		OBC/BC	MBC	SC/ST	No. of Students passed out/ Percentage
			M	F				
Mathematics	2014-2015	40	09	31	10	08	22	40/40=100
Mathematics	2015-2016	40	03	37	22	13	05	38/40=95.24
Mathematics	2016-2017	40	05	33	14	16	08	37/38=97.37
Mathematics	2017-2018	40	03	33	13	17	06	-
Mathematics	2018-2019	40	05	35	11	15	14	-

SECTION-D: STUDENTS

(Aided Section) Academic Year 2014-2019

Department of Computer Science

Mode of Selection as a Merit

Department	Academic Year	Sanctioned Strength	Admitted		OBC/BC	MB C	SC/ST	No. of Students passed out/ Percentage
			M	F				
Computer Science	2014-2015	50	10	39	19	22	08	42/43=97.67
Computer Science	2015-2016	50	10	40	29	18	03	34/43=79.07
Computer Science	2016-2017	50	15	35	28	19	03	40/45=88.89
Computer Science	2017-2018	50	11	37	25	19	04	-
Computer Science	2018-2019	50	10	29	18	17	04	-

b) Do all students under-take a summer training/research project? If yes, what is the duration?
No. of students in each project.

Details are enclosed in **Annexure V (Page No.90)**

c) Provide the list of student project

Details are enclosed in **Annexure VI (Page No.95)**

SECTION – E : CURRICULUM

E1 : Details are enclosed in **Annexure VII (Page No.95)**

PART B

Technical details of the proposed programme : Department of Zoology

1. Executive Summary

At undergraduate level the absence of modern equipment and devices hampering the student practical and not to complete it properly though they are studying theoretically. If we get the proposed instrument and devices enable the UG students for make use of their practical easily so as to enable them to learn newer techniques owing to environmental issues like waste water treatment, microbial analysis, water analysis and to know pollution in the environment. Some of the instrument is useful for the separation of micro molecules from cell and to know the variety of proteins. The students will be learning more practical techniques from inter departments like Zoology, Botany, Chemistry, Physics able to join for further studies like PG or diploma or research oriented skill training programme which will enhance the entrepreneur skill and NGO's or Government oriented jobs in India or Abroad. Students and staff could be invited to the parent institution to learn the technique. This kind of approach enhances the students to trigger their mind to do research in outstanding problems existed in various field and is expected to encourage the students to undertake higher studies in science.

2. Specific Objectives

- To enable the students to learn the applications of Zoological principles in human biology.
- To understand the impact of Zoology on basic human needs such as health care, agriculture, industrial, chemical and energy.
- To know the recent developments in Zoology.
- To evaluate the future priorities in Zoology.
- To know the practical areas of Applied Zoology.
- To develop skill in the various modern bio-techniques.

3. Measures to be adopted to enhance Students:

At the Department of Zoology as many as 250 students at under graduate level are being conducted practical as well as mini project work, involvement of field trip for the purpose of improving their skill in employment opportunity. Industrial visit is also made to give awareness to the students improving their practical knowledge. Laboratory-based learning skills allow students to experience bioscience knowledge also.

4. Faculty Improvement programme

To improve faculty skill Hand on Training, Workshop, Faculty development programme by way of advance training by inviting experts from various deputed institution of a short period. This kind of programme is usually organized by the institution; the learnt teaching techniques are promptly implemented at class room level to the students. It has been long believed that most important resource that any institution higher education has its faculty member who teach knowledge and skills to students.

5. Appropriate modification proposed in curriculum to cover laboratory exposure to students and IPR & bio-safety issues.

The elective and skill based courses of relevance to zoology will be modified in order to incorporate the UG practical methods.

A course named by Immunology & Bioinformatics will be offered as an optional course for elective VI semester which includes hands-on training on tools of immunological techniques and Bioinformatics tools.

In the semester VI, mini research projects will be offered to the students under the supervision of research guides as part of elective courses.

6. Techniques to be included for hands on training to students

a. Horizontal gel electrophoresis and DNA apparatus

Electrophoresis is used to quantitatively study the separation of molecules, protein and DNA. The analysis is very accurate and often used in separation of Protein and DNA.

Gel electrophoresis is a method for separation and analysis of macromolecules (DNA, RNA and proteins) and their fragments, based on their size and charge. Nucleic acid molecules are separated by applying an electric field to move the negatively charged molecules through a matrix of agarose or other substances.

b. Ultra Centrifuge

Ultracentrifuges are commonly used in molecular biology, biochemistry, and cell biology. Applications of ultracentrifuges include the separation of small particles such as viruses, viral particles, proteins and/or protein complexes, lipoproteins, RNA, and plasmid DNA.

c. PCR Analyzer

It is useful for molecular biology and genetics and DNA fragments. It is important tool for DNA analysis and gene identifying

7. Proposed activities for laboratory staff

- Analysis of Blood samples by using Biochemical Analyzer (Demonstration only)
- Demonstration of Beer-Lamberts' law and construction of standard graph using UV – Visible spectrophotometer
- Quantitative estimation of Biomolecules
- Lymphoid organs of the rat (Demonstration only)
- Double Immuno-diffusion (Demonstration only)
- **Demonstrations** Capturing of high resolution digital images of Gel bands by using Gel Documentation system
- **Demonstrations** Animal and Plant Tissue culture facilities including Inverted Microscope and CO₂ Incubator

8. Involvement of visiting faculty

The subject experts from Bioscience faculty from Universities and Research institutes will be invited for giving training our students for imparts knowledge in biological aspects.

The scientists from reputed institutes such a SACON, Zoological Survey of India, BNHS, WII, WTI will be called for giving training role of Zoology students to safe guard the environment.

Practical to be covered:

The local villages will be invited to our college and the physical test such as blood test, TB, Infertility and related diseases will be diagnose by using ELISA kit, Hemoglobino meter, Haemocytometer, Blood Pressure device, used for the purpose. Hence an awareness will be created among village people as well as students periodically.

The parameters used for biological purposes can be measured and analyzed. The environmental factors can be determined by measuring the various environmental parameters.

9. Details of projects to be carried out:

- ABO blood grouping and Rh typing
- Estimation of Hemoglobin
- RBC/WBC blood cell count
- Water quality assessment estimation of O₂, CO₂, Nitrate, COD and BOD
- Drug design to find out Diabetics and cancer treatment by using various plant extracts
- Urinary tract infection, infertility, uterus cancer, will be created awareness at local level

The proposed equipment/device will be used for the aforesaid project intensively. The proposed equipment will be used widely in the department as well as inter departments and society.

10. Time line for activities to be carried out under DBT Star scheme for B.Sc. Zoology students:

Activities	First Year	Second Year	Third Year
Introduction of new practicals in whole Curriculum			
Project work during the third year			
Summer training during I and II year			
Industrial training during the II year			
Faculty Improvement Program(FIP) for dept staff			

Number beneficiaries: 180 under graduates students and faculty staff-members

11. Proposed outreach activities for school teachers and college teachers per year

Each semester (90 days) two programme will be conducted for school teachers and college teachers per year. The nearby school and college will be indentified and invited for training them.

12. Details of Institutional Ethics committee if any: NIL

PART B

Technical details of the proposed programme: Department of Physics

(i) Executive Summary Indicating Relevance and Expected Outcome:

The Star Programme offered by DBT immensely helps us to improve the knowledge, thought provoking mind skill development by hands on experience to various research level equipments, also this program enable the students to think on the perspective of life science. This STAR college program helps to augment our lab facility which we could not obtain through normal funding.

The UV-VIS spectrophotometer will help our students to understand the physics involved in it for the study of normal samples as well as the sample used in biology, food industry, and industrial samples. Hence this single instrument itself can help our students to gain the knowledge on application of UV- VIS spectrophotometer. The nuclear radiation detector based measurements will help them to understand the level of contamination of water samples collected from various part of Tamil Nadu. The integrated kit is a standalone kit for doing about 30 experiments and to understand the importance of various components by interfacing to a single unit. The Fiber optic Kit will help to understand the roll of various color filters in optical fiber communication industry.

(ii) Specific objective:

- To inculcate young minds to various areas of research and interdisciplinary aspects of science and technology particularly life science
- To feel the taste of research and a passion for research as a carrier in challenging areas of Environmental studies, which is a threat to mankind.

- To use of modern sophisticated equipments for understanding the role of physics in chemical and biological sciences.

(iii) Measures to be adopted to enhance the bench skills of students, project work, summer training and industrial training

- Mini project work to be assigned compulsorily to our final year undergraduate students as a part of curriculum
- Industrial visits to be included during the final year and could be considered for evaluation
- Summer training courses for undergraduate students will be conducted.

(iv) Measures to be undertaken to upgrade skills of faculty by participation in faculty improvement programme

- The staff members are encouraged and deputed to attend refresher and orientation courses, seminars and workshops to develop their skills both for research and enhance teaching ability.
- The department also takes constant efforts to conduct state level and national level conferences and seminars to keep abreast of research and developments around the globe.

(v) . Appropriate modifications proposed in curriculum to cover laboratory exposure to students and IPR & bio-safety issues.

S.No	Title of the existing course	Modifications to be carried out
1	Semester -V Atomic & Nuclear Physics	Portions will be added bio-safety measures in case nuclear catastrophe.
2	Semester -V Python Programming	Portions will be added to plot logistic map model X_n Vs n graph and ODE
3	Semester- VI Major Practical IV	Experiments related to enumeration of bacteria by UV and radiation

(vi) . Techniques to be included for hands on training to students.

1). The training on bio-safety measures to be undertaken in case nuclear catastrophe.

The final year students are given hands on experience to use GM counter and other nuclear detectors for measuring the nuclear radian levels. The detection of radiation based training will be given to our students in association with the Indira Gandhi Centre for Atomic Research (IGCAR). The fundamental aspects of bio-safety will be insisted to our undergraduate students from expertise of IGCAR scientists.

2). Role of UV radiation on microbial numbers and population

The Ultraviolet (UV) radiation is part of electromagnetic spectrum which covers the wavelength of 100 to 350 nm plays a vital role in the biological aspects. The UV radiation helps to kill the Bactria content in a sample. When we alter the time of exposure of the sample to the UV radiation, percentage of bacteria killed by the UV light can be determined. Also we can calculate the surviving bacteria even after UV exposure. This kind of study is known as “Enumeration of Bacteria”. So determination of number of micro-organisms plays a important role in our day-to- day life when we consume food items and beverages. The undergraduate Physics students in association with the biological science students will estimate the microbial population. In addition to the above use the following **objectives** will be met by using the UV-VIS-NIR Spectrophotometer

- Enzymatic determination of alcohols, aldehydes and malic acid
- Browning index of fruit juices
- Packaging characterization
- Color testing
- Purity of olive oil.

3). Physics Experimental integrated Kit

The single integrated kit can be used for conducting the basic and applied aspects of Undergraduate physics experiments at the undergraduate level. This instrument will become an indispensable part of Physics laboratory in near future. This low cost kit can be utilized for conducting about 30 experiments. This integrated kit will reduce the time conducting the experiment as it reduces the time of assembling the apparatus. This kit helps the learner to understand the physics concept involved it and method of

verifying the physical laws associated with a particular experiment. This kind of practical tools will motivate the UG level students to create an interest in his discipline. The use of many physical transducers associated with this kit can be utilized for the direct measurement of pH of the solution, conductivity of the solutions used for the study of biological purposes. The parameters affecting our environment like water contamination, air polluting gases like CO,SO₂, CO₂ can be monitoring with the help of suitable attachments along with this kit. This kind of experiments will help to create the awareness the in the young learners and also to disseminate this knowledge among the rural masses, as our college situated in rural area.

(vii). Involvement of Visiting Faculty

- The subject experts from bioscience faculty from University and Research institutes will be utilized for giving training our students for imparts knowledge in biological aspects of physical measurements.
- The scientists from nuclear research centers will be called for giving training role of a physics student in bio-safety measures.
- The software experts will be used for the purpose of developing of software for biology applications.

1). Practical to be covered.

GM counter and nuclear detectors.

- The GM counter and available nuclear detectors will be used for monitoring the human safety.
- The exposure of nuclear radiation over the agricultural products and to find the growth monitoring.
- The use of nuclear sources with permitted level of radiation for vector control of disease
- Nuclear dosimeters will be employed for the bio-safety aspects.

Experiments based of UV source.

- The UV light based sterilizers of medical cloths and apparatus.

- The UV sources for the control of microbial contamination on food items and beverages.
- Calculating the temperature and UV exposure time over various samples to control the growth of micro-organisms.

Physics Experimental integrated Kit.

- 30 Physics experiments can be conducted using the kit
- The parameters used for biological purposes can be measured and analyzed.
- The environment factors can be determined using this kit by measuring the various environmental parameters

2). Details of projects to be carried out

- Studying the role of IR radiation over the growth of fungi and bacteria
- Creating Biophysical models using computers
- Determination of different physical parameters over patients
- Record and monitor the ECG signals by simple interfaces with smart phones
- Study the effect of UV exposure on biological samples.
- Nuclear radiation detection and safety measures for persons working in nuclear installations.
- Role of UV and IR radiation over the seeds for effective growth of crops

3). Details of Seminars, Workshops and Faculty improvement programmes to be organized by Physics department.

Seminars for the students	Practical workshop for students	Faculty improvement programme
Rs 25,000/- (3 lectures for academic year)	Rs 35,000/- (2 days workshop)	Rs 40,000/- Both on and off campus programmes
Total		Rs 1,00,000/-

(viii). Time-Line chart for the activities to be carried out under DBT Star scheme for B.Sc. Physics Students

Activities	First Year	Second Year	Third Year
Introduction of new practicals in whole Curriculum			
Project work during the third year			
Summer training during I and II year			
Industrial training during the II year			
Faculty Improvement Program(FIP) for dept staff			

Number of beneficiaries: 130 under graduate students and faculty staff-members

PART – B

Technical details of the proposed programme: Department of Chemistry

(i) Relevance and Expected Outcome

- Under the star college program offered by the DBT, the college would offer the program to the B.Sc. Chemistry students. Aimed at improving practical and computational skills on drug design and discovery, lead identification and bio-process investigations, the courses will provide hands on training and interactive class room environment in the field of biotechnology
- Also, the courses to be offered will serve as a platform to aid mobility and flexibility to under graduate chemistry students to take up interdisciplinary courses like biotechnology, bioinformatics, bio chemistry, molecular biology, eco biotechnology and related areas in the Post graduate & research program.
- In general a wider perspective of the course will also provide students an opportunity to appreciate life sciences in general and create a sense of belongingness to nature. The hands-on training on soft skills related to bio informatics would provide chemists a cutting-edge and offer employability in research laboratories of National and International repute, pharmaceutical companies and other Research & Development sectors of companies.
- It will also provide an opportunity to all the under graduate students to understand and appreciate the chemical processes and principles that aid the effective functioning of biological systems.

(ii) Specific objectives

- Become knowledge in the subject of chemistry and apply the principles of the same to the needs of Employer/Institution/Enterprise/Society.
- Gain Analytical skills in the field/area of Chemistry
- Understand and appreciate professional ethics, community living and Nation Building initiatives.
- Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical chemistries.
- Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
- Students will be skilled in problems solving, critical thinking and analytical reasoning as applied to scientific problems.

(iii). Measures to be adopted to enhance bench skills of students, project work, summer training and industrial training

- Introduction to concepts of Material chemistry and Nano technology in the curriculum as skill based elective courses.
- Practical sessions will be included in curriculum to impart experimental skills on qualitative and quantitative analysis.
- Hands on training on preparation of domestic product and other techniques
- Design of eco-friendly practical to include the curriculum.
- Department to arrange to be visit chemical industries and research Laboratories periodically

(iv). Measures to be undertaken to upgrade skills of faculty by participation in faculty improvement programme

- Faculty members of the chemistry Department will be encouraged to take part in training programme, seminar, workshop, Faculty Development programme, conferences in area related to recent trends in chemistry.
- To enhance the interdisciplinary approach in teaching and research, discussions and meeting of faculty members of Life sciences and Physical sciences will be periodically arranged.

(v). Appropriate Modification proposed in Curriculum to cover Laboratory exposure to students and IPR & bio-safety issues

- All elective course and skill based courses will be modified to incorporate material chemistry, Nano technology, chemistry of consumer products.
- A Course title Analytical chemistry will be offered as an optional course of elective - I in Semester –V, which include hands on training on UV-visible spectroscopy.
- In the semester VI Electro chemistry and Molecular spectroscopy, Molecular dynamics are introduced as an elective courses.

S.No.	Tile of the Existing Courses	Modification to be carried out
1	Industrial Chemistry Semester- III / SKBC - II	Material Chemistry and Nano technology To get knowledge in Properties of materials and techniques in nano chemistry
2	Physical Chemistry -II	EC-II Electrochemistry and Molecular Spectroscopy
3	Polymer Chemistry	EC-III Molecular Dynamics

(vi). **Techniques to be included for hands on training to students**

1. PREPARATION OF DETERGENT WASHING POWDER

AIM: Detergent washing powder for clothes.

CHEMICALS REQUIRED:

- | | |
|--|----------|
| 1. Acid slurry(Dodecyl benzene sulphonic acid) | =5.0g |
| 2. Sodium carbonate(commercial soda ash) | =20.0g |
| 3. Trisodium phosphate (T.S.P.) | =1.25g |
| 4. Carboxy methyl cellulose(C.M.C.) | =0.5g |
| 5. Detergent blue powder | =125.0mg |
| 6. Jasmine perfume liquid(water soluble) | =1.25ml |

PROCEDURE:

Acid slurry(5.0g)is carefully taken in a 400ml beaker and commercial sodium carbonate powder (20.0g)is slowly added little by little with constant stirring. Carbon dioxide gas is evolved during the addition. Trisodiumphosphate(1.25g)and carboxy methyl cellulose(0.5g)are added and stirred well. Detergent blue powder (125.0mg)is then added and stirred vigorously. The contents are then dried in air and sieved through a filter. Finally, water soluble jasmine perfume liquid (1.25ml)is sprayed with thorough shaking and packed in a closed container. The granular powder is used as a detergent washing powder.

2. PREPARATION OF UTENSILS CLEANING POWDER

AIM: To prepare the cleaning powder for utensils

CHEMICALS REQUIRED:

- | | |
|---|--------|
| 1.Acid slurry(Dodecyl benzene sulphonic acid) | =5.0g |
| 2.Sodium carbonate(commercial soda ash) | =25.0g |
| 3.Calcite powder | =50.0g |
| 4.Jasmine perfume liquid(water soluble) | =0.5ml |

PROCEDURE :

Acid slurry(5.0g)is carefully taken in 400ml beaker and commercial sodium carbonate(20.0g)is added little by little with constant stirring. Carbon dioxide gas is evolved during the addition. A little more of sodium carbonate(5.0g)is again added to make the content as a solid product. It is then dried in air and sieved through a filter. Calcite powder(50.0g)is added and mixed well. Finally, jasmine perfume liquid is sprayed with thorough mixing and used for cleaning the utensils similar to the VIM powder.

NOTE:

Bentonitepowder(50.0g)is added instead of calcite powder in order to prepare Sabeena type cleaning powder.

3. PREPARATION OF POLYVINYLALCOHOL ADHESIVE.

AIM: To prepare the fevicol type adhesive of polyvinylalcohol.

CHEMICALS REQUIRED:

- | | |
|--|-----------|
| 1. Polyvinylalcohol-(middle molecular weight granules) | =10.0g |
| 2. Distilled water | = 100.0ml |
| 3. Polyamide varying molecular weights | = q.s |

PROCEDURE:

Distilled water (100.0ml) is taken in a 400ml beaker and boiled. Polyvinyl alcohol granules (10.0g) are added little by little to the boiling water with constant stirring. The heating is continued until a clear solution is obtained. It is then cooled and used as an adhesive.

A sufficient quantity of polyamide of varying molecular weight is added to the above boiling solution with vigorous stirring. The heating is continued with stirring until a clear solution is formed. It is then cooled and stored in air-tight container and used as a binder for broken weed pieces. This is used as a fevicol type of adhesive.

4. PREPARATION OF LIQUID BLUE

AIM: To prepare the liquid blue solution for clothes.

CHEMICALS REQUIRED:

- | | |
|-----------------------------------|----------|
| 1. Methylene blue (water soluble) | = 5.0g |
| 2. Methyl violet | = 1.0g |
| 3. Acetic acid | = 2.0ml |
| 4. Water | = 20.0ml |
| 5. Tinopol | = 1.0ml |

PROCEDURE:

Methylene blue (5.0g) and Methyl violet (1.0g) are taken in a beaker and dissolved by adding acetic acid(2.0ml). Water (20.0ml) is then added with constant stirring. The liquid blue is packed in suitable container and used.

NOTE:

Tinopol (1.0ml) is added to the above solution to increase the brightness of the white clothes.

5. PREPARATION OF PAIN RELIEVING LINIMENT

AIM: To prepare the pain relieving liniment- an oil rubbed on the body to remove stiffness and pains.

CHEMICALS REQUIRED:

- | | |
|----------------------|---------|
| 1. Methyl salicylate | = 5.0ml |
|----------------------|---------|

2. Menthol	= 5.0g
3. Thymol	= 1.0g
4. Camphor oil (synthetic)	= 5.0ml
5. Eucalyptus oil	= 2.0ml
6. Cinnamon oil	= 2.0ml
7. White oil	= 20.0ml

PROCEDURE

Menthol (5.0g) is mixed with thymol (1.0g) in a 400 ml beaker. Methyl salicylate (5.0ml) is added followed by camphor oil (5.0ml), eucalyptus oil (2.0ml) and cinnamon oil (2.0ml) with thorough mixing and constant stirring. Finally, white oil (20.0ml) is added to the above mixture and stirred vigorously to give a homogeneous solution. This is used as a liniment for relieving head-ache and body pain.

6. PREPARATION OF FACE POWDER

AIM: To prepare the face powder for daily use.

CHEMICALS REQUIRED:

1. Magnesium carbonate	= 200.0mg
2. French chalk powder (500-600 mesh)	= 9.0g
3. Starch powder	= 1.0g
4. Boric acid (commercial)	= 100.0mg
5. Zinc oxide	= 100.0mg
6. Perfume (desired)	= 2.5ml
7. Sandal wood dust (500 mesh)	= 2.5ml
8. Zinc stearate	= 500mg
9. Titanium dioxide	= 500mg

PROCEDURE:

Magnesium carbonate (500.0mg) is taken in a 400ml beaker. A sufficient quantity of a desired perfume is sprayed and stirred to give a free-flowing powder.

French chalk powder (9.0g), starch (1.0g), boric acid (0.1g), zinc oxide (0.1g), titanium dioxide (0.5g), zinc stearate (0.5g) are mixed thoroughly in another beaker and added to the above mixture. All the contents are stirred vigorously for 30 minutes to give a homogeneous mixture. Finally, it is packed in a closed container and used as a face powder for daily use.

NOTE: Sandal wood dust (2.5g) is added in order to obtain a sandalwood face powder.

7. PREPARATION OF WHITE PHENEOL

AIM:To prepare the pheneol compound for sanitary purposes.

CHEMICALS REQUIRED:

- | | |
|--|-----------|
| 1. Castor oil | = 50.0g |
| 2. Distilled water | = 100.0ml |
| 3. Potassium hydroxide | = 18.0g |
| 4. Pine oil | = 100.0g |
| 5. Jasmine perfume liquid(water soluble) | = 5.0ml |

PROCEDURE:

Castor oil (50.0g) is taken in a 400ml beaker and potassium hydroxide (18.0g) is added slowly with stirring. Distilled water(100.0ml) is then added little with constant and vigorous stirring. Large amount of heat is produced during the addition. The contents are then cooled in a water –bath. Pine oil (100.0g) is added slowly and stirred well to give a white pheneol compound . Finally, water soluble jasmine perfume liquid (5.0ml) is added to the contents and stirred vigorously to give the pheneol compound.

DILUTION: 1 part of the above white pheneol compound is diluted with 20parts of water and used for sanitary purposes.

(Vii) Details of lecture and Practicals to be covered in the Department

(I) List of proposed visiting Faculty

- The subject experts from bioscience faculty from University and Research institutes will be utilized for giving training our students for imparts knowledge in biological aspects of physical measurements.
- The scientists from nuclear research centers will be called for giving training role of a physics student in bio-safety measures.
- The software experts will be used for the purpose of developing of software for biology applications.

2) List of new practicals and Hands on sessions to be introduced

- Demonstration of Beer- Lambertz law and construction of standard graph using UV spectrometer
- Qualitative analysis of various organic molecules
- Quantitative estimation of bio molecules
- Drug identification Docking
- Potentiometric Redox titration
- Viscosity measurement by Oswald method
- Extracton of Rose Oil from Rose (Soxhlet Extraction)
- UV spectrum – simple compound analysis

3) Details of Project to be organised

Areas under which project will be carried out

- Computational chemistry
- Synthesis of metal oxide Nano- particles
- Biological oxidation
- Biochemical studies
- Drug discovery and design
- Inorganic complex synthesis
- Preparation of domestic products

4). Details of seminars, workshop organised

Workshop for the students	Workshop for the society	Seminar for the students
Three days work shop on Preparation domestic products 30,000/-	Three days workshop on preparation of domestic products 20,000/-	10,000/- (3 lecture in academic year)

(viii). Time-Line chart for the activities to be carried out under DBT Star scheme for B.Sc. Chemistry Students

Activities	First Year	Second Year	Third Year
Basic of Bioinformatics & Biotechnology			
Project work during the third year			
Guest lectures and Internship			
Industrial training during the II year			
Faculty Improvement Program(FIP) for dept staff			

Beneficiaries and Requirements

The proposed programme will cover ten core courses, three elective courses and two skill based courses and society related projects and beneficiaries will be 120 undergraduate students of chemistry. The course will be handled by ten faculty members and with two laboratories assistant.

PART B

Technical details of the proposed programme: Department of Mathematics

1. Executive Summary Indicating Relevance and Expected Outcome

This proposal seeks on funds for the infrastructural development of the college and which in turn gives an opportunity for the students and teachers develop their subject and practical knowledge. It also gives an opportunity for the teachers from the schools to improve their technical skills. It enhances the participative teaching and learning skills of both teachers and students. As 90% of our students are first generation graduates, certainly this project will help them to get a higher confidence level and make them to move successfully towards their research goals and employment opportunity. As mathematics is considered to be a tough subject by almost every one, the blend of applied mathematics with practical computer science will help the students to get rid of the

prejudice against mathematics learning. As a whole this project will enlighten the lives of young students and teachers by imparting them a higher level learning and teaching skill.

2. Specific objectives (not more than one page)

- To Setup of Mathematical Sciences Laboratory.
- To Strengthen the infrastructure facilities by providing modern computers to enhance the teaching and learning process
- To enhance the quality of learning process of the students and provide reservoirs of knowledge with maximum connectivity with the subject.
- To train the faculty to learn various mathematical software
- To improve interdisciplinary and applied research.
- To impart the basic and advanced knowledge of essential Mathematics and related software to the teachers of schools of rural area

3. Measures to be adopted to enhance bench skills of students, project work, summer training and industrial training

- Project work to be assigned compulsorily to final year undergraduate students as a part of curriculum
- Tie-up and MOU's to be made with other reputed institutions associated with the college.
- Summer training courses for undergraduate students to be planned by the department

4. Measures to be undertaken to upgrade skills of faculty by participation in Faculty Improvement Programme

- The staff members are periodically deputed to attend refresher and orientation courses, seminars and workshops to develop their skills in their field of interest
- The department also takes constant efforts to conduct conferences seminars to enhance the knowledge of faculty to know the growing research trends

5. Involvement of visiting faculty (details of lecture & practical to be covered in the department)

- Subject experts who are well-versed in Tableau, Geogebra, MATLAB, Inkscape, SPSS and TORA will be invited to train by giving hands on experience to students and faculty members

6. List of new practicals (Interdisciplinary- Mathematics, Physics, Zoology and Chemistry)

(i) Data visualization and Tableau

- Creating a Tree map using Tableau

- Draw a histogram, pie chart using Tableau
 - Draw box plot and Gantt chart using Tableau
 - Draw a trend line using Tableau
 - Creating or modify a schedule using Tableau
 - Publishing data in Tableau
 - Working with data, filter, sorting
 - Data visualization using charts and scatter plots
 - Report generation in Tableau
 - Form a word cloud using Tableau
- (ii) **MATLAB**
- To solve the system of linear and non- linear equations
 - To solve the optimization problems
 - Likelihood estimation of parameters of statistical distributions
- (iii) **Inkscape**
- Creating a simple vector based shapes
 - Creating flag
 - Flour designing
 - Designing greeting card
 - Designing invitation
 - Designing visiting card (Business card)
 - Designing certificate
 - Designing memento
 - Designing flex
 - Designing logo
- (iv) **Geogebra**
- The length of the two tangent segments to a circle drawn from an external point are equal
 - Construct a regular polygon with 7 sides using polygon tool
 - Construct an equilateral triangle and measure its angles
- (v) **SPSS**
- Data capture, sorting the data
 - Presenting data using charts
 - To draw histogram, line charts and bar chart
- (vi) **TORA**
- Solution optimization problems using Simplex Method
 - Transportation problem
 - Assignment Problems
 - PERT and CPM

7. Details of group projects to be carried out

- Application of Statistical analysis using R programming (Interdepartmental with Zoology)
- Time series analysis and forecasting (Interdepartmental with Physics, Chemistry)
- Applications of Vector Calculus (Interdepartmental with Physics, Chemistry)
- Study on ordinary and partial differential equations using MATLAB (Interdepartmental with Physics, Chemistry)
- Applications of Fourier Transform to signal processing (Interdepartmental with Physics)
- Case study using data analytics and statistical tools and TORA(Interdepartmental with Computer Science)
- Mathematical Modeling (Interdepartmental with Physics, Chemistry , Zoology and Computer Science)
- Fuzzy Mathematical Modeling and its applications (Interdepartmental with Physics, Chemistry and Zoology)
- Applications of Graph theory (Interdepartmental with Physics and Chemistry)

1) Details of Seminars, Workshops and Faculty Improvement Programme to be organized

Seminar for students	Workshop for students	Faculty Improvement Programme
Rs. 30, 000	Rs. 30, 000	Rs. 40, 000
Total		Rs. 1,00,000

8. Time – line chart for the activities to be carried out under the scheme for B.Sc. Mathematics students

Activities	First Year	Second Year	Third Year
Introduction of new practical in the syllabus for all three years			
Project work during third year			
Summer training during the first & second year			
Faculty Improvement Programme (FIP) for all the faculty members in turn throughout year			

No of beneficiaries: 300 graduate students and faculty members

PART B

Technical details of proposed programme : Department of Computer Science

i) Executive summary indicating relevance and expected outcome.

The proposal is aimed to inculcate practical exposure in designing and developing applications to the students of Computer Science Discipline and also to create awareness about the utilization of computing resources among the inter disciplinary students like Physics, Chemistry and Zoology.

Data Analysis and Internet of Things are the two prominent areas that are providing large number of employment and also scope for Research and Development. Especially these two Domains are Inter Disciplinary in Nature where students of Science Stream can apply the concept of Data Analysis and IOT to their domains respectively. Classification and Organization of data both in structured and unstructured format are very much essential in the present context and also controlling and programming various gadgets without the human intervention are also getting prominence in the world. So, it is very essential to train the students of various disciplines including Computer Science to practically understand and classify data and also to learn programming in chip level. For this purpose, Practical trainings, Field Visits and Mini Projects are included in the Curriculum. At the outcome the students will have a basic understanding of programming, Data Analysis and Micro Programming. This will help the students to pursue their higher education, Research and employability.

ii) Specific Objectives

- To provide a fundamental understanding on computing and logical thinking
- To build a basic programming skill
- To enable employability in Information Technology, Government and Non-IT fields
- To provide broad education necessary to understand the impact of computer science solutions in a global and societal context
- To enable the students to pursue higher education in the field of computer Science and Information Technology
- To develop practical exposure to utilize computing resources in the inter disciplinary domains
- To provide internet education among inter disciplinary programmes
- To motivate the students to move along with Digital India campaign
- To inculcate creative ideas among the students to develop innovative products
- To conduct special training program for improving the technical knowledge for faculty

iii) **Measures to be adopted to enhance bench skills of students, project work, summer training & industrial training**

- Introducing the concepts of cloud computing in the curriculum as core elective.
- Practical session will be included to enrich the knowledge of students in Mobile App development
- Home based projects to improve in depth knowledge in the relevant courses.
- To visit IT industries as an extension activity for the students in semester VI.
- R programming, .NET and Haskell programming are introduced as Elective courses
- To impart practical training in improving skill in image manipulation, data analysis and micro programming

iv) **Measures to be undertaken to upgrade skills of faculty by participation in faculty improvement programme.**

- Faculty members of Computer Science department are encouraged to attend Workshops/Seminars/ Conferences in Mobile Application development, Internet of Things, Cloud Computing, Big data and Machine Learning.
- Periodical Faculty Development Programmes are conducted to improve Teaching, Learning Process, Counseling and Mentoring.
- Further they are encouraged to attend MOOC courses to acquire depth knowledge

v) **Appropriate modifications proposed in curriculum to cover laboratory exposure to students and IPR & biosafety issues**

S.No	Existing	Proposed Modifications
1	Python Programming- elective theory	Python Programming is introduced as Core Course with Practical
2	Non-Major Elective course: Internet and Web Design. There is No Practical Session	The syllabus of Non-Major Elective Course “Internet and Web Design” is modified to enable students of other departments to have the practical exposure of utilizing Internet Resources in Semester IV
3	Office Automation Lab is not in the curriculum for NMEC	It is proposed to include “Office Automation Lab” in Semester V for all programmes
4	Genetical Data Analysis using PANDAS is not in the curriculum	It is proposed to introduce “Genetical Data Analysis using PANDAS” course for Zoology and Botany Programmes.

5	“Internet of Things” is not in the curriculum	“Internet of Things” course is proposed to introduce Physics, Chemistry and Computer Science Programmes
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- For Practical, the data storage is slowly migrated to cloud storages to enhance biosafety.

vi) Techniques to be included for hands on training to students:

- Training to be conducted to use cloud storages to maintain the data to enhance biosafety.
- Workshops will be arranged to work with PANDAS to store and analyze different datasets
- Training programme is to be conducted for the implementation of IOT to all the science students

vii) Details of Lecture and practical to be covered in the department

1. Involvement of visiting faculty (details of lecture & practical to be covered in each department)

Subject Experts will be invited from Research Institutes and Universities as faculty.

Software Professionals for IOT, Mobile App Development will be invited to train students and faculty members

2. List of new Practical & hands on sessions to be introduced

3. Details of projects to be organized

Areas under which project should be carried out

- Web Design
- Data Analysis in Health care and Genetical analysis Domain
- Mobile Apps Development
- Simulation of Dissections of animals

4. Industrial Visits to be organized

- ISRO, Trivandrum
- BHEL, Trichy
- BSNL, Trichy
- HOV Services, Chennai
- Soft Square Solutions Ltd, Chennai

5. Details of Seminars, Workshops and Faculty Improvement Program to be organized

Seminars for the students	Practical Workshop for the Students	Faculty Improvement Programme
Rs.30000/- (4 lectures per Academic year)	Rs.30000/- (2 Days Workshop)	Rs.40,000/- Off Campus; Rs.15,000/- On Campus: rs.25,000/-
Total		Rs1,00,000/-

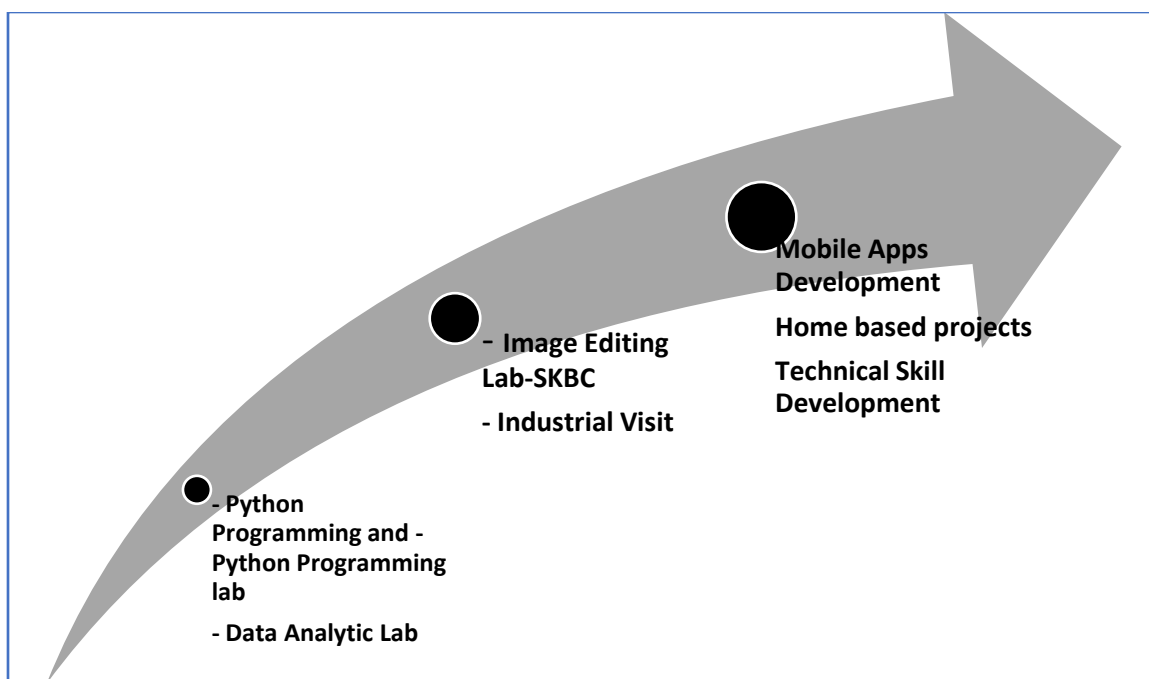
The same structure will be followed for 3 years

viii) **Timelines for activities listed at 3-5 in each academic session indicating no. of proposed courses, no. of beneficiaries.**

a. **Time Line Chart for the Activities to be carried out under the scheme for B.Sc Computer Science Students**

First Year	Second year	Third Year
Python Programming and Python Programming lab Data Analytic Lab	Image Editing Lab as SKBC Industrial Visit	Mobile Apps Development Home based projects (Extension Activity) Technical Skill Development

The proposed program will cover **8** courses and a Home-based Project and the beneficiaries are **150** undergraduate students of Computer Science and with **10** Faculty members and **1** programmer



b. Time Line Chart for the Activities to be carried out under the scheme for Science major Students

Third Year

Non-Major Elective:

Internet and Web Design

BPO and Health Care

Office Automation Lab

Image Editing Lab

The proposed program will cover Four courses and the beneficiaries are 185 undergraduate Science major students and with 10 Faculty members and 1 programmer


ix) Proposed outreach activities for school teachers and college teachers per year.

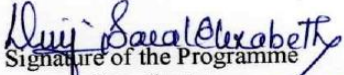
Workshop on “Python and PANDAS” for College Teachers Training will be given on “Digital Transactions” for School Teachers.

PART-C

Department Wise Budget Requirement: **DEPARTMENT OF ZOOLOGY**

S. No	Equipment Name	Quantity	I Year		II Year	III Year	Total price
NON-RECURRING EXPENSES							
1	Hemocytometer	10	15,000				15,000
2	Haemoglobinometer	10	7,500				7,500
3	BP apparatus	2	3,500				3,500
4	DNA separating apparatus	1	16,000				16,000
5	Virtual Dissection software	1	10,000				10,000
6	Insect Storage Box	1	25,000				25,000
7	Binocular microscope	20	1,00,000				1,00,000
8	Class room smart Board	1	26,000				26,000
9	Model: Rabbit, Rat, Malarial Parasite, Animal cell, Fish Anatomy, Owl, Loris	8	7,600				7,600
10	Ultimeter	1	21,000				21,000
11	Bacteriological incubator	1	15,000				15,000
EQUIPMENT FOR INTER DEPARTMENT USE							
12	Horizontal Gel Electrophoresis	1	18,000				18,000
13	Analytical digital balance	1	12,500				12,500
14	Water bath	2	30,000				30,000
15	Bunsen Burner	10	24,000				24,000
16	Ultra-centrifuge	1	1,90,000				1,90,000
17	PCR analyzer	1	2,20,000				2,20,000
18	Phase contract microscope	1	3,20,000				3,20,000
TOTAL			10,61,100				10,61,100
RECURRING EXPENSES							
19	Consumables (Consolidated)		2,00,000		2,00,000	2,00,000	6,00,000
20	Contingencies (Consolidated)		1,00,000		1,00,000	1,00,000	3,00,000
TOTAL			3,00,000		3,00,000	3,00,000	9,00,000
Total Budget						Rs. 19,61,100/-	


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 Puthanampatti-621 007, Tiruchirappalli District


 Signature of the Programme
 Coordinator
 20/07/2019

2) Department Wise Budget Requirement: **DEPARTMENT OF PHYSICS**

S. No	Equipment Name	Quantity	I Year	II Year	III Year	Total price
NON-RECURRING EXPENSES						
1	Kundt's Tube	2	4000			4000
2	Katers Pendulum	2	4000			4000
3	Maxwell's Needle Setup	2	7000			7000
4	G.M. Counter /Radiation detector	2	24000			24000
5	Dielectric Constant Apparatus (solid & Liquid)	2	18000			18000
6	De sauty Bridge	2	9000			9000
7	Anderson Bridge trainer kit	2	9000			9000
8	Photocell Characteristics Apparatus	2	16000			16000
9	Polarimeter for rotatory power of liquids	2	24000			24000
10	Physics Experimental integrated Kit for 30 Experiments (Fabricated and supported by IISc Bangalore)	1	80000			80000
11	Fiber Optics Kit	1	1,00,000			1,00,000
12	LAMBDA 365 UV-VIS Spectrophotometer	1	7, 55,000			7, 55,000
TOTAL			10,50,000			10,50,000
RECURRING EXPENSES						
13	Consumables (Consolidated)		2,00,000	2,00,000	2,00,000	6,00,000
14	Contingences (Consolidated)		1,00,000	1,00,000	1,00,000	3,00,000
TOTAL			3,00,000	3,00,000	3,00,000	9,00,000
Total Budget					Rs. 19,50,000/-	

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3) Department Wise Budget Requirement: **DEPARTMENT OF CHEMISTRY**

S. No	Equipment Name	Quantity	I Year	II Year	III Year	Total price
NON-RECURRING EXPENSES						
1	Water Analysis Kit	2	2,50,000			2,50,000
2	Soil Analysis Kit	2	2,50,000			2,50,000
3	Digital Polarimeter	1	30,000			30,000
4	Mechanical shaker	1	50,000			50,000
5	Double distillation unit	1	75,000			75,000
6	Digital Conductometer	4	50,000			50,000
7	Digital Potentiometer	4	50,000			50,000
8	pH Meter	1	25,000			25,000
9	Electric Bunsen burner	10	2,00,000			2,00,000
10	Thermostat with inlet and outlet circulation of water	1	1,00,000			1,00,000
TOTAL			10,80,000			10,80,000
RECURRING EXPENSES						
13	Consumables (Consolidated)		2,00,000	2,00,000	2,00,000	6,00,000
14	Contingences (Consolidated)		1,00,000	1,00,000	1,00,000	3,00,000
TOTAL			3,00,000	3,00,000	3,00,000	9,00,000
Total Budget					Rs. 19,80,000/-	

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4) Department Wise Budget Requirement: **DEPARTMENT OF MATHEMATICS**

S. No	Equipment Name	Quantity	I Year	II Year	III Year	Total price
NON-RECURRING EXPENSES						
1	Computers with High Configuration	12	5,50,000			5,50,000
2	MATLAB (Software)	1	3,00,000			3,00,000
3	SPSS (Software)	1	1,00,000			1,00,000
4	Tableau (Software)	1	1,00,000			1,00,000
TOTAL			10,50,000			10,50,000
RECURRING EXPENSES						
13	Consumables (Consolidated)		2,00,000	2,00,000	2,00,000	6,00,000
14	Contingences (Consolidated)		1,00,000	1,00,000	1,00,000	3,00,000
TOTAL			3,00,000	3,00,000	3,00,000	9,00,000
Total Budget					Rs. 19,50,000/-	

20/07/2019

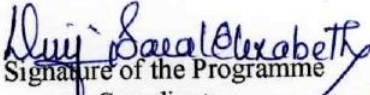
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4) Department Wise Budget Requirement: **DEPARTMENT OF COMPUTER SCIENCE**

S. No	Equipment Name	Quantity	I Year	II Year	III Year	Total price
NON-RECURRING EXPENSES						
1	Desk Top PC, Intel i7 processor, 32 GB RAM, 1TB Hard Disk 4GB Graphics Card	20	8,11,880			8,11,880
2	Epson L5190, Wi-Fi all in one ink tank Printer	2	36,850			36,850
3	Epson V370 Color Photo Scanner	1	13,590			13,590
4	Epson EBU05 Full HD Projector	2	1,22,580			1,22,580
5	Web Camera HD	2	16,000			16,000
TOTAL			10,00,900			10,00,900
RECURRING EXPENSES						
13	Consumables (Consolidated)		2,00,000	2,00,000	2,00,000	6,00,000
14	Contingences (Consolidated)		1,00,000	1,00,000	1,00,000	3,00,000
TOTAL			3,00,000	3,00,000	3,00,000	9,00,000
Total Budget					Rs. 19,00,900/-	

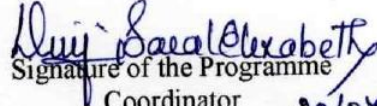

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TOTAL BUDGET FOR ALL DEPARTMENT

S.No	Description	Department				
		Zoology	Physics	Chemistry	Mathematics	Computer science
1	Non-Recurring	10,61,100	10,50,000	10,80,000	10,50,000	10,00,900
2	Recurring (RS.) (Three Years)	9,00,000	9,00,000	9,00,000	9,00,000	9,00,000
	TOTAL (Rs.)	19,61,100	19,50,000	19,80,000	19,50,000	19,00,900
GRAND TOTAL (Rs.)		97,42,000/-				


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Date : 20-07-2019