



St. Francis

College for Women

Begumpet, Hyderabad-500016

(Autonomous & Affiliated to Osmania University)
NAAC Re-accredited with 'A' Grade 4th Cycle



सत्यमेव जयते

जैवप्रौद्योगिकी विभाग

DEPARTMENT OF

BIOTECHNOLOGY

DBT STAR COLLEGE SCHEME

ANNUAL REPORT 2023-2024

ST FRANCIS COLLEGE FOR WOMEN, BEGUMPET- HYDERABAD

St. Francis College for Women

Annual Progress Report supported under Star College Scheme
(01/09/2023 to 30/03/2024)

1. Name of the College: St Francis College For Women
2. Name of the coordinator: Dr. M. Shailaja Raj,
Designation: Vice Principal (R&D)
Address: St. Francis College for Women,
Begumpet, Hyderabad
Phone No: 9949210270
3. Assessment duration : 01/09/2023 to 30/03/2024 Duration in years : 0.5 yrs
4. Details of Departments Supported

Sl No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty members	
			With Ph.D.	Without Ph.D.
			Total = 82	
1	Biochemistry & Nutrition	B. Sc	3	8
2	Botany & Biotechnology	B. Sc	3	3
3	Chemistry	B. Sc, M. Sc	10	7
4	Computer Science	B. Sc, M. Sc	1	19
5	Mathematics & Statistics	B. Sc, M. Sc	3	8
6	Microbiology	B. Sc, M. Sc	6	3
7	Physics & Electronics	B. Sc	1	4
8	Zoology	B. Sc	2	2

5. Number & Date of Advisory committee meeting: 25, (including Principal, DBT Coordinator, HoDs and Coordinators of each participating department)

Date 11.08.2023- Orientation to DBT Star college scheme

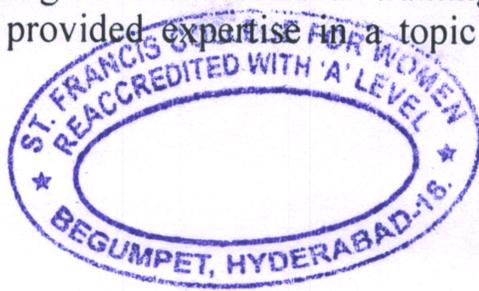
25.09.2023- Orientation to utilisation of funds

21.02.2024- Orientation to Budgeting and Annual report preparation

6. Qualitative improvements due to DBT support.

The support from DBT under 'Star College Scheme' led to significant qualitative improvement in terms of:

- Procurement of new equipment: Multiple units purchased helped the students to perform experiments independently and improved student-instrument ratio for them to learn better.
- New experiments were conducted, experiential learning was enhanced through field visits, which reinforced their theoretical & practical knowledge.
- Project work carried out has given them hands-on training.
- Guest lectures organized provided expertise in a topic and added credibility to the curriculum content.



Outcome: Experimental based & Student centric approach in laboratory experiments enhanced scientific learning, community outreach and development of outlook for scientific research and data analysis.

Summary:

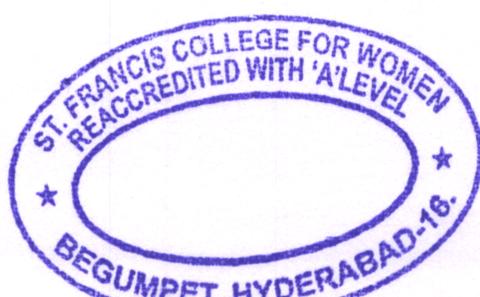
Projects	58
Student & faculty training program	26
Guest Lectures & Workshops	28
Field trips	10
Outreach Activity	2
National seminars/ Conferences	5

1. Projects:

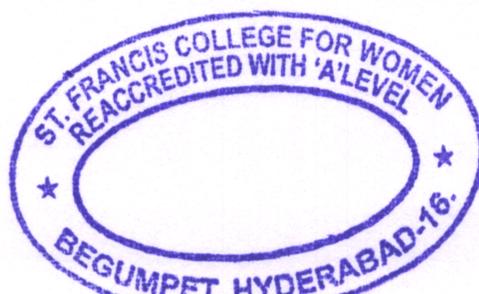
About 58 students have completed projects, which focus on areas aligned with the scheme's objectives, typically including promoting research, innovation, and skill development in the sciences. The potential project areas in which work was undertaken include in areas such as: Study on medicinal plants, Bioinformatics and Nanoparticle synthesis and characterisation, Secondary metabolites and Microbial diversity, applications of microbiology in medicine and Isolating and characterising microorganisms, studying antibiotic resistance, probiotics etc.

LIST OF PROJECTS CARRIED OUT

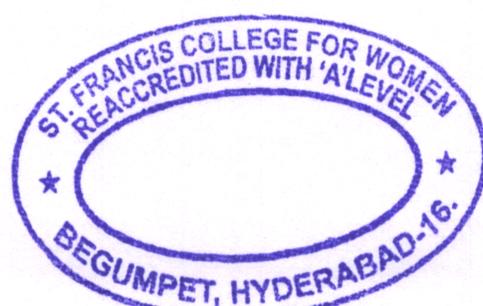
S.No.	Roll number	Student Name	Title of the project	Name of the Supervisor
Biochemistry and Nutrition				
1	121321057001	Akshaya Ajay	Phytochemical, antibacterial, antioxidant study of <i>Indigofera tirunelvelicasanjappaplant</i> based silver nanoparticles by microwave assisted technique	Dr.S.Kanchana
2	121321057009	Madhavi	Autoclave assisted green synthesis of <i>Indigofera Thirunelvelicasanjappa</i> - Plant based silver nanoparticles&its applications	Dr.S.Kanchana



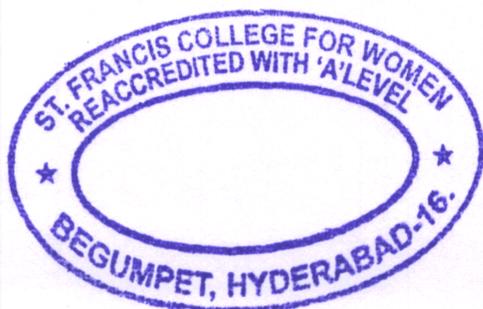
3	121321057021	Spurthi	Cloning and expression of green fluorescent protein and its chromatographic purification	Dr.S.Kanchana
4	121321057024	Shravya	Phytochemical, antibacterial, antioxidant study of <i>Indigofera tirunelvelicasanjappaplant</i> based silver nanoparticles by microwave assisted technique	Dr.S.Kanchana
5	121321056011	Jayashree	From waste to resource: comparative study of three bio enzymes for sustainable solutions	Ms.Malathi
6	121321056023	Muneeza	Exploring the impact of stress on endometriosis: unravelling the complex relationship between psychological factors and disease progression- a statistical study	Ms.Malathi
7	121321061005	Jaycinth Raj	From waste to resource: Comparative study of three bio enzymes for sustainable solutions	Ms.Malathi
8	121321056001	Archana Jayalakshmi	Assessment of genotoxicity of aspartame in diet sugar using <i>allium cepa</i> l. as a test plant	Dr.G.Sony
9	121321056007	Pankaja	Genotoxicity evaluation of kesari yellow dye by <i>allium cepa</i> test	Dr.G Sony
10	121321056009	Jyothirmaye	In silico DNA fingerprinting of streptomycetes	Dr.G.Sony
11	121321056017	Jyessica	Evaluation of the aqueous extract of <i>Spondiasmombin</i> seeds for the analysis of antioxidant, antidiabetic and antimicrobial activity	Dr.G.Sony
12	121321056027	Little Mystica	Therapeutic potential of flaxseeds and insilico analysis of its phytochemicals against breast cancer	Dr.G.Sony
Botany & Biotechnology				
13	121321041006	Naga Srikari	Antibacterial activity of the ethanolic extract of <i>Phyllanthniruri</i> on <i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i>	Dr. Basanti Ch
14	121321041007	K. Samsitha	To study the antibacterial activity of selected aromatic plants and their phytochemical analysis	Dr. Basanti Ch



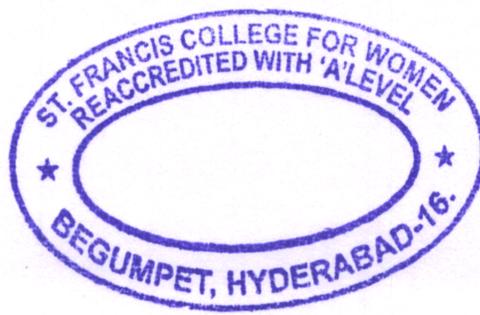
15	121321050036	Roshni Biswas	Extraction and Characterization of secondary metabolites from Solanum melongena (Brinjal) fruit peel and determining its antimicrobial property	Ms. T. Shouni Niveditha
16	121321050031	Niharika K	Extraction and Characterization of Secondary metabolites from Trachyspermum ammi (Ajwain) leaves and determining its antioxidant and antifungal activity	Ms. T. Shouni Niveditha
17	121321051015	M. Shiny Ratnapriya	Screening of Phytochemicals and Evaluation of Antifungal and Antimalarial properties of <i>Zamioculcas zamiifolia</i>	Ms. T. Shouni Niveditha
18	121321051013	K. Reshma	Analysis Of Secondary Metabolites In <i>Basella Alba</i> Leaf Extract And Determination Of Antimicrobial Property.	Ms. T. Shouni Niveditha
19	121321056002	B. Melisa Lorreta Anthony	Qualitative & Quantitative analysis of Secondary Metabolites extracted from <i>Costus igneus</i> rhizome & evaluation of Antimicrobial and Antioxidant properties	Ms. T. Shouni Niveditha
20	121321056013	D. Anantha Lakshmi	Isolation and characterization of <i>Agrobacterium tumefaciens</i> from crown gall collected from <i>Tabernaemontana divaricata</i>	Dr. Deepa Switha
21	121321056015	Indrakar Sanjana	Isolation and characterization of <i>Agrobacterium tumefaciens</i> from soil samples	Dr. Deepa Switha
22	121321056005	B. Lakshmi Keerthana	Isolation and Characterization of Crown Gall-Inducing <i>Agrobacterium tumefaciens</i> in <i>Tabernaemontana divaricata</i> : A comprehensive study of Morphological and Biochemical properties under In Vitro Conditions	Dr. Deepa Switha
23	121321051006	G. Hymavathi	Isolation and characterisation of <i>Agrobacterium tumefaciens</i> from <i>Tabernaemontana divaricata</i>	Dr. Deepa Switha
24	121321051030	V Jennifer Susheela	In Silico Studies of Thyroid cancer causing NRARP, NATA1, MRNA3, GAMA & CYCLO proteins	Ms. Mini Fernandez



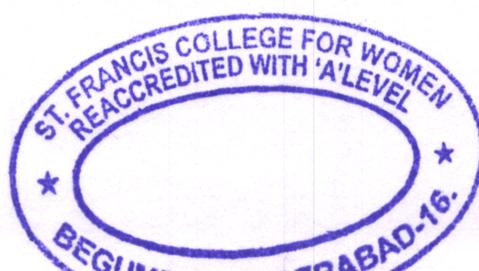
25	121321051032	K. Blessy Monika	In silico studies of DAL-4, SYN-2, HEM-MU, ZFP-346, and N-ATF-8 proteins involved in leukemia.	Ms. Mini Fernandez
26	121321056010	Cynthia Pilli	In-silico studies of dusp28, cdkn3, kras, s100p and zgl6b proteins involved in pancreatic cancer	Ms. Mini Fernandez
27	121321050041	Tulsi Kulkarni	In-Silico Analysis Of Ube2t, Peb11, Mgmt, Rab3d, And Ccl18 Proteins Involved In Glioblastoma	Ms. Mini Fernandez
28	121321050034	Rakshita Math	In silico analysis of Heat Shock Proteins HSP 40, HSP 60, HSP 70, HSP 90 and sHSP in <i>Solanum tuberosum</i> using Bioinformatics tools	Dr. A.S Pooja
29	121321050025	Sri Lasya	In silico analysis of Heat Shock Proteins HSP 40, HSP 60, HSP 70 and HSP 100 in <i>Clostridium botulinum</i> using Bioinformatics tools	Dr. A.S Pooja
30.	121321056008	B. Bhuvana	In silico analysis of Heat Shock Proteins HSP 40, HSP 60, HSP 70, HSP 90 in <i>Rattus norvegicus</i> using Bioinformatics tools	Dr. A.S Pooja
31.	121321051010	Ishi Bhargavi G	In Silico Studies Of Bcl-2a1, Bcl2-L-10-2, Npm2 And Cldn-4 Proteins Involved In Mesothelioma	Ms. Mini Fernandez
Microbiology				
32.	121321050030	Nacham Samhitha	Exploring the Marine Microbiome: Isolation of Antibiotic-Producing Organisms from Marine Samples - 16SrRNA analysis	K.Swathi
33.	121321050005	B. Shree Deepthi	Studying the Bacterial diversity and phylogenetic relatedness of Devkund Waterfall.	Dr. Arsheen Tabassum
34.	121321050026	M Risha Reddy	Microbial Examination of Oyster Mushrooms and synthesis of Nanoparticles to evaluate mushroom's shelf life	K.Swathi
35.	121321050030	Nacham Samhitha	Exploring the marine Microbiome: Isolation of Antibiotic producing organisms from marine samples	K.Swathi



36.	121321050033	R Madhumitha	Green synthesis of silver nanoparticles and drug delivery systems study by using exopolysaccharides	K. Suman
37.	121321050037	S Haarika	Study of Bacterial Flora from the surface of Public Capacitive Display Screens	K. Suman
38.	121321050042	Vaishnavi Ravukutam	Probiotic Properties Of Lactic Acid Bacteria Isolated From Fermented Food	K. Suman
Chemistry				
39.	121321041009	Kotagiri Veena	Green Synthesis, Characterisation And Antibacterial Activity Of Schiff Bases Derived From O-Vanillin	Dr Saritha Aduri
40.	121321041013	Malamanti Mercy Lydia	Preparation Of Schiffs Bases, Metal Complexes, And Its Anti Corrosion Property Of Indole 3 - Carboxaldehyde	Dr Asha
41.	121321041025	T.Meghana	"insights Into Molecular Docking Studies Of Breast Cancer Target Human Tankyrase 2 Inhibitors"	Dr Sabiha Fatima
42.	121321042002	Anshu Soni	Synthesis, Characterization And Molecular Docking Studies Of Schiff's Bases Derived From Salicylaldehyde With Some Amino Acids And Their Cu (Ii) Complexes By Microwave Method	Dr Susmitha Kasula
43.	121321042011	Ramavath Shivani	Green Synthesis Of NiO Nanoparticles Using Tulsi Leaves	Dr E.V.L Madhuri
44.	121321042014	Uppu Bhargavi	Green Synthesis, Characterisation And Antibacterial Activity Of Schiff Bases Derived From Pyridoxal	Dr Saritha Aduri
45.	121321042016	Yenni Monika	Chemical Modelling Studies On The Complexation Of Succinic Acid Dihydrazide And L-Histidine With 3d Transition Metal Ions	Dr Uma Rani
46.	121321051003	B V Varshita	Metal Complexes From Schiffs Bases, Synthesis, Coordination And Anticorrosive Investigations	Dr Asha
47.	121321051014	Nellutla Kruthi	Molecular Docking Studies Of Von Hippel-Lindau Associated Renal Cell Carcinoma Target HIF-2 Alpha Inhibitors"	Dr Sabiha Fatima



48.	121321053015	P V Lahari	Computational Modelling And Structure Validation Of Pcsk9: A Protein Of Significance In Atherosclerosis	Dr.M.Bhargavi
49.	121321056012	Dasari Gaayathri	Green Synthesis Of ZnO/NO ₂ Nanocomposites Using Neem Leaves	Dr E.V.L Madhuri
50.	121321056029	Snehankita Das	Synthesis Of Activated Carbon from Coconut Shell Using ZnCl ₂ And FeCl ₃ For Chemical Activation, Binding Polyacrylic Acid And Exploring It's Applications	Dr Shikha
51.	121321057023	Samra Fatima	Activated Carbon Synthesised From Coconut Shell Using CaCl ₂	Dr Shikha
52.	121321042003	K Sree Lakshmi	Green Synthesis Of NiO Nanoparticles Using Neem Leaves	Ms Lakshmi Madhuri
53.	121321042006	K Sameeha	Green Synthesis Of Silver And Ruthenium Oxide Nanoparticles Using Carica Papaya	Dr Sumalatha
54.	121321042013	Thatikala Nandini	Synthesis Of Activated Carbon Groundnut Shell Using KOH And It's Application	Dr Shikha
55.	121321042001	Ameti Nikhitha	Green Synthesis Of ZnO/NiO Nanocomposites Using Tulasi Leaves	Ms Lakshmi Madhuri
56.	121321042009	Maganti Nithya Sri	Synthesis, Characterization And Molecular Docking Studies Of Schiff's Bases Derived From 5-Nitro-2-hydroxybenzaldehyde With Some Amino Acids And Their Copper(II) Complexes By A Microwave Method	Dr Sushmitha. K
57.	121321042012	Sanika Uday Sri	Synthesis Of Activated Carbon From Groundnutshell Using ZnCl ₂	Dr Shikha
58.	121321042005	Kanagandul A Sathwika	Synthesis And Characterization Of Benzhydrazide Derived Schiff's Bases And Their Complexation With Copper	Dr Sumalatha



2. **Outreach:** Two outreach activities have been conducted for school teachers.

The Department of Biochemistry & Nutrition organised a Hands-on Training for school science teachers on Qualitative analysis of Biomolecules and bio-separation techniques and Importance of Balanced Diet and assessment of nutritional status.

Around 14 faculty members from different schools participated.

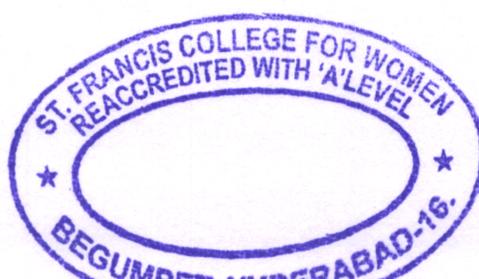
The Department of Zoology organised a training program for School teachers in Biology Experiments with an objective to demonstrate and analyse the basic biological experiments to the teachers. 15 faculty members participated.

3. **Student and Faculty training** is crucial for fostering a productive learning environment. About 10 programs have been conducted in various areas such as:

- Career guidance seminars, provided training to students on how to conduct research effectively and analyse the data by using statistical tools, library resources, databases, and academic journals.
- Technology Training for students to equip them with essential tech skills such as using IoT solutions and SAGE MATH, MATLAB, and differential equations - software relevant to their field.
- Faculty Training on developing technical skills on Biomolecule separation, Nutritional assessment, Building smart IoT solutions, Deep learning based Machine translation.

LIST OF STUDENT AND FACULTY TRAINING PROGRAMS

Department	Students/ Faculty No. /Date	Activity	Resource person	Outcome
Biochem & Nutrition	B.Sc.III - 21 26/12/23 to 1/1/24.	Industrial training on Basics in Pharma Industry	Dr. Satyanarayana Director, Pharma Paatashala, Miya pur, Hyderabad.	Students get familiarise to Pharmacy industry and update their knowledge on advanced analytical techniques



Microbiology	5-01-24	Hands on training on Microscopic Techniques	Dr.Roselin Dr. Arsheen	Students gained hands-on experience in the operation of Compound microscope, Phase contrast microscope and Bright field microscope.
	28-11-23	Hands on Training on Statistical tools for data Analysis	Dr. Padmaja, VJIT, Hyd	helped them in understanding the significance of "Statistical tools for data Analysis" in the area of research.
Zoology	December 14, 2023	One Day Hands on Training for School teachers in Biology Experiments	Dr. Jyothi Rani HoD, Dr. Vidya Jayaram Ms. S. Sravanthi. Ms. X. Sheila Merlin St Francis College	Teachers will be able to conduct biological experiments and impart scientific aptitude amongst students
Mathematics & Statistics	Faculty -22 2-3rd Feb 2024	Two-day International FDP on "Mathematical Software for Teaching and Research"	Dr.D.Vignesh, Mr. GovindaRaj CMR University, Bengaluru	Faculty were benefited with the regular concepts of their teaching aids along with research skills required.



Physics & Electronics	B.Sc II / III - 60 students 2 faculty 18 th and 19 th of January 2024.	2-day hands on training workshop on the topic “ Embedded Systems and IoT Applications ”	Mr. Shareef, from Physitech Consultancy Services Pvt Ltd.	Students learned about basic programming in ESP 32 Micro controller including GPIO manipulation, Soil moisture Sensor ,LDR Sensor, OLED DISPLAY, IP address Sensor, Ultrasonic Sensor
	B.Sc I/ II / III – 42 students	2-day hands on training on the topic “ Robotics ”	Pantech E learning Pvt Ltd.	Designing a serial robot, line following robot, obstacle sensing robot and applying logic for selection of robotic subsystems.
	BSc. III year – 63 students	Hands on Training in Characterizati on Techniques for Magnetic Materials	S. Shiva Krishna, Texla Scientific Instruments, Hyderabad. Pantech E learning Pvt Ltd.	Hands-on Experience on determining magnetic susceptibility of solid enhances proficiency in measuring resistivity of semiconductor materials.

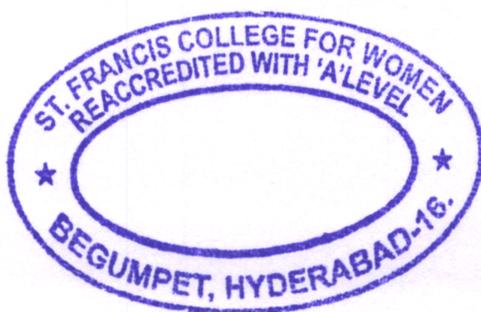


Computer Science	Students	Quiz- Programming, debugging & developing wireframe, given problem specifications	Faculty Coordinators : Ms. Afeefa, Ms. Prabhmeet, Ms. Rajeshwari and Ms. Preethi	Participants unleashed their coding prowess, crafting ingenious solutions to real-world challenges
	Faculty	FDP on Deep Learning based Machine Translation FDP on IoT based applications	Mr. G.N.L. Ravi Teja, Founder & Manager Tejasya Innovative Solutions and Pvt LTD.	Updated knowledge on how to run a code through node MCU and light a LED through Arduino software through various time stamps.

4. **Guest lectures/ Workshops:** Guest lectures and workshops are fantastic opportunities to enrich learning experiences and gather insights from experts in various fields. The departments organised 28 Guest lectures and Workshops.

LIST OF GUEST LECTURES AND WORKSHOPS

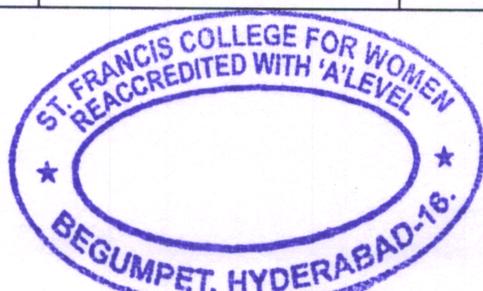
Department	Students/ Faculty No. /Date	Activity	Resource person	Outcome
Biochem& Nutrition	B.Sc. I /II /III yr - 105 students 20 th Dec 2023	GL - Cancer Biology	Dr. Madala Ravi Krishna, Consultant Medical and Haemato-Oncologist, KIMS-SunshineHospital, Begumpet.	The guest lecture helped the students to gain in depth knowledge of cancer and the importance of observing symptoms and going for diagnosis at an early stage .



UG students of I /II / IIIyr - 180 students & 7 faculty	GL- Role of Nutrition for Competitive Edge in Sports Performance	Dr. Rohini Raman, Director, and Chief Nutrition Consultant, Starlite Nutrition Centre, Hyderabad	Students understood the role of different nutrients and nutritional supplements in the performance of a sports person and provided an insight for the students to choose different avenues in the field of Sports Nutrition.
B.Sc. III Yr Biochemistry students – 65, 24 th Jan 2024	Workshop on Statistical Tools in Life Sciences & Scientific Paper Writing, St. Ann's Degree College for Women, Mehdipatnam	Dr. G. Sony and Dr. S Kanchana	Familiarised with excel to analyse the data, perform calculations and plot graphs and updated knowledge on selecting research topic, literature review, present the work in to paper format and communicating the data to UGC approved journals.
30 Faculty	Workshop for Faculty on "Oven Fresh Delights	Chef Ajith, Faculty of Bakery and Patisserie Arts from Regency College of Hotel Management, Hyderabad	Baking Recipes including Hands on training for the faculty.
B.Sc. II, III Yr students – 100, 24 th Jan 2024	GL- Career Guidance for Science Graduates	Dr. Mir Zahoor Gul, Research Associate, Department of Biochemistry, Osmania University, Hyderabad	Students were enlightened with various advancements in nanotechnology and various scholarships, internships that students can apply at different levels of their studies



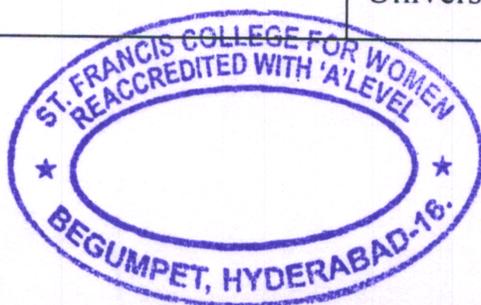
	UG students of I / II / IIIyr -187	HINT EXPERT APP	Dr. Krishna Athmakuri, Co-founder and CEO, ClearCals Pvt. Ltd., Hyderabad.	Helped the students understand the importance of Nutrition software applications in calculating the nutritional requirements and provided an insight on use of Artificial intelligence tools in the nutrition industry.
	UG students of III yr - 120	GL- Food Label- Read it right	Dr. Avanti Rao, Head, PG, Department of Nutrition, Madina Degree and PG college for women, HYD.	Helped the students understand the importance of a food label and provided an insight for the students to the latest updates that are put forth by FSSAI.
Biotechnology & Botany	30 students	workshop on "Hydroponics: Basic Techniques and Scope of soil less Farming	Dr. Satya Narayana Reddy, Managing Director, IHG Farms Pvt. Ltd, Hyderabad.	checking the TDS and pH levels of the nutrient solution and planting the seedlings in the hydroponic unit
	I, II- and III-year BZC and ANBC- 104 students	GL on "Recent Trends in Medicinal Plant research"	Dr. Mohd Kashif Husain Research Officer (Scientist) Botany from CCRUM, Hyderabad.	helped students to understand the significance of medicinal plants in modern health care. And gained new insights on the technologies used in medicinal plant research, broadening their understanding of scientific approaches.
	31 students	Workshop on the 'Basics of genetics and genotyping	AIG hospitals	Understanding of genotyping, sequencing techniques, and microarray chip result interpretation.



	160 students	A one-day national seminar on "Bridging the Gap: Biotechnology Revolutionising Medicine	-	Enhanced their knowledge in the areas of genetic counselling, transcriptomics, ML, tissue engineering, and epigenomics
	81 students	Medicinal Plants for Anticancer Properties.	Dr. Irfan Ahmad Ghazi -Professor, University of Hyderabad.	understood the role of medicinal plants, their anti-cancerous properties and uses in synthesis of anticancer drugs
	217 students 14-12-23	Guest Lecture on Empowering Futures: Nurturing a Passion for Research in the Next Generation	Ms Priyanka Mishra CSIR-IICT, HYD	This event mainly focused on instilling a passion among the students for research and to convey the invaluable role it plays in shaping the future of both individuals and the scientific community
Chemistry	18-01-24 330 students	National Seminar on the Emerging Trends in Sustainable Chemistry, Nanotechnology & Electroanalytical Methods	by Prof. Vijjulatha, Vice chancellor, Telangana Mahila Visvavidyalayam, Hyderabad.	Fostering collaboration and networking among participants, encouraging the exchange of ideas and experiences to stimulate potential interdisciplinary research and innovative projects
	133 students, 08-02-24	Workshop on "Dare to Lead"	Ms Rohini Raju from Rave Institutes.	The workshop helped the students to impart confidence, assertiveness, team-building and problem-solving.

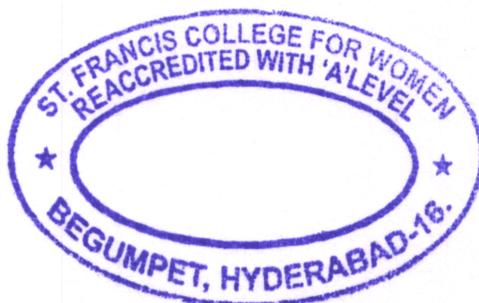


	12-2-24 BSc I yr - 250	GL - The Theory of Quantitative Analysis	Ms. Ayesha Kausar, Assistant Professor, Department of Chemistry, Shadan Degree and PG College for Women.	To deepen their comprehension of the theory of quantitative analysis, providing clarity on key concepts and methodologies
Microbiology	BscI,II,II yr students - 180 20-2-24	National Seminar on Artificial Intelligence in Disease Diagnosis	Dr. Zahoorullah, Atal ncubation Centre Dr. Ravi Kiran Manapuram, Founder, Medevplus Dr. Rupjyoti Talukdar, Director, Pancreatology AIG,Hyd Mr. Manuj Vangipurapu, Founder /CEO Clinion	Highlighted the importance of innovations and artificial neural networking, AI revolution in optical coherence tomography AI in clinical trials and gave insights into career opportunities in life sciences
Zoology	B.ScIst, IIInd&IIIrd year (189 students)- 24-01- 2024 9th December, 2023 (65 students)	“Emerging infection of Arthropod borne Diseases” Workshop on “Entrepreneurs hip in Beekeeping for Honey production”	Prof. M. Madhavi, HoD of Zoology, & Director, Sir, Ronald Ross Institute of Parasitology Ravindra Kumar, Director, API. Culture technology Centre Professor Jaya Shankar, Telangana State Agricultural University,	gain knowledge of vector-borne diseases that are preventable, through protective measures, and community mobilisation. Understand Beekeeping has prime significance for human health care and nutrition.



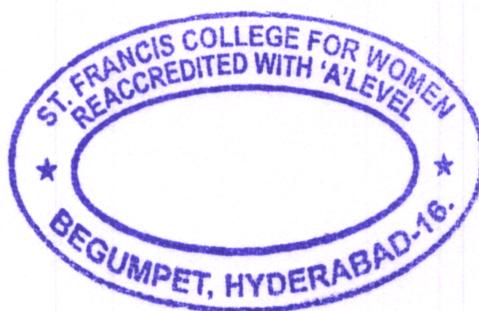
Mathematics & Statistics	12 Dec 2023 for B.Sc II yr students	a workshop on on the Topic "Cauchy's Criteria For Convergence"	Ms Jhansi RBVRR College ,Narayanguda	The students were able to obtain a thorough understanding of sequences concepts along with convergence techniques.
Physics & Electronics	of I,II and III yr-161	GL - Structural ceramics developed, ARCI	Dr. Madireddy Buchi Suresh (Scientist F - ARCI, HYD	Gained a deeper understanding of fundamentals of structural ceramics including their properties, applications and manufacturing processes.
Computer Science		Two-month training for Computer Science students on working with the IoT kits	IoT Users Club	Learnt concept of sensors and their types and innovative ways to control devices. Understood concept interconnected world of Internet of Things
		12-hour Hackathon	Ms. Afeefa, Ms. Prabhmeet, Ms. Rajeshwari and Ms. Preethi.	Ignited the spark of creativity and collaboration among students through an immersive hackathon experience. It cultivated a competitive yet supportive atmosphere that encouraged participants to push their boundaries in programming, problem-solving, and design.

5. **Field Trips:** The eight departments of the College have organized a field trips to enhance students' learning experiences and provide them with practical exposure to their academic subjects. These trips could include visits to Industries, Institutes, research centers, natural reserves and Gaming institutes depending on the subjects being studied and the objectives of the trip.



LIST OF FIELD TRIPS

Department	Date	Students	Visiting Institute	Outcome
Biochemistry & Nutrition	9 th Jan, 2024	Bsc III yr – 67 students	HCU, Hyd	All Biochemistry labs and research areas are shown and explained to the students and visited Bio Nest and TBI Labs.
Botany	05.02.2024	37 students	AgroBiotech foundation Biofertilizers vermicomposting unit.	Awareness of research activities at Agribiotech and Plant tissue culture unit
Biotechnology	15/12/23	81 students and 2 faculty	Centre for DNA Fingerprinting and Diagnostics, Inner ring road, Uppal,	opportunity to explore the role of DNA fingerprinting in medical diagnostics, to diagnose genetic diseases, criminal profiling.
Chemistry	5-01-24	BSc III yr- 103 students	Central Institute of Petrochemicals Eng.& Technology (CIPET), Hyd	students gained exposure to the plastic industry and interacted with the faculty of CIPET and are able to relate the theoretical knowledge to practical aspects of plastics



Microbiology	15/02/2024 02/02/2024 14/12/2023	BSc III yr - 38 students BSc II yr - 24 students BSc III yr - 30 students	Crown Beverages Agri Biotech Foundation Creamline Dairy Products Limited (Jersey)	knowledge about fermenter construction, operation methods understanding about the important methods used in agriculture. understanding the functioning of different dairy product units and fermentation involved in the preparation of different milk products.
Physics & Electronics	12-01- 2024	BSc III yr - 100	Indian National Centre for Ocean Information services	Tsunami detection, the significance of sustainable fishing practices, effective responses to oil spills, and the critical role of coral reef conservation in marine ecosystems.
Computer Science	21st February 2024	40 from BSc SE(H) Sem II and IV students.	Gaming Institute	Understood the importance of a gaming, game's destination, objectives, and rewards, advocating for games that are both interesting and time efficient.
Maths&Statis tics	Date: 20 th February 2024	B. Sc. IID students. 55 students	"FIELD TRIP TO ICRISAT"	students had a great understanding of real life demonstrations of the statistical concepts used in research studies a

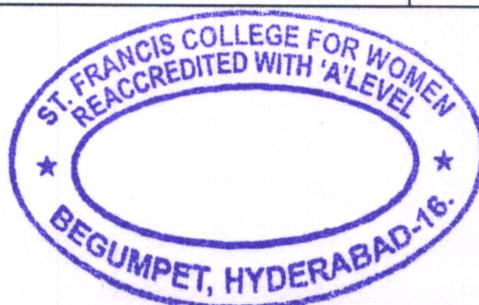


6. Any Novel aspect introduced or planning to introduce during the Scheme duration.

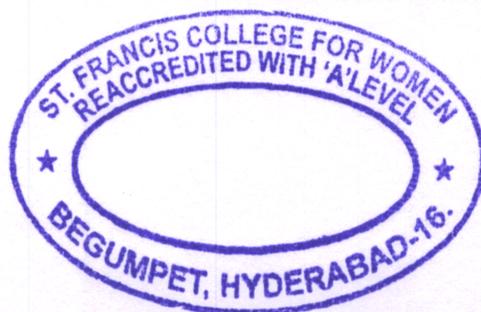
Activity	Novel aspects introduced or planning to introduce
Project based learning	Research on : <ul style="list-style-type: none"> • Medicinal plants • Nutritional analysis • Community studies using Diet Cal software • Comparative studies of Hydroponically grown plants • Organic synthesis, Nanomaterials, Materials Science
FDP	<ul style="list-style-type: none"> • For the college faculty & Non-teaching faculty members • Training students of other colleges and Faculty that have limited lab facilities
Workshop	Workshop on: <ul style="list-style-type: none"> • learning mathematics not only theoretically but in a practical way. • Animal cell culture • Workshop for school and college students in learning mathematics not only theoretically but apply practical way
New experiments	<ul style="list-style-type: none"> • Planning to introduce: • Cultivation of Anaerobic bacteria from dental samples & acne, • Production of alcohol using different substrates, I • Isolation and identification of pathogenic bacteria. using specific media. • Screening haemoglobin percentage in women and children in adopted villages • Virtual dissections and simulation is now prioritised as per UGC recommendation,
New approaches	AI based learning
Entrepreneurship	Hands on training : Honey extraction in Apiculture Vermicomposting, Mushroom cultivation to be entrepreneurs

7. Key performance indicators

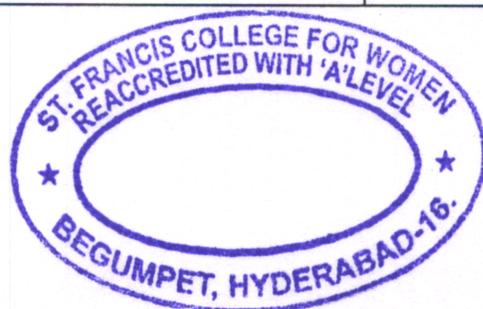
S. no	Indicator	Pre-support	During /After Support	Remarks																
1	No. of students admitted	Total = 1067																		
		Total = 1215																		
		Only females		Only females																
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SC</th> <th>ST</th> <th>OBC</th> <th>G</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">82</td> <td style="text-align: center;">24</td> <td style="text-align: center;">325</td> <td style="text-align: center;">636</td> </tr> </tbody> </table>	SC	ST	OBC	G	82	24	325	636	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SC</th> <th>ST</th> <th>OBC</th> <th>G</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">102</td> <td style="text-align: center;">21</td> <td style="text-align: center;">535</td> <td style="text-align: center;">557</td> </tr> </tbody> </table>	SC	ST	OBC	G	102	21	535	557	
SC	ST	OBC	G																	
82	24	325	636																	
SC	ST	OBC	G																	
102	21	535	557																	



2	No. of students passing out (%) Students Admitted/passing out (pass %)	UG- 94%	Results awaited	
3	Drop-out rates	3%	4%	
4	No. of students opting for MSc	600	700	
5	Average marks	8.20	8.41	
6	No. of hands-on experiments being conducted	<p>Biochemistry & Nutrition U. G Curriculum based experiments.</p> <p>Botany & Biotechnology U. G Curriculum based experiments</p> <p>Chemistry U. G. Curriculum based experiments.</p> <p>Computer Science UG IoT Based Experiments</p> <p>Mathematics & Statistics</p> <p>Microbiology</p> <p>Physics & Electronics U. G Curriculum based experiments</p>	<p>1.PAGE 2. Anti-oxidant assay 3. Body composition analysis</p> <p>1. Hydroponics 2. Anatomical sections using trinocular microscope Total – 2 3. Assay technique using Soxhlet apparatus 4. Agarose Gel electrophoresis, 5. Handling of Micropipettes 6. Phylogenetic analysis using bioinformatics tools</p> <p>1. Microwave assisted organic synthesis 2. Computational Chemistry 3. Nanoparticle synthesis and applications 4. Magnetic moment analysis of metal complexes 5. Green synthesis using ionic liquids 6. Spectrophotometric analysis of organic compounds 7. Temperature Sensor Monitor, Light Sensor Monitor Programs were worked on by students</p> <p>IoT based experiments After support</p> <p>Statistical Tools for Data Analysis- 46 students</p> <p>Hands on Training in Microscopic techniques Mushroom Cultivation</p> <p>1. Robotics 2. Embedded Systems and IoT Applications 3. Characterization Techniques for Magnetic Materials Total – 3 Zoology – 2</p>	Completed

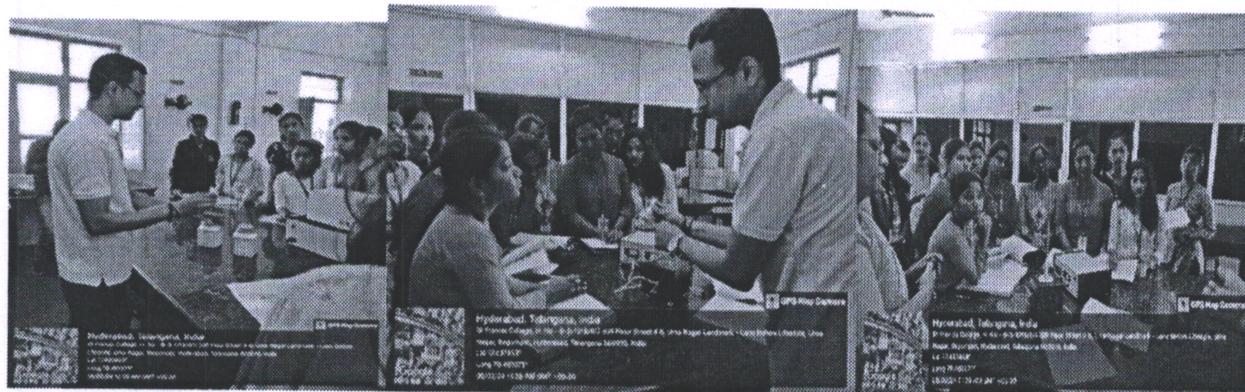


10	Exhibitions/seminars /training courses conducted	<p>Biochemistry & Nutrition 1 Field trip – 65 students 1 Workshops/ training program for Staff – 14 staff 1 Workshops for students 1 Training for students- 24 students</p> <p>Botany:& Biotechnology 1 Seminar – 40 students 1 Field trip – 19 students 1 National Workshop – 75 students 1 National seminar (Hybrid mode)- 150 participants 1 Field trip-80 participants</p> <p>Chemistry One workshop- 60 students and 25 faculty</p> <p>Computer Science 1 Workshop – 60 students 2 Competitions– 30 students each 1 Field trip – 40 students</p> <p>Mathematics & Statistics Organized -1</p> <p>Physics& Electronics 1 Field trip – 62 students</p> <p>Zoology - 1</p>	<p>Biochemistry & Nutrition 1 Workshops/ training program for Staff – 14 staff</p> <p>Botany:& Biotechnology 1 Workshop / training program – 30 students 1 Field trip – 37 students 1 National seminar- 145 participants 1 Field trip- 83 participants 1 Joint workshop- 31 participants</p> <p>One National Seminar- 300 students One Workshop- 123 students One field trip- 103 students</p> <p>Microbiology 1. National Seminar on Artificial Intelligence in Disease Diagnosis</p> <p>2. Hands on Training on Statistical tools for data Analysis</p> <p>3. Hands on Training in Microscopic techniques</p> <p>Field trips Creamline Dairy Products Limited(Jersey)- 30 students. AgriBiotec Foundation-24 students</p> <p>Physics& Electronics 3 Workshops – 160 students 1 Field trip – 100 students</p> <p>Zoology - 1</p>	<p>Completed</p> <p>250 students were benefitted</p>
11	Books/journals subscribed from grants	Count : 41		
12	Outreach activities (Popular lectures)	Count: 1(Mathematics) Count:1(Staistics)	1	500 students + 15 Faculty 30 faculty
13	Colleges mentored to apply for DBT Star College grants	-		



resource person for the event was S. Shiva Krishna, Texla Scientific Instruments, Hyderabad. The training was organised, with an objective to provide hands-on experience and offer participants a first hand exploration on determining magnetic susceptibility of solid using Gouy's Method and enhance proficiency in measuring resistivity of semiconductor materials.

OUTCOMES: The interactive sessions helped participants acquire skills in conducting experiments using Gouy's method and Four-Probe method.

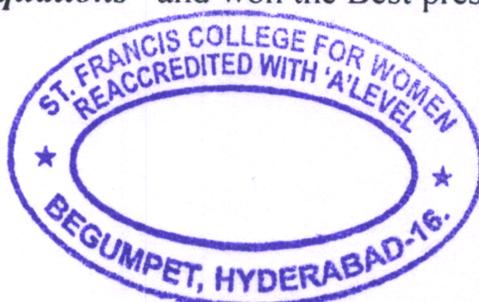


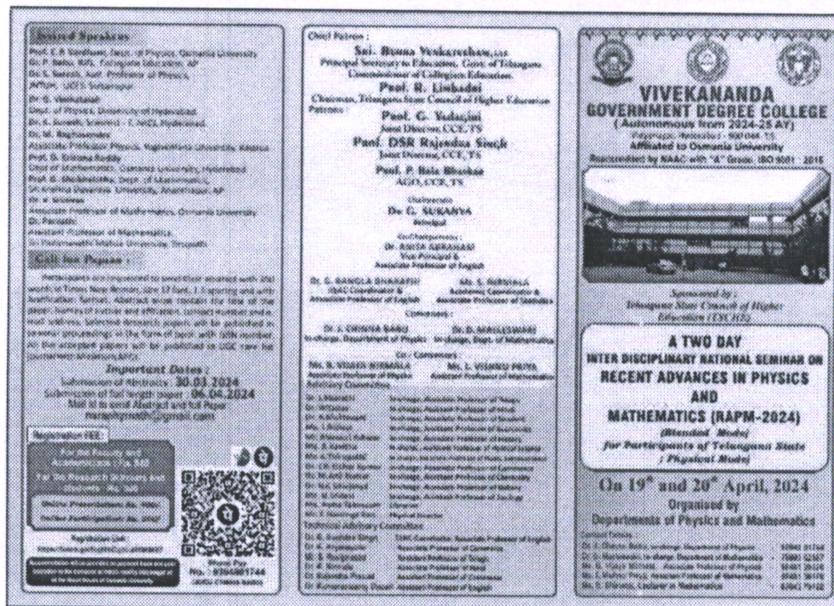
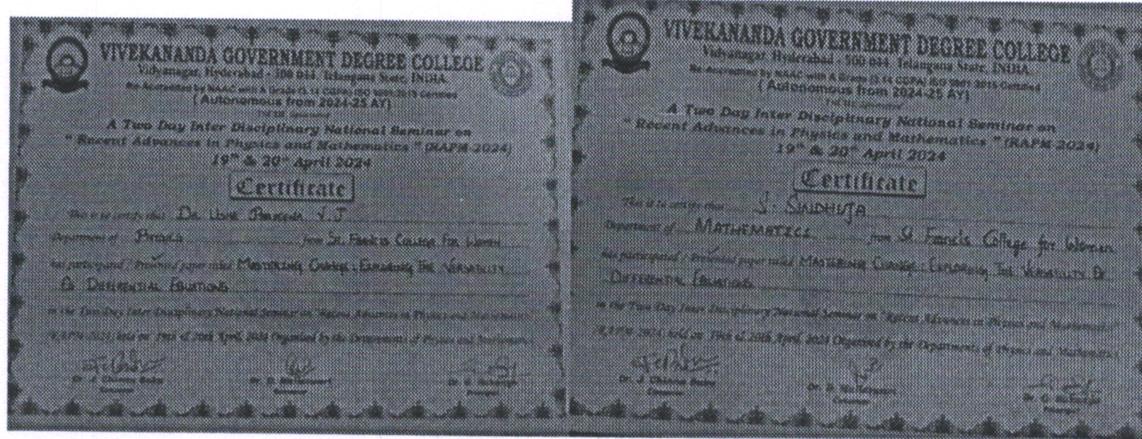
7. New experiments Introduced:

Department	Experiment
Biochemistry and Nutrition	Antioxidant assay
	Body Composition analyser used in the practical sessions
	Dietcal software was used.
Biotechnology	Bioinformatics-protein modelling ,phylogenetic analysis and drug designing
Chemistry	Individual hands on experience given to the students with the purchase of more units through DBT grant
	Potentiometric estimations

8. Publications (scopus indexed) /patents, if any:

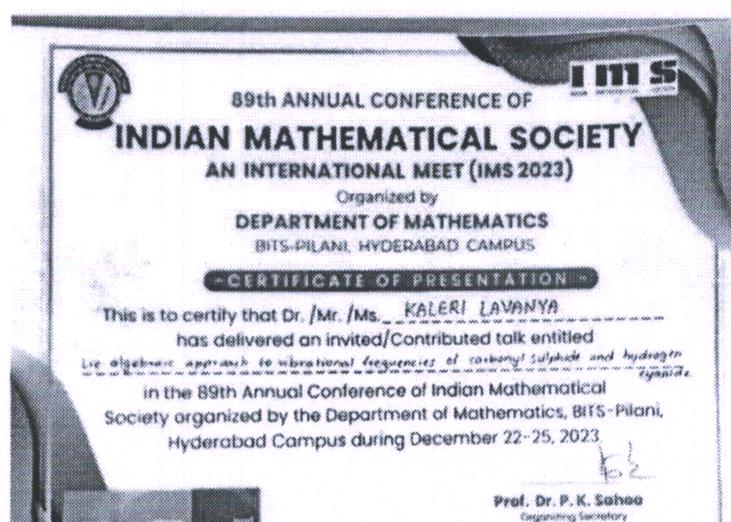
S. Sindhuja, a 2nd year, Mathematics-Physics-Chemistry Undergraduate Student and Dr. Usha Praveena from department of Physics attended a *TSCHE Sponsored Two Day Inter-Disciplinary National Seminar on Recent Advances in Physics and Mathematics* in Vivekananda Government Degree College, Vidyanagar, Hyderabad on April 19 & 20, 2024 under DBT STAR COLLEGE (Strengthening Scheme). They have presented a paper titled "*Mastering Change: Exploring the Versatility of Differential Equations*" and won the Best presentation award.



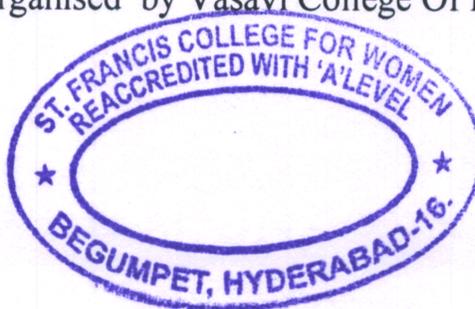


TSCHE Sponsored Two Day Interdisciplinary National Seminar on Recent Advances in Physics and Mathematics

2. Ms.Lavanya .K presented a paper titled “ Lie algebraic approach to vibrational frequencies of carbonyl sulphide and hydrogen” in an International conference IMS -2023 on December 22-25 , 2023. organised by BITS-PILANI,Hyderabad



3. Ms.Lavanya Baradi presented a paper titled “ Turbulent flow heat and mass transfer of CuO -Water nanofluid through a square channel with inner semi circular groove ” in a National conference RMST -2024 organised by Vasavi College Of Engineering on 11 th March 2024.



4. Four faculty from Department of Nutrition presented papers at various conferences. Ms. Tabitha Ramona presented a paper on “ A Comparative study of proximate and mineral content in vegetable and oil seed microgreens”, Ms. Patricia Micheal presented a paper on Development of gluten-free protein bars and Ms. Indu Bhargavi presented a paper on Effect Of Blending Jackfruit Seed Flour With Cereal And Legume Based Flours On Their Nutritional Composition And Functional Properties in the International conference on “Futuristic Trends in Science, Engineering and Management” conducted on February 23, 2024 organized by Department of Business administration, St. Xavier's College of Management & Technology (SCMT), Patna, India & Global Conference Hub, Coimbatore. Dr. Poonam Singhal presented a Paper entitled “Preparing for sustainable food systems: Lessons learnt from pandemic crisis” at Climate Change and Agriculture: Impacts, mitigation and adaptation for sustainable food security and livelihood improvement (ICCA-2024), on 1st and 2nd March 2024.

Publications:

Chemistry - 4 in progress, Microbiology – 1 in progress, Physics- 1 Paper would be published in UGC-Group-1 journal.

9. Outreach and Training received by faculty

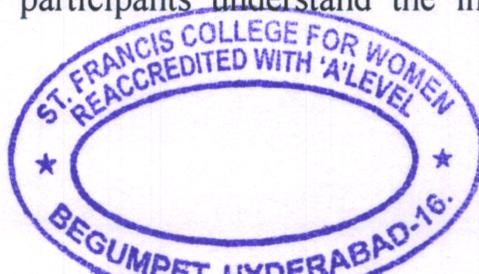
The **Department of Biochemistry & Nutrition** organised a One Day Hands on Training on the topics, Qualitative analysis of Biomolecules and Bio-separation Techniques: Chromatography & Electrophoresis and Importance of Balanced Diet and Assessment of Nutritional Status for school science teachers, around 14 faculty members from different schools participated. With an objective to familiarise the various biochemical reactions of biologically important molecules like carbohydrates, amino acids and lipids. To educate about the importance of adequate nutrition and healthy lifestyle and to evaluate their health status with the help of different nutritional assessment methods.

The outcome of the event has been gaining in-depth practical knowledge on the biochemical reactions given by biomolecules that the teachers can transform into their classrooms and Educating the participants to make informed decisions and healthy choices to maintain a healthy lifestyle.



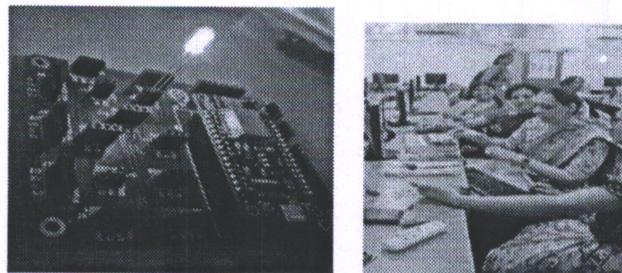
Hands on Training for School Science Teachers

The **Department of Computer Science** in collaboration with IoT Users Club has organised a Faculty Development Program on **Building Smart IoT Solutions** on 18th March 2024 in a CS lab for all the faculty with an objective to make participants understand the interconnected world of Internet of



Things exploring its applications and impact on various industries.

Outcomes: Updated knowledge on how to run a code through node MCU and light a LED through Arduino software through various time stamps. Participants learnt the delay of lighting of one LED corresponding to the other LED and controlling two LEDs at same time.



Building Smart IoT Solutions

Dr.Usha Praveena, from Department of Physics, attended a 6 Day National online workshop on 'ARTIFICIAL INTELLIGENCE IN PHYSICS'. It was conducted by Indian Association of Physics Teachers-IAPT-Bengaluru Chapter. The "Artificial Intelligence in Physics" online workshop showcased the revolutionary potential of AI in improving physics research and tackling difficult scientific problems.

10. Exhibitions/seminars/ /training courses conducted:

1. The **Department of Zoology** organised a One Day Training Programme for School teachers in Biology Experiments. Around 15 faculty members participated. The resource persons for the event were Faculty members, Department of Zoology, SFC.

Objective: The workshop aims at giving hands-on training to comprehend, to examine, to demonstrate and to analyse the basic biological experiments to the teachers, who can inculcate scientific temperament in young minds aspiring in the field of Biological Science.

Outcomes: The teachers will be able to conduct biological experiments which can impart scientific aptitude amongst students at High School Education.



Training Programme

2. The **Department of Mathematics** organised a Two-Day Faculty Development on the topic "Mathematical Software for Teaching and Research", on February 2–3-24, in response to the need to



explore the software. The programme was graced by the eminent resource persons Dr. D. Vignesh, Assistant Professor, Department of Basic Sciences and Humanities and Mr. GovindaRaj G, Assistant Professor, CMR University, Bengaluru. Over 18 participants from various colleges including our faculty were a part of the session. The participants had hands-on training in MATLAB which includes basic commands in MATLAB and on Sage Math in Differential Equations and Numerical Analysis. The participants gained awareness on two mathematical software programmes.

Outcomes: Faculty members will demonstrate increased proficiency in using mathematical software tools, including proficiency in navigating interfaces, utilising key features, and implementing advanced functionalities.



FDP on Mathematical Software for Teaching and Research

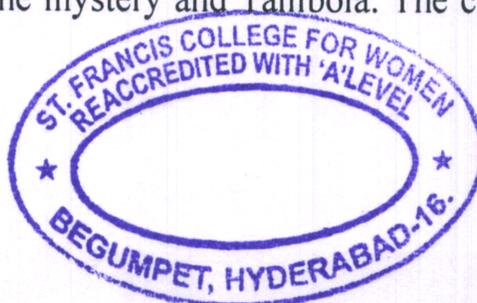
3. The Department of Biotechnology organized a national seminar titled 'Bridging the gap: Biotechnology Revolutionizing Medicine'. Around 143 students and 2 faculty members from SFC and various other colleges in Hyderabad participated in the seminar. The students understood about the Revolutions in Medical biotechnology like Cancer Research which includes tissue engineering, nanotechnology, machine learning and usage of technologies like genomics, transcriptomics and epigenomics, the molecular tools used in Cancer Research and the different pathways that can cause colorectal cancer and the process of Genetic Counselling with familial implications of genetic contributions to diseases.

11. Books/journals subscribed from grants

41 books were purchased from the grant.

12. Outreach activities (Popular lectures)

The Department of Mathematics organised an intercollegiate National Mathematics Day, " Ankh Ganith " in the commemoration of " Sri Srinivasa Ramanujan " on 22nd January 2024 for all UG students. The chief guest for the event was Dr. K. Vijayalakshmi, Dean of Research, Loyola Academy, Alwal. She educated the students about the contributions of Srinivasa Ramanujan. As a part of this event various competitions were held like Logo designing, Poster making, Chinese Whisper, Memory game, Quiz, Who solved the mystery and Tambola. The cash prizes were distributed to the winners.



Objectives: To raise awareness about the importance of mathematics in various fields for the overall development of the students.

Outcomes: Students are able to analyse their logical and mathematical skills which will enhance their analytical reasoning in handling real life scenarios and are able to self-assess academic growth and explore their careers in mathematics and other related fields.



13. Colleges mentored to apply for DBT Star College grants: None, As we have just started the scheme

14. Invited lectures:

The Department of Botany organised a guest lecture on the topic “Recent Trends in Medicinal Plant Research” for the Botany students of I, II- and III-year. Around 104 students and 3 faculty members participated. The resource person for the event was Dr. Mohd Kashif Husain Research Officer (Scientist) Botany from CCRUM, Hyderabad.

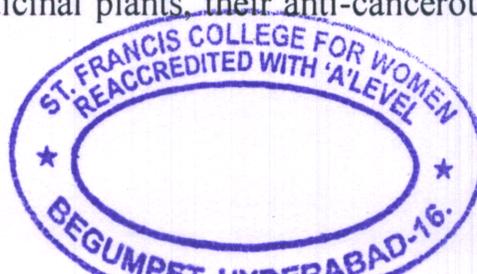
Objective: To explore the recent discoveries in the field of medicinal plants and their potential applications as the therapeutic agents for various diseases and health conditions.

Outcome: Students understood the significance of medicinal plants in modern health care. The lecture ignited the interest in students to explore potential career opportunities in the life science stream.



Guest lecture on the topic Recent Trends in Medicinal Plant Research

The Department of Biotechnology organized a guest lecture on Medicinal Plants for Anticancer Properties. Around 81 students and 5 faculty members participated during the guest lecture. The resource person for the event was Dr. Irfan Ahmad Ghazi -Professor, University of Hyderabad. The students understood the role of medicinal plants, their anti-cancerous properties and uses in synthesis



of anticancer drugs, Plant-based therapeutics, oxidative stress and the importance of free radicals.

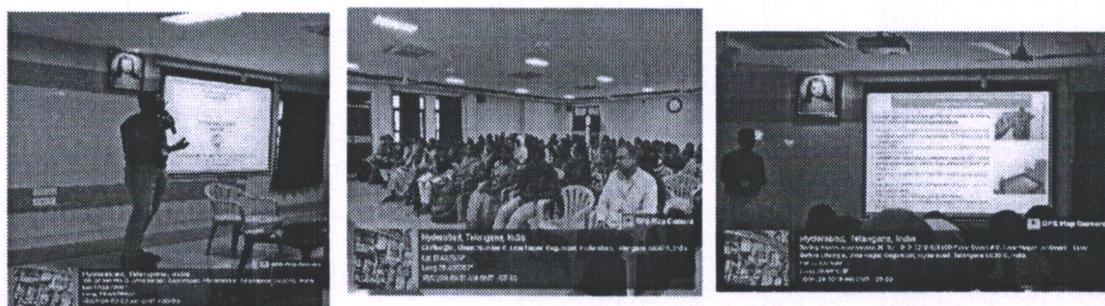


Guest lecture on Medicinal Plants for Anticancer Properties

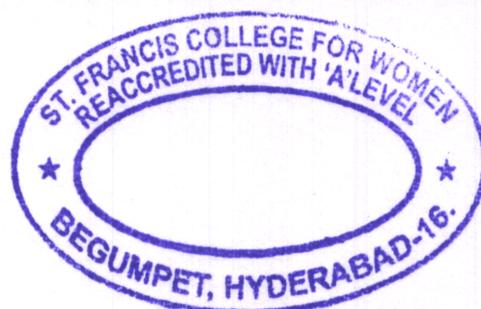
The Department of Physics organized a guest lecture on the topic “Structural Ceramics developed at ARCI” for the Physics students of I ,II and III year. Around 161 students and 3 faculty members participated. The resource person for the event was Dr. Madireddy Buchi Suresh (Scientist F at ARCI, Hyderabad).

Objective: To provide students an insight on the significance of structural ceramics, their unique properties and make them suitable for structural applications.

Outcome: Students gained a deeper understanding of fundamentals of structural ceramics including their properties, applications and manufacturing processes.

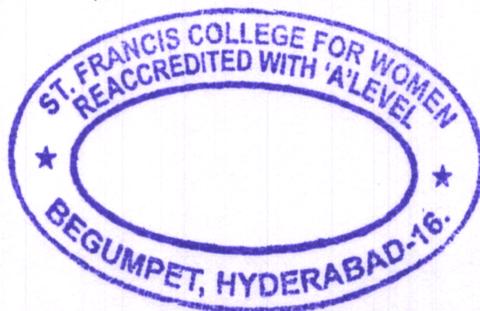


Guest lecture on Structural Ceramics developed at ARCI



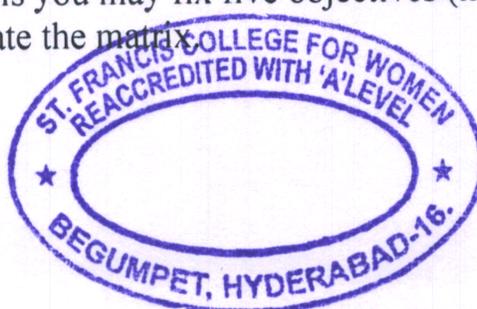
9. Self evaluation

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Biochemistry Nutrition	<ol style="list-style-type: none"> 1. Project work (Completed) 2. Field trips 3. Guest lecture 4. Workshops (Completed) 5. New experiment based on new instrument purchase <ol style="list-style-type: none"> 1. Visit to reputed food industry (coming academic year) 	100%	Quantitative metrics –9/10
Botany & Biotechnology	<ol style="list-style-type: none"> 1. Project work (Complete) 2. Visit to reputed laboratories (Completed) 3. Guest lecture (Completed) 4. FDP - (completed) 5. Recent advances in Botany – Hydroponics Workshop - Completed) 6. National seminar to upgrade faculty and students' skills in medical biotechnology(completed) 7. Gel electrophoresis practical (Yet to complete) 	80%	<p>SDS PAGE unit will be purchased in the next budget year and hands-on practical training will be imparted to the students.</p> <p>Quantitative metrics – 8/10</p>
Chemistry	<ol style="list-style-type: none"> 1. Field visits 2. Guest lectures/Workshop/Seminar 3. Project work for B.Sc. III year students with the proposed experiments 4. Training program for the laboratory staff- Outreach program 	60%	<p>The objectives are spread across two academic years. Training programs for the laboratory staff and outreach programs for the school teachers are planned for the next academic year.</p> <p>Quantitative metrics – 6/10</p>
Computer Science	<ol style="list-style-type: none"> 1. Project Work (Completed) 2. Faculty Improvement Programmes (2 workshops were conducted) 3. Skill Enhancement Courses (Course on IoT was initiated) 4. Industrial Training (Yet to be done) 	70%	<p>Delay in procurement of IoT kits resulted in finishing only the initial part of the training; the final projects will be completed in the coming academic year.</p> <p>Quantitative metrics – 8/10</p>



Microbiology	<ol style="list-style-type: none"> 1. To provide quality education using the latest technologies. 2. To meet the corporate requirements by organising skill enhancement courses. 3. To train students and help them gain experience in higher learning through Interdisciplinary approaches like Nanobiotechnology, Bioinformatics, Scientific paper writing and Data analysis. 4. To create awareness about possible scope and range of research activities in the field 	100%	Quantitative metrics – 10/10
Physics & Electronics	<ol style="list-style-type: none"> 1. Visit to reputed laboratories (Completed) 2. Magnetic susceptibility and Resistivity Experiments (Complete) 3. Guest lecture in Smart materials & Embedded Systems (Completed) 4. Workshops in Advanced materials & IoT (Completed) 5. Project work (Yet to complete) 	85%	As the grant was received during the middle of academic year. Project work was not allocated to students. It will be completed in the coming academic year. Quantitative metrics – 8/10
Zoology	<ol style="list-style-type: none"> 1. To augment the Curriculum with add on practical sessions in the respective areas to abreast the students with latest procedures and techniques. 2. To create an interface between academics, research institutes and industries for one to one interaction among the experts, faculty and the students. 3. To augment/enhance knowledge of faculty and lab staff through training programmes 4. To inculcate scientific temperament and research culture for holistic development of the students. 5. To have better infrastructure and lab facilities with latest equipment for effective practical demonstrations, teaching- learning process & research. 	60%	Lack of time to conduct as sanction granted in september 2023 and delay in receiving equipment ordered Quantitative metrics – 6/10

* For quantitative analysis you may fix five objectives (max) each having 2 marks and accordingly can calculate the matrix



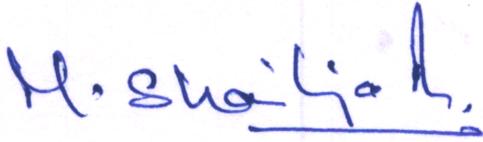
Not opened Under process Opened but not mapped on PFMS Account is functional

ZBSA Status: (Mark Check Box):

Remarks if, any: _____

Sanctioned Budget details: (Rs. in Lakhs)

Head	Total Released Budget from DBT	Total Expenditure	Balance as on 31.12.2023	Remarks if any
Grants for creation of capital assets (Non- recurring)	38,75,500	38,75,500	-	-
Grants-in-aid General (Recurring)	13,50,000	13,50,000	-	-



Course Coordinator

Vice-Principal
St. Francis College for Women
Begumpet, Hyderabad-16.



Head of the Institution

Principal
St. Francis College for Women
Begumpet, Hyderabad - 16