



John Wilson Education Society's
Wilson College (Autonomous)

RE-ACCREDITED 'A' GRADE BY NAAC

DBT Review Meeting

Rathnavel Subramaniam College of Arts and Science, Coimbatore, 7th to 9th February 2024

Introduction

Wilson College established in 1832 by Rev. John Wilson, D.D.,F.R.S. is a multi-faculty college providing liberal education to a diverse range of learners. The college provides an education that is holistic, relevant and contemporary in an environment that is welcoming, nurturing and enabling. The college provides learners a background in the basic sciences, with a stress on building in-depth knowledge and modern capabilities. The DBT STAR Scheme grant (Strengthening Component) awarded to the college has provided a strong helping hand to achieving these goals.

Departments under DBT – STAR Scheme

- Botany**
- Mathematics**
- Zoology**
- Chemistry**
- Microbiology**
- Physics**
- Information Technology**

Objectives Achieved

1. Augmented current laboratory facilities so that more hands on practical training is provided to students.
2. Improved the curriculum through introduction of newer experiments helping students gain a deeper understanding of their chosen field of study.
3. Trained staff and students by involving them in a wide range of activities e.g. workshops, training programmes, projects, field visits, outreach, etc. in order to widen and strengthen their subject knowledge.

Students Selected at Training/Winter Schools(Total no.=28)

No. Of Students	Details
5	Green and Sustainable Chemistry
5	Synthesis, Catalysis and Chemical Biology
5	PYTHON Workshop at IIT Bombay
1	AI workshop at IIT Bombay
4	ARDUINO Workshop at IIT Bombay
1	NIUS, at UGC-DAE-CSR, Kolkota
1	Radio Astrophysics Winter School, NCRA
4	“SEED”, 2023, Sophia College Mumbai
2	Internship at Saifee Hospital

Faculty Sent to training programs(Total No = 15)

No. of Faculty	Details
2	Techniques for Extraction and Quantification of Plant Metabolites, RUSA Centre, Kolhapur
3	Advancement in Chemical and Biological Research: Breaking Boundaries and Shaping futures, Uka Tarsadia University, Surat(I.C.)
1	FDP on “How’s and Why’s in learning UG level Quantum Mechanics”
1	Combinatorial Games, IIT Bombay
2	FDP on Popularising the science of DNA Barcoding at RLT college of science Akola
2	Science Education through Experiments and Demonstrations, Sophia College
2	Biodiversity and Geochemistry of Deep and Extreme Earth Systems IIT, Kharagpur (I.C)
2	Workshop in Computational Chemistry, ICT Mumbai

Workshops conducted (Total participants = 328)

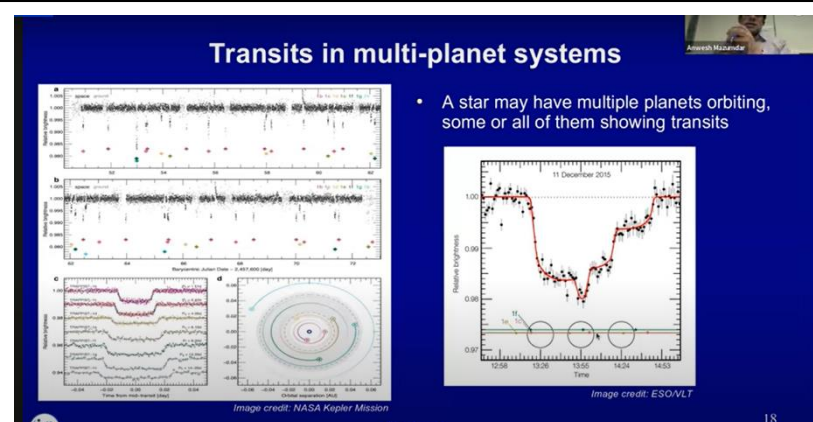
Title of Workshop	Duration	Participants
Workshop in Planetary Science	4 Days	100
Raan Bhaji Fest- Field to Fork	1 Day	14
Training on making glass aquarium	1 Day	32
Workshop on LaTeX	2 days	25
HPLC hands on training workshop	2 days	50
Ethical Hacking workshop	2 days	88
Bioinformatics workshop Introduction - User End Bioinformatics	2 days	19

Student Projects (ongoing)

Department	No. of Projects	No. of Students
Microbiology	5	25
Physics	3	6
Zoology	1	7
Chemistry	1	5
Physics-Chemistry (interdepartmental)	1	5

Field Visits

Area/Place of Visit	Participants
KISAN (Nat. Agri. Ex.)	11
Amul Dairy	50
BARC	25
Mangrove Conservation Centre	54



Snapshot of talk during Planetary Science Workshop



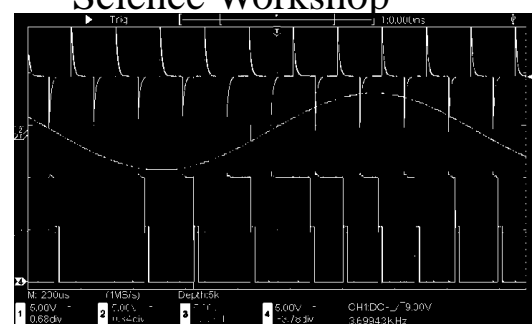
Students displaying their preparations during Raan Bhaji Fest



3D Printer



Micro-plastic in fish gut seen through Trinocular microscope



PPM output on DSO



Students Using Muffle Furnace



Students using UV-Vis spectrophotometer



Metaphase of mitosis seen through Trinocular microscope

Laboratory Infrastructure Augmentation with Support under DBT grant

Department	Equipment before support	Major New Equipment after support
Botany	Electrophoresis(1)	Vis Spect., Electrophoresis(3), High Speed Centrifuge
Chemistry	HPLC, Uv-Vis(2)	UV- Vis(3), Muffle Furnace, Ultrasonic water Bath,
I. T.	PC(150), R.Pi(6)	R.Pi(30), ARDUINO(20), 3D Printers(2), µp- Kit, Camera
Physics	DSO(4), DMM(12)	DSO(10), DMM(18), Hall effect Apparatus, He-Ne Laser
Mathematics	Calculators(3)	Graphical Calc.(3), Calculators(20), Workstation
Microbiology	Binocular Microscopes	Trinocular Microscope(Camera), SDS Page, Western Blot
Zoology	Monocular Microscopes	Trinocular Microscope, Binoculars, Electrophoresis Units

Numbers in bracket indicate copies available before and after



Students watching Flamingos using newly acquired binoculars at MCC



Students checking out varieties of seeds in a seed bank at KISAN Exhibition



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New experiments (Total No.= 81)

Department	Number	Representative Examples
Botany	04	Estimation of Chlorophyll from leaves at different growth stages of Fenugreek, To estimate the amount of reducing sugar in plant material using Dintrosalicylic Acid method.
Chemistry	03	Green synthesis of acetanilide from aniline using microwave synthesizer, Ultrasound assisted synthesis of cyclohexanone oxime from cyclohexanone
Information Technology	08	Implementation of family tree, Implementation of DFS, Implementation of SWI, Implementation of water jug problem
Physics	19	Thermocouple, Compound pendulum, Data analysis using Python, Q factor of LCR circuit, Barrier potential of LED for various band gaps, Python: Runge - Kutta 4, Mobile camera settings.
Mathematics	12	Graph Plotting of various functions and graphs using Geogebra, Classification of Data using R-Program, Graphical representation of open and closed ball in various metric spaces.
Microbiology	03	Visualization of Mitosis and Meiosis by using Trinocular Microscope, Drinking water analysis using the rapid MUG technique
Zoology	32	Comparison by electrophoresis of amylase from different organisms, Effect of certain heavy metal on opercular movement of certain fishes, To explore Cn3D to study the 3D structure of protein.

Invited Guest Lectures (participants) (Total Lectures = 14)

Name of Invitee/Designation	Affiliation	Title of Lecture
Dr. Kemraj Maurya , Manager R&D	Marico India Ltd.	Plant Science Opportunities in Pharma Industry (216)
Dr. Purabi Garai, Scientist E	HEMRL, DRDO	Polymer and composites as a smart material (104)
Dr. Shibdas Banerjee, Associate Professor	IISER, Tirupati	Chemical Wizardry of Microdroplets: From reaction vials to human tissues (92)
Dr. Arpan Kumar Nayak, Professor	Konkuk University, Seoul, South Korea	Career opportunities in India and abroad (92)
Mr. Rishikesh Tripathi, SRF	Centre for animal taxonomy and ecology, Christ College, Kerala	The Amazing World of Spider (82)
Dr. Reji N Nair, Research Scientist	Catalent Biologist, Emeryville, CA, USA	Bench Chemist to drug discovery professional to being an Inventor (70)
Ms Bhavika Waghela, Business Development Executive	Techeco	E waste Management and handling (70)
Dr. A. M Deshmukh, President	Microbiologists Society of India	Research Avenues in Microbiology (49)
Pradip Patade, Founder (Non-Profit)	Coastal Conservation Foundation	Coastal Diversity of Mumbai shores (48)
Dr.Hafeez Ahmad, Associate Professor and clinical microbiologist	RAK College of medical Sciences, UAE	Medical Innovations and Emerging Health Sciences Careers (43)
Dr. A. P. Jayraman, Scientist(Retired)	BARC	Wheel Tyre Environmental Problems (34)
Dr. Prachi Mahajan, Assistant Professor	IIT Bombay	Infinite Series (30)
Dr. Vivek Patkar, Operations Research Specialist(Retired)	MMRDA	Careers in Mathematical Sciences (29)
Dr. Paresh H. Salame, Assistant Professor	ICT, Mumbai	Energy storage devices, beyond lithium - ion battery technology (25)

Financial Targets achieved (1st Year)

Head	Total Sanctioned (₹)	Status of Utilization
Capital Grant	59,67,613/-	85% of equipment mentioned in the proposal procured or in process of procurement.
Recurring Grant	21,00,000/-	75% of consumables for the first year procured or in process of procurement. 60% of activities planned completed.

Outreach (Total Beneficiaries = 386)

Activity	No. of Students	Beneficiaries
Demonstration and hands on activity for school students in the subject of mathematics organised by the mathematics department.	10	100
Aids awareness programme for school students organised by the microbiology department.	9	286

Interdepartmental Activities Initiated

- Plant Tissue Culture (Botany-Microbiology)
- Mushroom Cultivation (Botany-Microbiology)
- Vermicompost(Botany-Zoology-Microbiology)
- Testing of water quality (Microbiology-Chemistry)
- Mathematical Physics (Physics-Mathematics)
- Materials Science (Physics-Chemistry)
- I.T. in science (I.T. with other science departments).
- Cross disciplinary projects (All departments)
- Cross disciplinary experiments (All departments)

Conclusion

Wilson College is grateful to the Department of Biotechnology for sanctioning the grant to the college. This grant has inspired the faculty to design and implement, new ideas for various theoretical and experimental courses. This has enriched the curricula. Faculty is able provide students with experiential learning opportunities. There is a greater enthusiasm for collaboration between departments for interdepartmental projects and activities. The infrastructure support provided by the grant has honed the practical skills of students. It has led to enhancing capacity of the staff.