

Deccan Education Society's Fergusson College (Autonomous), Pune

Department of Biotechnology, Ministry of Science and Technology DBT STAR College Scheme

Objective of the Scheme

• Strengthening undergraduate Science Education.

List of Departments supported under the Scheme

Sr. No.	Name of the Department	Status / Scheme
1	Department of Biotechnology	STAR Status
2	Department of Chemistry	STAR Status
3	Department of Computer Science	STAR Scheme
4	Department of Electronic Science	STAR Status
5	Department of Environmental Science	STAR Scheme
6	Department of Geology	STAR Scheme
7	Department of Microbiology	STAR Status
8	Department of Physics	STAR Status
9	Department of Statistics	STAR Scheme
10	Department of Zoology	STAR Status

Advisory Committee

Sr. No.	Name	Designation / Department
1	Dr. Ravindrasing Pardeshi	Principal and Chairman
2	Dr. Garima Gupta	Scientist "E", Department of Biotechnology, Ministry of Science and Technology, CGO Complex, Lodi Road, Delhi
3	Prof. Arvind Shaligram	Dean, Faculty of Science, Savitribai Phule Pune University, Pune
3	Prof. Bimalendu Nath	Professor, Department of Zoology, Savitribai Phule Pune University, Pune
4	Prof. Satish Pardeshi	Professor, Department of Chemistry, Savitribai Phule Pune University, Pune
5	Dr. Dhanashri Godbole	Department of Biotechnology
6	Dr. Parbati Bandyopadhyay	Department of Chemistry
7	Shri. Jeevan Limaye	Department of Computer Science
8	Dr. Madhukar Zambre	Department of Electronic Science
9	Dr. Preeti Aphale	Department of Environmental Science
10	Dr. Devdutt Upasani	Department of Geology
11	Dr. Suneeti Gore	Department of Microbiology
12	Dr. Alka Deshmukh	Department of Physics
13	Smt. Charuta Dabir	Department of Statistics
14	Prof. navnath Chandanshive	Department of Zoology
15	Dr. Samir Terdalkar	Programme Coordinator

Focus of the Scheme/ programmes

1	Promotion and propagation of Interdisciplinary activities. Establish the concept of Add On Practical's to enhance Student's practical skills and go beyond the prescribed curriculum and maximise the number of beneficiaries
2	Create and establish a platform for face to face with scientists, experts in various subjects, theme- based lecture series, workshops with researchers and industry and strengthen research and industry activities for undergraduate students.
3	Workshops to strengthen basic techniques and life skills in all subjects.
4	Organize poster competition, exhibitions and PRAYAS- Popularization of Science for the young minds.
5	Reaching out to schools for popularization of Science.

Programmes /	Activities	conducted	under	the	Scheme
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Course Code	Name of Course	Student Group
BT (1)	Basic techniques in Plant Tissue Culture	Microbiology,
	(a) Concept of nutrients required for plant growth	Botany and
	(b) Preparation of stock solutions and media	Biotechnology
	(c) Inoculation	
	(d) Hands On training on working in under aseptic	
	conditions in Laminar air flow	
	(e) Nodal sector culture and embryo culture (Maize)	
B (2)	Advanced Animal Tissue Culture Techniques	Biotechnology
	(a) Introduction to animal cell culture	
	(b) Concept of Primary Culture	
	(c) Importance of sterile and aseptic handling	
	(d) Preparation of lymphocytes by density gradient	
	centrifugation	
	(e) Initiation of Primary culture (adherent) from chick	
DT (2)	embryo	Diana
BI (3)	Hands on Protein Separation Lechniques	Physics,
	(a) Introduction to various aspects of proteins and protein	Zoology and
	(b) Role of various reagents used	Biotechnology and
	(c) Laboratory work- cell disruption technique	Diotechnology
	centrifugation and isolation of proteins fractionation	
	by ammonium sulphate precipitation	
	(d) Reagent preparation and protein separation by SDS	
	PAGE	
	(e) Analysis of protein profile on Gel Documentation	
	system	
BT (4)	Propagation of virus in chick embryo model and	Biotechnology
	enrichment and isolation of bacteriophages	and
	(a) Significance of viral inoculation and propagation in	Microbiology
	chick embryo	
	(b) Different techniques of marking inoculation sites	
	(c) Hands On training on inoculation in allantoic cavity,	
	chorioaliantoic membrane and amniotic cavity by	
	(d) Determination of proper inconlation of proper site by	
	(d) Determination of proper moculation at proper site by	
	(e) Concept of enrichment and isolation of	
	hacterionhages dilution of phage lysate and	
	enrichment with host culture on agar	
	(f) Observation of isolated plaque and determining the	
	plaque forming units	
BT (5)	Basic Cell Biology for Mathematics. Statistics. Physics	Electronic
	and Electronic Science Students.	Science,
	(a) Types of Cells	Mathematics,
	(b) Functions of Cell	Physics and

	(c) Study of cells under microscope	Electronic
	(d) Staining methods	Science
C (1)	Organic Chemistry	F.Y., S.Y. and
	(a) Separation of binary mixtures using common organic	T.Y.B.Sc.
	solvents.	Botany,
	(b) Distillation of these volatile solvents under reduced	Geology,
	pressure using rotary evaporator (depression in boiling	Chemistry
	point)	
C (2)	Physical Chemistry	F.Y., S.Y.
	(a) Determination of E Max of Beta Radiation using GM	and T.Y.B.Sc.
	Counter	Botany,
	(b) Determination counting error of GM Counter	Geology,
		Chemistry
C (3)	Inorganic and Analytical techniques	F.Y., S.Y. and
	(a) Magnetic Susceptibility of inorganic compounds	T.Y.B.Sc.
	(b) ThermoGravimetric Analysis of inorganic compounds	Botany,
	(c) Purification of organic solvents by distillation using	Geology,
	still – head	Chemistry
C (4)	Biochemistry	
	(a) Qualitative and Quantitative Analysis of biomolecules	
	(b) Clinical biochemistry (blood grouping, urine analysis	
~ (-)	for glucose, protein and ketone bodies)	
C (5)	Enzymology	F.Y., S.Y. and
	(a) Extraction of invertase from yeast and entrapment in	T.Y. B.Sc.
	calcium beads.	Botany,
		Geology,
		Chemistry
CS (1)	Modeling and Simulation Tools	Physics and
	Learning software tools for report generation of any	Electronic
$\mathbf{FS}(1)$	Use MATLAP for scientific computing	EV SV and
ES(1)	(a) Passian of MATLAP Programming	Γ . Γ . Γ . Γ . Γ
	(a) Dasks of MATLAD Hogramming (b) Modeling using Eigenvalues and Eigenvectors	Flectronic
	(c) Circuit analysis in MATLAB	Science and
		Physics
	(e) Development of GUI (Graphic User Interface)	1 1195105
	(f) Image processing in MATLAB	
	(g) Case Studies	
ES (2)	Use CAD package for preparation of PCB layout -	T. Y. B.Sc.
	Analog circuits	Electronic
	(a) Express PCB Software	Science
	(b) Use of Express PCB CAD Software for drawing	
	Schematics and making PCB Layout.	
	(c) Use of Express PCB CAD Software for drawing	
	Schematics and making PCB Layout	
	(d) Use of Express PCB CAD Software for drawing	
	Schematics and making PCB Layout of	
	Transistorized Circuits	
	(e) Use of Express PCB CAD Software for drawing	
	Schematics and making PCB Layout of Opamp	

	Circuits.	
	(f) Use of Express PCB CAD Software for drawing	
	Schematics and making PCB Layout of Digital	
	Circuits	
ES (3)	Study the characteristics of Temperature sensors	S. Y. B.Sc.
22 (0)	(a) LDR as light sensor	Electronic
	(b) Microphone as acoustic transducer	Science
	(c) LM-35 as Temperature sensor	Selence
	(d) Photodiode as Light Sensor	
	(e) Adder-Subtractor	
	(f) Astable multivibrator using IC 555	
ES (4)	Introduction to PLC hardware	T.Y.B.Sc.
	(a) Introduction to PLC Simulator	Electronic
	(b) To develop a ladder diagram for Combinational	Science
	Circuit using PLC simulator Logosoft/ Picosoft for	berenee
	combinational circuit.	
	(c) To develop a ladder diagram for various applications	
	using PLC	
	(d) To develop ladder diagrams for timer based	
	applications.	
	(e) To develop a ladder diagram for Bottle Filling Plant	
	using PLC simulator and Implement on PLC	
E (5)	Real World Interfacing for smart Instrumentation	T. Y. B.Sc.
_ (*)	(a) Interfacing of LED to AVR	Electronic
	(b) Interfacing 4×4 Keypad to AVR	Science
	(c) Use of ADC of AVR	
	(d) Study of PIC Microcontroller Board and LED	
	Interfacing	
	(e) Interfacing of 7-Segment Display	
	(f) LCD Interfacing Stepper Motor Interfacing	
	(g) Intensity Control of LED using PWM	
MB (1)	Basic Microbial Techniques for Non Microbiology	Physics,
	Students	Geology and
	(a) Collection of samples	Zoology
	(b) Staining techniques	F.Y. B.Sc. and
	(c) Streaking	S.Y. B.Sc.
	(d) Plating out	
	(e) Motility	
	(f) Sterilization	
	(g) Disinfection	
MB (2)	Immunological Techniques for Antigen - Antibody	T. Y. B.Sc.
	Interactions	Microbiology
	(a) Qualitative detection of antigen-antibody by	
	agglutination	
	(b) Double diffusion techniques	
MD (2)	(c) Kauto - Infinuno assay	TVDC
IVIB (3)	a) Plasmid DNA isolation	I. I. D.SC.
	(a) Flashillu DINA Isolation	wherobiology
	(a) Agarosa Gal alactrophoragia	
	(c) Agaiose Gerelectrophoresis	

	(d) Restriction digestion of DNA			
	(e) Ligation of DNA			
	(f) Competent Cell Preparation and transformation			
MB (4)	Pharr	naceutical techniques	T. Y. B.So	с.
	(a) S	Sterility testing	Microbiol	ogy
	(b) N	Microbial limit test		
	(c) A	Antibiotic assay		
	(d) V	Vitamin assay		
	(e) H	Environmental monitoring		
	(f) I	LAL test		
P (1)	Intro	duction to Nanomaterials and Nanoscience	S.Y. and	
	(a)	Introduction to nanomaterials	T.Y.B.Sc.	
	(b)	Synthesis of metal nanomaterials	Physics	
	(c)	Synthesis of semiconductor quantum dots	-	
	(d)	Synthesis of metal oxide/ polymeric thin films by wet		
		chemical method		
	(e)	Deposition of thin films by dip coating technique		
	(f)	Contact angle measurement of deposited thin films		
	(g)	Deposition of thin films by spin coating technique		
	(h)	Hydrothermal synthesis of metal oxide nanoparticles		
	(i)	Characterization of synthesized nanoparticles - XRD		
P (2)	Basic	Course in Observational Astronomy	F.Y., S.Y.	B.Sc.
	(a)	Introduction to night sky and use of stellerium	Physics	
	(b)	Handling telescope mounts and fabrication of		
		reflector and refractor		
	(c)	Spectrum analysis- unit I		
	(d)	Using astronomy softwares for messiner objects		
	(e)	Use of virtual observatory (VO) and WWT (World		
		Wide Telescope)		
	(f) Fabrication of Spectroscope and its Use			
	(g)	Spectrum Analysis-II		
	(h)	Night Sky observation and telescope alignment		
P (3)	Cours	se in Radiation Physics	F.Y. and T	Г.Ү.
	(a)	Determination of energy of gamma ray for unknown	B.Sc. Phy	sics
		gamma ray source		
	(b)	Measurement of energy resolution of gamma ray		
		detector		
	(c)	Verification of gamma ray intensity		
	(d)	Measurement of absorption coefficient for aluminum		
	~ .	foil using gamma rays		~
P (4)	Scient	tific Model Making	F.Y.B.Sc.	
	Under	standing the basic principles behind the project/	Mathem	atics
	model	making, designing models, engineering drawing of	Physics	and
	the mo	odel and preparing the working model.	Electro	onic
	(a)	Real Mirror	Scien	ice
	(b)	Optics Demo Kit		
	(c)	Staircase Lighting switch diorama		
	(d)	NipKov's Disc		DC
Z(1)	Intro	duction to General Laboratory Procedures	F.Y.	B.Sc.
	(a)	Centrifugation techniques	students	

	(b)	Paper chromatography		
	(c)	Microscopy		
	(d)	Use and calibration of pH meter		
	(e)	Use of colorimeter (Demonstration of Beer Lambert's		
		Law)		
	(f)	Use of Autoclave		
	(g)	Demonstration of Gel Electrophoresis		
Z (2)	Basi	c Methods in Cell Biology	F.Y.	B.Sc.
	(a)	Detection of mitochondria by using Janus Green B	students	
	(b)	Observation of Cyclosis by using Congo red		
	(c)	Cell viability by dye exclusion method (trypan blue)		
	(d)	Detection of DNA by using methyl green pyronin		
Z (3)	Haer	matological Techniques	F.Y.	B.Sc.
	(a)	Total WBC Count	students	
	(b)	Total RBC Count		
	(c)	Haemin Crystals		
	(d)	Differential WBC count		
	(e)	Hameoglobin by using haemoglobinometer		

Hand's On / Skill Based Programmes

Sr.No	Title of Workshop/ Seminar	No. of Beneficiaries
1	Hands On Training programme on "Transformation" and	40
	"Basic Bioinformatics Tools"	
2	Seminar on "Conservation of Sacred Grooves"	75
2	Seminar on Conservation of Sacred Grooves	15
3	Seminar on "Introduction to Big Data Modelling and	75
	Management Systems"	
4	Seminar on "Intellectual Property Rights" for Science	60
-	Teachers and Students	00
5	One Day Workshop on "Scientific Writing" for Students	50
6	One Day workshop on "Microscale Techniques" for	70
0	Chemistry Students	10
	-	
7	One Day Workshop on "Laboratory Safety Measures" For	30
8	Laboratory Assistants One Day Workshop on "Instrumentation Maintenance" for	30
0	teaching and Non Teaching Staff	50
9	One Day workshop on Use of Various Instruments used in	50
	Radiation Dosimetry for Students	
10	One Day Seminar on "Medical Dosimetry, Radiation	70
	Dosimetry and Radiation Protection"	
11	Hands on Wederland Different Courter's Matheda of	40
11	Hands on workshop on Different Synthesis Methods of Nanoparticles	40
12	Hands On Workshop on "Chick Embryo YSM (Yolk Sac	25
	Model) for Angiogenesis	
13	Hands On Workshop on "Stem Cell Technology"	25
14	Soft Skills Training for Life Science Students	60
	(a) Computational approach to study Biology (b) Handa on Training of various Computational tools to	
	(b) Hands-on Training of Various Computational tools to interpret Biological Data	
	(c) Presentation of Biological Data in various forms like	
	reports, slideshow and posters	
	(d) Internet search for survey of related literature	
15	One Day Workshop on "Vector Borne Diseases" in	28
1.5	collaboration with National Institute of Virology. Pune.	20
16	Three day observation session of Geminides Meteor showers	08

	in December. Observations accepted by the International Meteor Organization.	
17	Frontiers in Physics IX – 19 th & 20 th January 2016, Speakers: Prof. Arun Nigawekar, Former Vice Chancellor, Pune University &Former Chairman, UGC, Prof. Anvar Sukrov, New Castle University, U.K., Dr. Peter Kamphius, CSRIO, Australia, Prof. Ramprasad Mukhopadyha, BARC, Mumbai. Prof. Ajith Kembavi, Former Director IUCAA, Pune, Prof. Sunil Mukhi, Head, Department of Physics, IISER, Pune, Dr. Sudipto Muhuri, Savitribai Phyle Pune University, Pune and	Student Conference
	Dr. Aparna Deshpande, IISER, Pune.	

Sr. No.	Name of Guest	Affiliation	Торіс	
	Faculty			
1	Dr. Nutan Malpathak	Professor, Department of	Plant tissue culture	
		Botany, SPPU, Pune.	techniques and	
			applications	
2	Dr. Mohan V.	Associate Professor,	Protein Analytical	
	Kulkarni	Department of Chemistry,	techniques	
		SPPU, Pune.		
3	Smt. Supriya Patil	Abasaheb Garware	Development of GUI	
		College, Pune		
4	Shri. Kaustubh	PICT, Pune	Image Processing in	
	Sakhare		MATLAB	
5	Shri. Prashant Baylla	PROVIZ Instruments,	Microwind Software for	
		Pune	VLSI design	
6	Shri. S. S. Dudam	PICT, Pune	Communication Protocols	
			for microcontrollers	
7	Shri. Mangesh Edake	Shradhha Engineering,	RTOS fundamentals	
		Pune		
8	Shri. D. V. Kulkarni	Director, ITI, Pune	PLC programming	
9	Shri. Ashish Bhopale	Shradhha Engineering,	SMT and SMD practices	
		Pune		
10	Mr. Sushant Patankar	Assistant Manager,		
		Department of		
		Microbiology, Biorad		
		Medisys Private Ltd.,		
		Pune.		
11	Shri. Madhav Khare	Director, Shastravahini,	Scientific Model Making	
10		Pune.		
12	Smt. Sunita Khare	Shastravahini, Pune.	Scientific Model Making	
13	Sherry Chhabra	IUCAA	Introduction to Night sky	
			& use of Stellerium	
			Software	

Guest faculty/ face to Face with Scientists

14	Smt. Supriya Patil	Abasaheb Garware	Development of GUI
		College, Pune	-
15	Shri. Kaustubh	PICT, Pune	Image Processing in
	Sakhare		MATLAB
16	Shri. Prashant Baylla	PROVIZ Instruments,	Microwind Software for
		Pune	VLSI design
17	Shri. S. S. Dudam	PICT, Pune	Communication Protocols
			for microcontrollers
18	Shri. Mangesh Edake	Shradhha Engineering,	RTOS fundamentals
10		Pune	22.0
19	Shri. D. V. Kulkarni	Director, III, Pune	PLC programming
20	Shri. Ashish Bhopale	Shradhha Engineering,	SMT and SMD practices
21	Chri Suchant	Pune	OA and OC LAL Test
21	Silfi. Sushalli Dotonkor	Assistant Manager,	CMD and SOD
	Fatalikal	Microbiology Biorad	GWIF and SOF
		Medisys Private I td Pune	
22	Prof Sulabha	LIGC- Professor IISER	Introduction to
	Kulkarni	Pune	Nanomaterials and their
			applications
23	Dr. Dattatraya Late	Ramanujan Fellow, NCL,	Introduction to
		Pune	Nanotechnology
24	Shri. Madhav Khare	Director, Shastravahini,	Scientific Model Making
		Pune	
25	Smt. Sunita Khare	Shastravahini, Pune.	Scientific Model Making
26	Smt. Sherry Chhabra	Inter University Center for	Introduction to Night sky
		Astronomy and	& use of Stellerium
		Astrophysics,	Software
27		Pune(IUCAA)	
27	Shri. Varun Bhalerao	Inter University Center for	Handling Telescope
		Astronomy and	Mounts and Fabrication of Reflector and Refrector
		(IIICAA)	Kenector and Kenactor
28	Shri Samir Dhurde	Inter University Center for	Spectrum Analysis
20	Shift Sahihi Dharae	Astronomy and	Speed and 7 marysis
		Astrophysics, Pune	
		(IUCAA)	
29	Shri. Santosh Agade	Inter University Center for	Using Astronomy
		Astronomy and	Software for Messiner
		Astrophysics, Pune	Objects
		(IUCAA)	
30	Smt. Sonal Thorne	Inter University Center for	Use of Virtual Observatory
		Astronomy and	(VO) and WWT (World
		Astrophysics, Pune	Wide Telescope)
		(IUCAA)	
31	Dr. Nutan Malpathak	Professor, Department of	Plant tissue culture
		Botany, SPPU, Pune.	techniques and
			applications

KulkarniDepartment of Chemistry, SPPU, Pune.techniques33Padmabhushan Padmashree Prof. Madhav GadgilRole of Environmentalists in Today's World.34Dr. L. S. Shashidhara, PuneIndian Institute for Science Education and Research, PuneEvolution Of Human Cognition35Dr. GhaskadbiSurendra Institute, PuneResearch Evolution of body plan in animals36Dr. Prasad Bhagat,National Laboratory, Centre PuneChemical Venture
33Padmabhushan Padmashree Prof. Madhav GadgilRole of Environmentalists in Today's World.34Dr. L. S. Shashidhara, Dr. L. S. Shashidhara,Indian Institute for Science Education and Research, PuneEvolution Of Human Cognition35Dr. GhaskadbiSurendra Institute, PuneResearch Evolution of body plan in animals36Dr. Prasad Bhagat,National Laboratory, Centre PuneChemical Venture
Padmashree Prof. Madhav Gadgilin Today's World.34Dr. L. S. Shashidhara, Education and Research, PuneIndian Institute for Science Education and Research, PuneEvolution Of Human Cognition35Dr. GhaskadbiSurendra Institute, PuneResearch Institute, PuneMolecular Regulation of Evolution of body plan in animals36Dr. Prasad Bhagat,National Laboratory, Centre PuneChemical Eukaryotic Genetics
Madhav GadgilIndian Institute for ScienceEvolutionOfHuman34Dr. L. S. Shashidhara,Indian Institute for ScienceEvolutionOfHumanEducationandResearch,Cognition35Dr.SurendraAgharkarResearchMolecular Regulation of35Dr.SurendraInstitute, PuneEvolution of body plan in animals36Dr. Prasad Bhagat,NationalChemical Laboratory,Overview and History of Eukaryotic Genetics
34 Dr. L. S. Shashidhara, Indian Institute for Science Evolution Of Human 34 Dr. L. S. Shashidhara, Indian Institute for Science Evolution Of Human 35 Dr. Surendra Agharkar Research, Cognition 35 Dr. Surendra Agharkar Research Molecular Regulation of Ghaskadbi Institute, Pune Institute, Pune Institute, Pune Institute, Pune 36 Dr. Prasad Bhagat, National Chemical Overview and History of Laboratory, Venture Cantra Puna Cantra Puna Eukaryotic Genetics
Education and Research, PuneCognition35Dr.Surendra GhaskadbiAgharkar Institute, PuneResearch Evolution of body plan in animals36Dr. Prasad Bhagat,National Laboratory, Centre PuneChemical Eukaryotic Genetics
35 Dr. Surendra Agharkar Research Molecular Regulation of 36 Dr. Prasad Bhagat, National Chemical Overview and History of 36 Dr. Prasad Bhagat, National Chemical Overview and History of Eukaryotic Genetics Centre Pune Centre Pune Eukaryotic Genetics
35 Di. Surficient Agriatical Research Morecular Regulation of Ghaskadbi Institute, Pune Evolution of body plan in animals 36 Dr. Prasad Bhagat, National Chemical Overview and History of Eukaryotic Genetics Gentre Pune Centre Pune Eukaryotic Genetics
36Dr. Prasad Bhagat,National Laboratory,Chemical VentureOverview and History of Eukaryotic Genetics
36Dr. Prasad Bhagat,National Laboratory,Chemical VentureOverview and History of Eukaryotic Genetics
Laboratory, Venture Eukaryotic Genetics
Contra Duna
37 Dr. Lalita Limaye, National Center for Cell Stem Cells with special
Science, Pune reference to Haematopoietic Stem
Cells
38 Dr. B. B. Nath, Department of Zoology, Modern Chromosomal
Savitribai Phule Pune Genetics: Application &
University, Pune Future Perspectives
39 Dr. Deepti Department of Metagenomics and
Deobagkar, Microbiology, Savitribai Exploration of Marine
Pune Pulle Pulle Oniversity, Ecosystems
40 Dr. Vasudevan National Center for Cell Host Factors contributing
Seshadri, Science, Pune to Parasite Infection –
Malaria
41 Dr. Nagaraj Indian Institute for Science To stick or not to stick that
Balasubramanian, Education and Research, is the question: The Role
Pune of Cell Adhesion III our
42 Dr. Sanjeev Galande, Indian Institute for Science From Genome to
Education and Research, Epigenome: New
Pune Perspective for
Understanding of Complex
Diseases
45 Dr. Maerikar Puram Ecovision Solid waste Management 44 Dr. Subas CEE Pupe Filed Survey techniques
Waingankar VLE, Tune Theu Survey techniques
45 Dr. Himanshu ACWADAM, Pune Watershed Management Kulkarni
46Shri. Ajunkya PathakVKE, PuneEnvironmentImpact
Assessment
4/ Dr. Girish Jathar WOTR, Pune Biodiversity and
48 Lokavat Pupe Water Crisis Locture and
Screening of Documentary

49	Lokayat, Pune	GMO's and Garbage Issue	
50	Lokayat, Pune	Radiation and	
		Environment	

Mini Research projects

Sr. No.	Title of Project	Name(s) of Student(s)	Name of Supervisor
1.	Ecofriendly Synthesis of nanomaterial and its characterization	Satyajeet Morale	Nilam Patil
2.	Synthesis of starch-g-acrylamide hydrogels and its possible applications	Rajpal Jadhav	Gauri Shelar
3.	Study of adsorption of fluorides on groundnut shell ash	Shubham Kale	Samir Omkar, S.M.Vhankate
4.	Phytochemical analysis of <i>C. argenta</i>	Shashnak Shrikant	Anil Markandeya
5.	Synthesis of bioactive pyrazolines by using various catalysis	Trisha Goswami	Sushil Dhanmane
6.	Synthesis of quinolene and its derivatives by using N-doped TiO2 as nonaocatalyst	Emelda Ahongshangbam	Sushil Dhanmane
7.	To study the catalytic activity of mixed dicarboxyliate	Urmila Makhija	Shankar Pawar
8.	Design, Synthesis and Characterization of ligand and metal complexes with biologically active thiosemicarbazone ligands	Rinaj Bano, Priyanka Gopalan	Jatinder Kaur
9.	Synthesis and characterization of Ruthenium(II) complexes of some biologically active thiosemicarbazone ligands	Tapsya Tanu Dash	Parbati Bandyopadhyay
10.	Metabolic profiling of <i>C. argenta</i>	Stephonia D'Souza	Anil Markandeya
11.	Synthesis of heterocyclic compunds	Vaishnavi Padaki	Rohitkumar Gore
12.	Ethanol Production by cellulytic bacteria isolated from kitchen and municipal waste	Anisha Dhawan, Manjiri Patil, Viduhi Gupta	Sonali Joshi
13.	Isolation of endophtyic bacteria from tulsi and analysis of their protein content	Vinodita Phatak, Aishwarya Shaha, Pooja Dangare, Neha Bunge.	Ketaki Bhate
14.	To study medicinal properties of lichen thallus and its isolated mycobiont	Akshata Kamble, Monika Harshwal, Sneha Aouti, Tanvi Jadhav, Vedavati Karandikar	Manisha Dharmadhikari

15.	Optimization of activity of enzymes isolated from carrots and liver	Rajkanya Gaikwad, Nayanika Das, Rutuja Purkar, Ankita Lawhale	Sanket Tembe
16.	Effect of different sound frequencies on development of chick embryo	Chinmayee Patil Siddi NArgund, Sawanee Joshi, Yashashree Bhorkar	Dhanashri Godbole
17.	Study of microflora on surface of eggs procured from different sources	Sayali Mulye Sakina Rangoonwala	Dhanashri Godbole
18.	Screening of antimicrobial activity of different food preservative like sodium benzoate, potassium meta bisulphate and butilated hydroxyl toluene (BHA)	Rajashri Nene, Snigdha Nadgouda, Tanya Srivastava (S.Y.B.Sc. Microbiology)	Suneeti Gore
19.	E.coli promotion of photosynthesis in chloroplast	Isha Mone, Mrumai Pavangadkar, Charuta Naik and Tanvi Bhagwat	Samir Terdalkar
20.	Which spice inhibits bacterial growth the best	Isha Mone, Mrumai Pavangadkar, Charuta Naik and Tanvi Bhagwat	Samir Terdalkar
21.	Detection of anti-microbial effect of garlic	Rattan Mishra, Ankita Argulewar, Monica Thakur and Shauryarudra Banerjee	Pramod Phirke
22.	Assessment of the microbial flora on cell phones of science students after laboratory work in college against cell phones of arts and commerce faculty students	Kartik Deopujari, Chinmay Gokhale and Sanjeet Gaonkar	Saylee Darvekar
23.	Application of lactic acid bacteria in improvement of lactose intolerance symptoms	Shraddha Savarkar, Pranjali Sahastrabuddhe, Sakshi Patange	Saylee Darvekar
24.	Cannibalism: A Social Behaviour in Sporulating <i>Bacillus subtilis</i>	Pranav Kulkarni, PrajaktaTalekar, Anagha Nachare	Vidula Bindu
25.	Estimation of Antimicrobial Properties of Essential oil based hand sanitizer	Bhagyashree Deshmukh, Shreya Pundir	Gauri Bhavkar

26.	Biofiltration of Air	Dipanjana	Manaswi Gurjar
		Bandvopadhvav.	Julius - Juli
		Srushti Dedhane.	
		Bhagyashri	
		Radhakrishnan	
		Samrudhi	
		KEndale Zaib	
		Savvad	
27	Waste water treatment for removal of	Bolor	Rupali Gaikwad
	nhosphates	Otgonhaigal	Shraddha
	phosphares	Tanava Thakare	Kulkarni
28	Study of angiosperms of Pabe Ghat	Malavika	Priti Anhale
20.	Study of anglosperins of 1 abe Onat	Gundawar	i nu Aphaic
		Krutika Bhave	
		Aichwarwa Gogta	
20	Characterization of next site selection by	Manashri Danat	Vineyal Chayon
29.	white hallied and apple	International In	v mayak Chavan
20	Vinte benned sea eagle	Drouth on a Davani	Cubbash Chanda
50.	Use of statistics in environment	Prartnana Bayari,	Subnash Shende
	conservation	Valshnavi	
21		Kenjale, Rohini	
31.	Data analysis using psychological tests	Maiteyi guna,	Nileema Bhalerao
		Nikhil Mudbidri,	
		Meghna Dineshan,	
		Shivani Ghodekar,	
		Pratik Kakade,	
		Aditya Joshi,	
		PRanav Warhady,	
		Eesha	
		Chinchwadkar,	
		Shruti Mokashi,	
		Shreya Inamdar	
32.	Projects related to statistical analysis of	Rakhi Jain,	Deepa Kulkarni
	finance/ social/educational	Samruddhi	
		Kadam, Sneha	
		Sanklecha, Rachel	
		Gaikwad, Madav	
		Sanap, Tanaji	
		Mane, Jyoti	
		Kumari, Vidyarani	
		Patil	
33.	Statistical Analysis of Data related to	Vinay Tiwari,	Charuta Dabir
	Economics	Mahadev	
		Brahmankar,	
		Nikhil Nadgoye,	
		Gauroa Chavan,	
		Nalinin patil.	
		Pranita Patel.	
		Sanket Gaikwad.	
		Chaitrali	
		Deshpande	

34.	Medical Statistics	Aishwarya	Charuta Dabir
		Gotekar	
		Nivedita	
		Yawalkar	
35.	Development of fiber optic displacement	Durriya	Pallavi Dixit
	sensor for sugar concentration	Kutbuddin	
	measurement		
36.	To Study the Medicinal Plants (Adathoda	Ashutosh Bhujbal,	Anil More
	vasica, Ocimum sanctum and Asparagus	Rui Borse	
	racemasus) for their antibiotic activity		

Faculty Development Programmes

Sr.	Title of the Course	No. of Beneficiaries
No.		
1	One Day Workshop on "Plagiarism" for Teachers	60
2	One Day Workshop on "Emotional Intelligence" for Teachers	50
	and Students	
3	Hands on Workshop on "Techniques in Animal Cell Culture"	25
4	One Day Workshop on "Advanced Studies in Petrography and	25
	Micropaleantology"	
5	Hands on training Workshop on "Applications of	15
	Bioinformatics"	
6	One Day Workshop on Apiculture conducted in collaboration	60
	with Central Bee Research and Training Institute, Pune,	
	Government of India.	

Outreach activities conducted and their impact/ follow-up

- (a) Workshop on Basic Biological Techniques for School Teachers Basics of Microscopy, Cell Staining Methods, Clinical Biochemistry and Mounting of Chick Embryo
- (b) Basic Techniques in Microbiology for School Teachers Basic Methods used in Microbiology, Sterilization Process and Handling of Microorganisms.
- (c) Science Education Initiative (SEI)

SEI is one of the most prominent activities of teaching maths and science in classrooms of low income schools. Students from Physics (undergraduate) are trained rigorously to teach science and maths to school students and propagate scientific thinking amongst the students. Our students act as 'Student Volunteers' to carry out this activity.

(d) Exhibition on remembering Dr. A.P.J.Kalam (Former President of India)

A two day exhibition on Dr. APJ Abdul Kalam is organized twice in a year. The themes included: Early childhood, Education, Career, Work in ISRO/DRDO, Missiles, Poetry & his contribution as President of India.

Celebrating 30 Years of Establishment of Department of Biotechnology, Government of India

One day workshop on 'Technical Writing and Interview Skills'

A one day workshop on 'Technical Writing and Interview Skills' was organized on 30th January 2016 at C6 Hall of Department of Chemistry between 9:30 AM to 5:30 PM for the final year students of science faculty.

The detailed program is as to	The detailed program is as follows.			
SOP and CV writing	Mr. Amit Murugkar, Director, Evolve Training and			
	Development, Mumbai			
How to face an interview?	Mr. Sanjeev Sood, Placement Counsellor, RCF, Mumbai			
Technical English	Dr. Shridhar Gokhale, Ex-Head, Dept. of English, SPPU,			
	Pune			
Scientific Writing	Dr. Shashidhar, Principal Scientist, National Chemical			
_	laboratory,Pune.			

The detailed program is as follows:

The heads of all the science departments were requested to send the list of interested students to participate in this workshop. 194 students from Biotech, Zoology, Botany, Microbiology, Biochemistry, Environmental Science, Chemistry, Geology and Physics Departments participated in this workshop.

Four interactive sessions were organized during this workshop. The inauguration of the workshop was done in the presence of Hon. Principal Dr. Ravindrasinh G. Pardeshi. In his inaugural speech, Dr. Pardeshi highlighted different initiatives taken by the Fergusson College for the student's welfare. He also narrated different activities conducted under DBT Star College Scheme. He mentioned the importance of soft skill training for the students entering into professional life.

The first session of the workshop was conducted by Mr. Amit Murugkar, Director, Evolve Training and Development, Mumbai on the topic SOP and CV writing, during which he mentioned the importance of writing a very effective SOP in order to get selected in overseas Universities. He also explained the difference between CV, Bio data and Resume and how to present you through an impressive CV. During the interactive session, he also discussed the Dos and Don'ts while writing SOP and CV.

The second session of the workshop was conducted by Mr. Sanjeev Sood, Placement Counsellor, RCF, Mumbai on the topic How to face interviews? During this session he guided the audience about how to prepare for interviews. He discussed the general mannerism that should be followed throughout the processes of the interview. During the interactive session, he discussed Dos and Don'ts during the process of interview.

The third session of the workshop was conducted by Dr. Shridhar Gokhale, Ex-Head, Dept. of English, SP Pune University on the topic Technical English. He explained different aspects of Technical communication. He also demonstrated how to do effective verbal communication and also how to write grammatically correct sentences. Students also interacted with him at the end of session.

The fourth session of the workshop was conducted by Dr. Shashidhar, Principal Scientist, National Chemical laboratory, Pune.During this session, he guided students about the ethics and methodology of scientific writing. He explained different aspects of abstract writing, referencing, title of the paper, authors etc.



Date	Speaker	TOPIC
25 th January	Dr. Surendra Ghaskadbi	Molecular regulation of evolution of
	Agharkar Research Institute, Pune	body plan in animals
27 th January	Dr. Prasad Bhagat National Chemical Laboratory, Venture Centre, Pune	Overview and history of eukaryotic genetics
28 th January	Dr. Lalita Limaye, National Center for Cell Science, Pune	Stem cells with special reference to haematopoietic stem cells
29 th January	Dr. B. B. Nath, Department of Zoology, Savitribai Phule Pune University, Pune	ModernChromosomalGenetics:Application & Future perspectives
30 th January	Dr. Deepti Deobagkar, Department of Microbiology Savitribai Phyle Pune University	Metagenomics and exploration of Marine ecosystems
	Pune	
2 nd February	Dr. Vasudevan Seshadri National Center for	Host factors contributing to parasite
	Cell Science, Pune	infection - Malaria
2 nd February	Dr. Nagaraj Balasubramanian, Indian Institute	To stick or not to stick that is the
	for Science Education and Research, Pune	question: The role of cell adhesion in our
		lives
4 th February	Dr. Sanjeev Galande Indian Institute for Science	From genome to epigenome: New
	Education and Research, Pune	perspective for understanding of
		complex diseases

Lecture Series on 'Eukaryotic Genetics'

The participating students were majorly from microbiology stream. They usually do not get a chance to learn about eukaryotic genetics as their syllabus is focused on prokaryotic systems. Hence this lecture series theme proved to be very beneficial to them and they might use the knowledge in their future research careers. The ideas discussed by all the speakers sparked a lively debate among all the students and the interaction they had with the speakers would prove to be very beneficial to them.





Debate Competition on Climate Change: Role and Responsibilities

For the debate competition eight teams from different departments from Fergusson College have been registered. Each team had been given 8 minutes to speak that includes 5 min for their own opinion and 3 minutes to convince their views to the point raised by the other team. The members for the Panel discussion involved:

Dr. Rajendra Shende		Former Director in UNEP, Chairman, TERRE Policy Centre			
Dr. Gurudas Nulkar		Associate Professor and Head Ex MBA Program, Symbiosis			
		International University			
Dr.	Sanjeev	Head, Geography Department, Fergusson College, Pune			
Nalawade					
Smt. Sunita Gupta		Head, Sociology Department, Fergusson College, Pune			
Smt. Rupali Gaikwad		Head, Environmental Science Department, Fergusson College, Pune			

All panel members expressed their view on this topic in the context of the role of industries and society in climate change.

Dr. Gurudas talked more about renewable energy and other resources. He talked about the role and responsibilities of climate change. Dr. Nalawade talked about life cycle assessment of a product in an industry and how it can be conducted.

Head of the department of environmental science Mrs. Rupali Gaikwad gave vote of thanks to each guest and audience, participant, organizers.

At the end of the program, winners of the debate competition were awarded with cash prizes and books on climate change by the guest.



Guest lecture by: Dr. Madhavrao Gadgil

On 17th December 2015, the department of Environmental Science on behalf of Fergusson College organised a guest lecture by Padmabhushan Padmashree Dr. Madhavrao Gadgil under the DBT star Program. After Saraswati Pujan, Dr. Sachin Khedkar Sir delivered the welcome address. A brief introduction of guest was given by a student & Dr. Khedkar Sir felicitated Dr. Gadgil.

In the initial talk of Madhavrao Gadgil with the students, he spoke about the role of environmentalists in today's world. He talked about the positive and negative things faced by environmentalists. He emphasized on the opportunities available for environmentalists. He shared his experience when he was the chairman on Western Ghats Ecology Expert Panel which was an Environmental Research Commission.

He explained ways available for common people to develop a scientific temper and conserve environment by some innovative ideas. He also appreciated the role of social media and search engines as an information provider.

At the end of the session he interacted with the students feeding their inquisitiveness. The vote of thanks was given by the head of Environmental Science, Mrs. Rupali Gaikwad.



Sr.	Name of Students	Name of College	Class
No.			
1.	Soching Luikham (Micro)	Modern College, Ganeshkhind,Pune	T.Y. B.Sc.
2.	Parisee Shirke (Phy)	Fergusson College, Pune	T.Y. B.Sc.
3.	Nilam Mahadik (Phy)	Fergusson College, Pune	T.Y. B.Sc.
4.	Sushma Vaidya (Phy)	Fergusson College, Pune	T.Y. B.Sc.
5.	Neha Visal (Phy)	Fergusson College, Pune	T.Y. B.Sc.
6.	Monika Jawale (Phy)	Fergusson College, Pune	T.Y. B.Sc.
7.	Amruta Pawar (Phy)	Fergusson College, Pune	T.Y. B.Sc.
8.	Meghana Roychoudhury (Phy)	Fergusson College, Pune	T.Y. B.Sc.
9.	Akash Jagtap	Fergusson College, Pune	T.Y. B.Sc.
10.	Mohini Shinde (Physics)	Prof. Ramkrishna More College,	T.Y. B.Sc.
		Akurdi	
11.	Prajakta Jadhav (Biotech)	Fergusson College, Pune	T.Y. B.Sc.
12.	Pravin Hivare (Biotech)	Fergusson College, Pune	T.Y. B.Sc.
13.	Shashank Shrikant (Geo)	Fergusson College, Pune	T.Y. B.Sc.
14.	Ayesha Minaz Pathan (Bot)	Fergusson College, Pune	T.Y. B.Sc.
15.	Anuja Kamble (Bot)	Fergusson College, Pune	T.Y. B.Sc.
16.	Vikram Patil (Physics)	Fergusson College, Pune	T.Y. B.Sc.
17.	Prasad Waman (Physics)	Fergusson College, Pune	T.Y. B.Sc.
18.	Ratanadip Koyale	Sinhgad College of Science	S.Y. B.Sc.
19.	Desai Ankita (Physics)	Prof. Ramkrishna More College,	T.Y. B.Sc.
		Akurdi	
20.	Akshay Borkar	Fergusson College, Pune	S.Y. B.Sc.

Intercollegiate Poster Competition: Magical Nanoworld



Science Exhibition

Interaction with Prof. J.K.Pal, BSR Fellow, Savitribai Phule Pune University, Pune

Themes

- Scientific breakthroughs in Life Sciences in 20th Century
- Posters:
 - (a) Statistics in Army/ War/ How Alan Turing used Stats and German Lost
 - (b) Big Data Analysis (How Statistics is used in Internet.)



Qualitative improvements due to DBT support

The scheme has given an opportunity to undergraduate students to upgrade / update their practical skills apart from their prescribed curriculum which has promoted the concept of "going beyond the curriculum".

- 1. Lectures and interactions with Experts from National Institutes and Industries have added to the knowledge base of our students.
- 2. Students have been given free hand to come to the laboratory anytime and work for their mini projects, explore equipments / instruments and interact with teachers.
- 3. Workshops for school children and school teachers have been one of the popular programmes under this scheme.
- 4. Exhibitions and poster competitions for students have enhanced their presentation and competitive spirits. The best example could be of programmes conducted by department of Biotechnology and Chemistry.

Novel aspect introduced or planning to introduce during the Scheme duration.

1. Under the DBT Scheme we have initiated a programme called "Understanding and Broadcasting Science". This could be considered as a novel approach where the

College

is involved in promotion of science through popular lectures, hands-on demonstration for school children and for school teachers.

- 2. Portable Amateur Radio Telescope, with dish of 1.8 m, was successfully built by the students.
- 3. Students visit to Sriharikota to witness the launch of CHANDRAYAN II on 14th July 2019.

Self-Evaluation

Objectives for Quantitative Metrics (two points each)

- 1. Skill Development
- 2. Learning beyond the curriculum
- 3. Expert interaction
- 4. Project Based Learning
- 5. Field based learning

Department	Objective (as stated in proposal)	%	Reasons for
		achieved	underachievement /
			If achieved, state in
			quantitative metrics
Biotechnology	1. Reaching maximum students from school to college	100	08
	2. Educating teacher's about basic biotechnology		
	techniques with more focus on interdisciplinary		
	aspects		
	3. Introduction of new practicals - Model Systems in		
	Biology (regeneration in hydra)		
	4. Introducing bioinformatics at undergraduate level		
	5. Workshops on applied aspects like working of		
	fermenters for all students (Biotechnology /		
	Chemistry / Microbiology / Zoology)		

Chemistry	1. Efforts for attracting students towards Chemistry and	100	08
	motivating them to do experiments in Chemistry		
	2. Assign mini research projects to inculcate scientific		
	and independent thinking ability in designing		
	methodology for synthesis and analysis of chemical		
	transformations.		
	3. Training students regarding scientific literature		
	survey, collecting references and creating awareness		
	about plagiarism.		
	4. Expose students to spectroscopic techniques /		
	methods of characterization of synthesized		
	compounds.		
	5. Organize popular lectures and promote interactions.	100	
Computer	1. Provide students with updated knowledge in	100	08
Science	computer science with reference to web designing,		
	data sciences and training to college faculty		
	2. Support innovative ideas in computer sciences		
	in the form of projects (selective) and inculcate		
	research ideas amongst students.	100	
Electronic	1. Experimental skills enhancement through Hands On	100	08
Science	training		
	2. Value addition to the learning and teaching process		
	through circuit simulations		
	3. Live interactions with industrial experts		
	4. Exposure to new application domains through		
	guest lectures		
	5. Stimulate original thinking through mini research		
F (1)	projects	100	10
Environmental	1. Provide skill-based practicals for undergraduate	100	10
Science	students.		
	2. More focus on various field techniques		
	3. Awareness programmes to educate students and		
<u> </u>	general public.	100	0.0
Geology	1. Field based teaching - learning	100	08
Missohiology	2. Exposure to application-based areas in geology	100	0.0
Microbiology	1. Teach Basic skills in microbiology to science	100	08
	2. Introduce inductive based (basic) prostical skills		
	2. Introduce industry based (basic) practical skins.		
Dhysics	1. Nurture students in group of Astronomy and	100	08
Physics	1. Nurture students in areas of Astronomy and	100	08
	2 Skill oriented practicals in Dhysics		
Statistics	2. Skill offended placticals in Thysics	100	06
Statistics	techniques	100	
Zoology	1 Basic Bioinstrumentation practicals	100	08
Zoology	2 Exposure to Hands On Training in grass like	100	
	Embryology and Virology		
	3 Introducing students to other allied areas in		
	biological sciences in the curriculum		
	biological sciences in the curriculuin.		