

**PATNA WOMEN'S COLLEGE**

Autonomous

PATNA UNIVERSITY3rd Cycle NAAC Accredited at A Grade with CGPA 3.58/4

'College with Potential for Excellence'(CPE) status accorded by UGC

Avila Convent, Bailey Road, Patna- 800 001, Bihar

Department of Biotechnology
Ministry of Science & Technology,
Government of India**Progress Report for the year 2020-2021**

- Name of the College** : **PATNA WOMEN'S COLLEGE, Autonomous**
- Name of Coordinator, designation, Address, Phone nos.** : **Dr. Aprajita Krishna**
Coordinator, Star College Scheme,
Head, Dept. of Physics
Dean, National, International
Collaborations and Consultancy
Patna Women's College
Bailey Road, Patna, 800001
Ph. No. 9431632519
E-mail:krishna.aprajita@gmail.com
- Assessment Duration** : **1st April 2020 - 25 Feb 2021**
Duration in Years : **1 year 2020 – 2021**
- 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.
1.	Physics	<ul style="list-style-type: none"> B.Sc Physics Honours (3year course) M.Sc. Physics (2year course) 	6	1
				Pursuing Ph.D
				Total = 7
2.	Chemistry	<ul style="list-style-type: none"> B.Sc Chemistry Honours (3year course) 	5	1
				Pursuing Ph.D
				Total = 6
3.	Zoology	<ul style="list-style-type: none"> B.Sc. Zoology Honours (3year course) M.Sc. Zoology (2year course) 	6	2
				Pursuing Ph.D
				Total = 8
4.	Botany	<ul style="list-style-type: none"> B.Sc. Botany Honours 	5	1
				Pursuing Ph.D
				Total = 6

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5.	Computer Science	<ul style="list-style-type: none"> • B.Sc. (Hons) in Computer Applications (3 year course) • Post Graduate Diploma in Computer Applications (1year course) • Credit based Add – on Certificate Course in Computer Literacy Programme (College Level) • Credit based Add – on Certificate Course in Web Designing (College Level) • Credit based Add-on Certificate Course in Financial Accounting (Tally) (College Level) 		8 Pursuing Ph.D.
			Total = 8	
6.	Microbiology	<ul style="list-style-type: none"> • B.Sc. Hons Microbiology (3year course) 	6	
			Total = 6	

5. **Number & Date of Advisory committee meeting:** Not Held. Request has been sent.

Due to unavoidable circumstances a date for Advisory Committee meeting could not be fixed.

6. **Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).**

- (i) Enhancement of Lab facilities and upgrading experiments provided beneficial knowledge to the undergraduate students. The students got exposure towards the practical applications of scientific principles through these innovative practicals. Having multiple copies of instruments has helped students to perform experiments individually. In the last three years new advanced equipments have been purchased by the DBT grant, which has improved the infrastructure of the departmental laboratory
- (ii) Students undertake research projects. This helped them to make themselves ready to pursue higher studies and jobs. The students are able to undertake short term research in accordance with their interest especially in Basic sciences. It has enhanced the research aptitude of students
- (iii) The collaborative events have inculcated teamwork and coordination amongst the students and the departments. It has increased the interaction of teaching, non teaching and students creating a consortia for academic progress. It has increased the knowledge of other subjects and created interest in the students to learn something new.

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- (iv) Students are able to participate in several activities conducted under DBT Scheme such as Hands on training through workshops, industrial visits etc. Departments have organized guest lectures, seminars and webinars with DBT support providing learning opportunities to students beyond their class rooms. Increased training programs on new technologies have enhanced the learning horizons. Analytical and critical thinking has developed scientific temperament among students. They have been able to visit the archaeological site and botanical garden for green auditing regularly. Exposure trip have helped them to broaden their practical knowledge on large scale.
- (v) This scheme provides teachers and students with more opportunity to attend seminar and conferences & training programs which impart research knowledge to teachers also the departmental library is now enriched with new books of Indian and Foreign authors.
- (vi) During the Covid situation, the students were provided online Robotic Training in which they were taught simulation using TinkerCad . As an outcome, they prepared Robotic projects:
 - (i) Automatic Sanitizer Dispenser
 - (ii) Door automation system for touch free operation
 - (iii) Alert card for Social distancing
 - (iv) Automatic Cleaning Robot for Covid Hospitals

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

- Skill enhancement sessions were conducted for students in which they were demonstrated Transformers and Electric supply in the Campus. Electricity Transmission Generation was also explained
- Hands on training on Electrical connections of Fuse and MCB were provided to students .
- Students got their communication skills improved, by orientation programs in Soft skills .If this scheme continues, more and more programs for overall personality development of the students will be the prime focus.
- Planning to introduce Green Chemistry for different chemical syntheses which have broad applicability.
- Webinars and Conferences are being organized and many others are in pipeline
- Introduced Online Training Programme for students

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- Specialized training has been given to the students like:
 - (a) Vermicomposting (b) Apiculture (c) non-invasive technique of material analysis
 - (d) Robotics (e) 3D Printing (f) Biophysics

To study the various beneficial properties, Preliminary screening, assessing and analyzing different phytocompounds present in the plant and various plant products have been introduced during the scheme duration.

- The department plans to send students for summer training internship programme to Tissue Culture Centre and major Labs in India.

A tie-up with a local NGO Mishra Social Skills , Patna working for slum children and women has started in, where the Department of Computer Science henceforth will conduct multifarious outreach activities regularly for the beneficiaries.

- Training programmes on application of new technologies.
- Online training courses were attended by the faculty members.
- Online activities were conducted by the department like quiz competition etc.

8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).

- (i) Late release of fund hinders in the implementation of project. High cost of chemicals/instruments /training programme is a hindrance for conducting various experiments/ training programme
- (ii) Increased work load on teachers, paucity of time to complete the syllabus, sometimes delays the implementation of scheme. Scarcity of quality training Institute for advanced technology in the state is also a constraint.
- (iii) In the financial year 2020-2021, due to prolonged lockdown many training programmes for the students have been delayed, the numbers of hands on experiments programmes conducted were less because of the constraint of online platforms.

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9. Key performance indicators

S. no	Indicator	Pre-support (2016-2017)	During /After Support(2020-2021)	Remarks
1	No. of students admitted	Total =336	Total =348	
		M= NA F=336	M=NA F=348	
		SC ST OBC G SC ST OBC G	SC ST OBC G SC ST OBC G	
		18 2 48 268	20 11 137 180	
2	No. of students passing out (%) Students Admitted/passing out (pass %)	90%	94%	
3	Drop-out rates	10%	5%	
4	No. of students opting for MSc	50%	54%	
5	Average marks	Maximum First Division	Maximum First Division	

9.6. No. of hands-on experiments being conducted :

Department of Physics - 04

Sl. No.	Topic
1	Synthesis and characterization of nanoparticles
2	Study of Archaeological artifacts using non invasive technique
3	Programming on Aurdino, simulation using TinkerCad and Realization in form of projects
4	Programming using Mathematica and Calculation of Tricritical point in Ising Models

Department of Chemistry - 05

Sl. No.	Topic
1	Determination of pH of soil and water by pH-meter
2.	Verification of Beer Lambert Law by Colorimeter
3.	Determination of melting point of pure and mixed substance by Digital Melting point Apparatus
4.	Determination of Turbidity of different water samples of Patna region by Turbidity Meter
5.	Verification of Titration Curve of strong acid vs strong base by Digital Conductivity meter

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Department of Zoology - 02

Sl. No.	Topic
1.	Vermicomposting
2.	Apiculture

Department of Botany - 03

Sl. No	Name of the experiment
1.	UV-VIS Spectroscopic screening of major phytochemicals of medicinal and economic interest from different plants.
2.	Cultivation of mushroom in an aquaponic system .
3.	DNA extraction technique

Department of Computer Science -02

Sl. No.	Event	Topic
1.	Network Security	Encryption and Decryption Techniques using Java Programming.
2.	Hands on Training	3D Printing

Department of Microbiology -03

Sl. No.	Topic
1	Hands-on-training on Artificial Transformation of Bacterial Cell
2	Workshop on Extraction of Antibiotic Resistant Plasmid
3	Visualization of different forms of extracted plasmid

9.7. No. of new Experiments: -

Department of Physics: 06

1. **Name of experiment :** Measurement of critical angle and study of total internal reflection in a glass piece using He-Ne Laser.

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2. Name of experiment : Verification of truth table of Flip Flops.
3. Name of experiment : To Determine charge density and type of charge carrier in a semiconductor by Hall effect method .
4. Name of experiment : Sensor based device development.
5. Name of experiment : Study of Lissajous figure by CRO
6. Name of experiment : Study of two stage R-C Coupled Amplifier.

Department of Chemistry: 04

1. Name of experiment : Extraction of essential oil from plants
2. Name of experiment : Extraction of heavy metals in different food material
3. Name of experiment : Determination of nutrient contents in food items
4. Name of experiment : Determination of caffeine contents in beverages

Department of Zoology : 04

1. Name of experiment : Isolation and identification of microorganism
2. Name of experiment: ABO Blood Group
3. Name of experiment : Bioaccumulation of heavy metals in indigenous species from river Ganga, Patna
4. Name of experiment : Identification of Arsenic in ground water

Department of Botany : 04

1. Name of experiment : Assay of enzymes in different plant samples.
2. Name of experiment : Estimation of carotene in different varieties of Capsicum
3. Name of experiment : Salt analysis of soil samples from different agricultural \ land near Patna
4. Name of experiment: Assessment of Iron Content in water samples

Department of Computer: 06

1. Name of experiment : Image Processing Using OpenCV
 - a) Read, display and import image using OpenCV.
 - b) Deducing image information such as its shape, height, width and channels.
 - c) Converting RGB image to Gray Scale Image and Black and White image.
 - d) Resizing, cropping and restoring images
2. Name of experiment : Introduction to TOR Browser
3. Name of experiment : Viewing and Managing Cookies.
4. Name of experiment : Two Step Verification processes of different Social Sites for additional security.

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5. Name of experiment : Introduction to Virtual Private Network using Proton VPN.

6. Name of experiment : Introduction to Data Analysis using R Programming.

Department of Microbiology: 04

1. Name of experiment : Genetic transformation of bacteria

2. Name of experiment: 18SrRNA sequencing and preparation of phylogenetic tree

3. Name of experiment: Isolation of different forms of plasmid and its visualization

4. Name of experiment: Polyphasic characterization of phytopathogenic fungi.

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

Books / Chapters Published:

Department of Physics : 03

- Dr. Aprajita Krishna and DevamPriya, BATAR: The Weather , Issue 8, 2020 , Pg no. 11-13, Noise: A Scientific Analysis as Environmental Pollutant

Papers Presented

- Dr. Amrita presented paper in a National Conference on “Contributions of Indian Scientists in different areas of Physics organized by PG Deptt. of Physics, Patna University on 15. 04.2018.and received First Prize in Oral presentation.
- Dr. Rohit Singh presented paper in a National Conference on “ Contributions of Indian Scientists in different areas of Physics organized by PG Deptt. of Physics, Patna University on 15.04.2018.

Department of Chemistry: 01

- Jyoti Chandra and Srinivasa Rao Manne, Org. Lett. 2019, 21, 636-639 (Accepted).

Department of Botany: 07

- Hena Naz, Naheed Ahmed and Piyush Kumar Rai (2020). “Cytotoxicity of nanoparticles on the seedlings of the plants belonging to Fabaceae family”.*Journal Of Advanced Scientific Research*; 11 (3): 189-196; ISSN 0976-9595,www.sciensaga.info .UGC care listed journal .
- Pinky Prasad, Tanuja and Sheila Bedi (2020). “Comparative Assessment of Endoglucanase Activity of Cellulolytic Bacterial Strains on Untreated and Pretreated Natural Cellulosic Wastes”. *International Journal of Current Microbiology and Applied Sciences* 9(5): 1974 – 1987

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- Neha Sharma, kamni, Virendra .K.Singh , Sandeep kumar, Yonghoon Lee , **Piyush Kumar Rai** and Vivek . K . Singh (2020). “ Investigation of Molecular and Elemental changes in rice grains infected by false smut disease using FTIR” *SpringleJournal ofApplied Physics B .Lasers and Optics* , Volume 126:122 –, Impact factor 1.746 , ISSN: 0946-2171 (Print) , 1432-0619 (Web) , Indexed in Scopus and web of science, <http://doi.org/10.1007/s00340-020-07475-8> www.springer.com . International Level
- Neha Sharma, Virendra. K. Singh , Yonghoon Lee , Sandeep Kumar , **Piyush Kumar Rai**, Ashok .K. Pathak and Vivek . K. Singh (2020). “ Study of Molecular and Elemental changes in Nematode- infected Root in Papaya Plant using FTIR , LIBS and WDXRY Spectroscopy” *journal of Atomic Spectroscopy*. Volume 41 Issue 03 year –, Impact Factor 1.292 , ISSN : 0195- 5373 (Print) , 2708- 521X (Online) , Indexed in scopus and web of science , DOI: 10.46770/As.202003.003 , www.at-spectrosc.com. International Level
- Neha Sharma , YogulKhajuria, Virendra.K.Singh , Sandeep kumar , Yonghoon Lee, **Piyush Kumar Rai**,Vivek. K. Singh (2020).“ Analysis of Mineral Elements in Medicinal Plant Samples using LIBS and ICP-OES” *Journal of Atomic Spectroscopy*. Volume 41 Issue 06 , Impact factor 1.292 , ISSN : 0195- 5373 (Print) , 2708- 521X (Online) , Indexed in scopus and web of science, DOI: 10.46770/AS.2020.06.003 www.at-spectrosc.com. International Level
- **Gaurav I, Singh T, Thakur A, Kumar G, Rathee P, Kumari P, Sweta K (2020).** “Synthesis, *in-vitro*, and *in-silico* evaluation of silver nanoparticles with root extract of *Withania somnifera* for antibacterial activity via binding of penicillin binding protein-4”. *Current Pharmaceutical Biotechnology*.DOI: 10.2174/1389201021666200702152000. International Level
- **Thakur A, Mishra AP, Panda B, Rodríguez DCS, Gaurav I, Majhi B (2020).** Application of artificial intelligence in pharmaceutical and biomedical studies. “*Current Pharmaceutical Design*. DOI: 10.2174/1381612826666200515131245”. International Level

Department of Computer Science : 19

- **Mr. Ajit Kumar Singh & Ms. Manisha Prasad**, Book on Big Data: Simply in Depth published by Amazon, July 2020
- **Ms. Manisha Prasad & Ms. Amrita Prakash**, Title of the Book: Excellence in Higher Education: Emerging Concerns and Road Ahead., Ch. Name: Effectiveness and Adaptation of E-learning in Higher Education., Effectiveness and Adaptation of E- learning in Higher Education., Sep 2020

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- **Ms. Deepa Sonal**, Scopus Indexed Solid State Technology, Scopus Indexed Solid State Technology, An IoT-Based Model for Defending Against the Novel Coronavirus (COVID-19) Outbreak, 30.03.2020
- **Ms. Anshu & Ms. Renu Kumari**, Journal of Information and Computational Science, **UGC Care List Group II** Volume 10, Issue 04 / ISSN No. :- 1548-7741, Moving Digital Transformation of India Forward, April - 2020
- **Ms. Deepa Sonal**, International Journal of Computer Science and Engineering (**IJCSE**) , Quantum Computing: A possibility to find COVID-19 antidote, 30.05.2020
- **Ms. Renu Kumari**, Alochana Chakra Journal, **UGC Care List Group I Volume IX**, Issue VI ISSN NO: 2231- 3990 International (Impact Factor : 6.3), Study of E-Commerce and Social Media Analytics, June 2020
- **Mr. Ajit Kumar Singh & Ms. Manisha Prasad** , Amazon, Book: Big Data – Simply in Depth, Big Data: Simply in Depth, July 2020
- **Ms. Anshu & Ms. Renu Kumari**, DRSR Journal (DOGO Rangsang Research Journal), **UGC Care List Group I** / Volume 10, Issue 07 /ISSN No.:- 2347-7180, Impact of COVID pandemic on World tourism - Economic and socio-cultural Aspects, July 2020
- **Ms. Amrita Prakash**, New Horizons of Biological Sciences: Advantages and Challenges, Role of Plant Tissue Culture in Crop Improvement, Sep 2020
- **Ms. Manisha Prasad & Ms. Amrita Prakash**, Excellence in Higher Education: Emerging Concerns and Road Ahead., Effectiveness and Adaptation of E-learning in Higher Education., Effectiveness and Adaptation of E- learning in Higher Education., Sep 2020
- **Ms. Amrita Prakash**, International Journal of Advanced Research in Science, Communication and Technology, **IJARCT**, Volume 10, Issue 2, ISSN No. 2581-9429, Cyber Security: Issues and Challenges, 31.10.2020
- **Ms. Deepa Sonal**, Materials Today: Proceedings (Elsevier), , Security Enhancement for IoT enabled Agriculture, December 2020
- **Ms. Amrita Prakash**, Shree Vinayak Publication, Agra, Deliberations on Advances in Physical, Mathematical and Computational Sciences, Big Data: The next Frontier for Innovation and Productivity, December 2020
- **Ms. Renu Kumari**, Shree Vinayak Publication, Agra, Deliberations on Advances in Physical, Mathematical and Computational Sciences, A Comprehensive Survey of Data Mining Techniques on Time Series Data for Rainfall Prediction., December 2020

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Papers Presented

- **Ms. Amrita Prakash** presented paper in Online International Conference on Advances in Physical, Mathematical & Computational Sciences on the topic "Big Data: The next Frontier for Innovation and Productivity" on 12.06.2020 organized by St. Aloysius College (Autonomous), Jabalpur, MP.
- **Ms. Amrita Prakash** presented paper in International Webinar on "Post Pandemic Corporate Management" on the topic: "Cyber Security: Issues and Challenges" on 07.06.2020 organized by Chanakya National Law University and Magadh Mahila College, Patna.
- **Ms. Manisha Prasad and Ms. Amrita Prakash** presented paper in Online International Conference on "Covid-19 Pandemic and World Tourism-Hospitality: Trends, Challenges and Future Prospects" on the topic "Effectiveness of Virtual Reality in Tourism" on 27.05.2020 organized by IQAC, Patna Womens College (Autonomous), Patna University
- **Ms. Renu Kumari** presented paper in "POST-PANDEMIC CORPORATE MANAGEMENT" on the topic "Impact of COVID pandemic on World tourism Economic and Socio-cultural Aspects " on 7.6.2020 organized by Chanakya National Law University & Magadh Mahila College, Patna.
- **Ms. Renu Kumari** presented paper in Online International Conference on Advances in Physical, Mathematical & Computational Sciences on the topic "A Comprehensive Survey of Data Mining Techniques on Time Series Data for Rainfall Prediction" on 12.06.2020 organized by St. Aloysius College (Autonomous), Jabalpur, MP.

Department of Microbiology : 14

- **Dr. Jaya Philip** , Effect of fungi isolated from different plastic pollutant sites on low density polyethylene material degradation with reference to SEM analysis. Int. j of Current Microbiol. & Appl. Sc., 2020, Vol.9(6), pp. 3149-3157
- **Dr. Jaya Philip**, Identification of Bacteria from under Finger Nails. INT. J of Sci. Res.in Sc. & Tech., 2020, vol.7(6), pp. 234-241.

Book Chapter

- **Dr. Jaya Philip**, Edited book on "New Horizons of Biological Sciences: Advantages and challenges". Rajesh Publications, New Delhi-110002 in 2020.
- Isolation of cellulose degrading fungi from decaying agro-waste. Chapter: 7, Pg.: 62-67
- **Dr. Preeti Swarupa**, Characterization of amylolytic bacteria *Bacillus subtilis* LC4 isolated from Sita Kund hot springs of Bihar, India." *Intl J Biotechnol Microbiol* 7, 2(2), (2020): 09-14.

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- **Dr. Niti Yashvardhini**, Occurrence of recurrent mutation in SARS-CoV-2 genome and its implication in the drug designing strategies. *Journal of Pharmacy and Pharmacology Research* 4 (2020): 96-102.
- **Dr. Niti Yashvardhini**, Genome Organization and Pathogenesis of SARS-CoV-2. *Int.J.Curr.Microbiol.App.Sci* (2020) 9(9): 2153-2156
- **Dr. Swetnisha**, *In vitro* production of capsaicin through plant tissue culture. *Journal of Phytology*. 24-33. 10.25081/jp.2017.v9.3389.
- **Dr. Swetnisha**, Assessment of Phytochemicals, Antioxidant and Free Radical Scavenging Potential of Aqueous Methanol Extract of *Capsicum assamicum* Jubilee Purkayastha & L. Singh (*Bhut Jolokia*) fruits. *Int J Pharma Res Health Sci*. 2018; 6 (1): 2148-53
- **Dr. Arti Kumari**, Phytochemical Screening of root extracts of *Glycyrrhiza glabra* by Spectroscopic methods (UV-Vis Spectrophotometer, FTIR and HPLC). Vol. 11(6), 2019, pg. 376-381.
- **Dr. Arti Kumari**, Antibacterial activity of *Glycyrrhiza glabra* root extracts against *Staphylococcus* species and *Escherichia coli*. Vol. 09(15), 2020, pg. 1069-1080.
- **Dr. Arti Kumari**, Identification and prevention of microbial contamination in tissue culture of *Catheranthus roseus*. Vol. 30(2), 2020, pg. 297-305.

Book chapter

- **Dr. Arti Kumari**, UV -Vis spectrophotometer and Fourier transformed infrared spectroscopic (FTIR) analysis of *Glycyrrhiza glabra* root extracts. Chapter: 8, Pg.: 68-74.
- **Dr. Satyamvada Swayamprabha**, Biodegradation of Pesticide Chlorpyrifos by Bacteria *Staphylococcus aureus* (Accession no. CP023500.1). Vol 20(1&2), DOI: 10.18311/jeoh/2020/25042, 21–26, January–June 2020

Book chapter

Dr. Satyamvada Swayamprabha, Isolation, growth and identification of *chlorpyrifos* degrading probiotic bacteria from agricultural soil. Chapter: 9, Pg.: 75-84.

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9.9. Training received by Faculty: -

DEPARTMENT OF PHYSICS : 22					
Sl. No	Name of program	Date	Name of Faculty who attended	Topic	Venue
1.	Online Learning Workshop for Faculty	15 th -17 th April'2020	Dr. Aprajita Krishna Dr. Rohit Singh Dr. Amrita	Learning Management system	Zoom Platform
2.	Effective and Efficient Online Teaching in the Age of Corona: A Hands on Workshop	23.05.2020	Dr. Rohit Singh Dr. Amrita	Bodhi Tree LMS	LMS
3.	NPTEL Course	8 weeks	Dr. Aprajita Krishna Dr. Rohit Singh	Architectural Conservation and Historic Preservation	Swayam
4.	ARPIT AICTE Course	16 weeks	Dr. Kavita Verma	Teachers and Teaching in Higher Education	Swayam
5.	NPTEL Course	12 weeks	Dr. Rohit Singh	Laser: Fundamentals and Applications	Swayam
6.	AICTE NPTEL FDP Course	12 weeks	Dr. Rohit Singh	Nuclear and Particle Physics	Swayam
7.	NPTEL Course	12 weeks	Dr. Rohit Singh Dr. Amrita	Solid State Physics	Swayam
8.	NPTEL Course	8 weeks	Dr. Rohit Singh Dr. Amrita	Physics through Computational Thinking	Swayam
9	Coursera	6 weeks	Dr. Amrita	Physical Basis of Quantum Computing	Coursera
10	AICTE NPTEL FDP Course	4 weeks	Dr. Amrita	Selection of Nanomaterials for Energy Harvesting and Storage Applications	Swayam

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11.	DELNet	Phase 1 (16.04.2020 - 26.04.2020) Phase 2 (30.4.2020 - 13.05.2020)	Riekshika Sanwari	TLC Mentorship Programme	Zoom
12.	FDP (Spoken tutorials)	22.5.2020-2.6.2020	Riekshika Sanwari Dr. Rohit Singh Dr. Amrita	Scilab	Zoom
13.	FDP (Spoken tutorials)	11.5.2020-17.5.2020	Riekshika Sanwari Dr. Rohit Singh	Latex and Xfig	Zoom
14.	FDP (Aztech Academy)	25.6.2020-09.07.2020	Riekshika Sanwari	Python Programming	Zoom
15.	AICTE NPTEL FDP Course	12 weeks	Dr. Amrita	Introduction to Classical Mechanics	Swayam
16.	One week Workshop		Dr. Kavita Verma	Research Methodology	Zoom
17.	FDP organized by IQAC in collaboration with the Department of Education, Patna Women's College, Autonomous, Patna University.	08.05.2020 & 09.05.2020	Dr. Aprajita Krishna	The Role of E-Learning during Lockdown : Academic Challenges and the Road Ahead	Zoom
18.	FDP organised by Department of MCA, Patna Women's College (Autonomous), Patna University	29.04.2020 & 30.04.2020	Dr. Aprajita Krishna	Effective Tools for Online Meeting and Teaching	Google Meet
19.	FDP organised by St. Teresa's Institute of Education, Santacruz, Mumbai	06.06.2020 - 10.06.2020	Dr. Aprajita Krishna	"Creating Tech-Savvy Teachers for future classrooms	Zoom
20.	NPTEL Course		Dr. Aprajita Krishna	Architectural conservation and Historic preservation	Swayam

21.	Digital Leadership Course, Part 1: Online Learning workshop for faculty.	15.04.2020-17.04.2020	Dr. Aprajita Krishna	QASPIR	
22.	FDP organised by IQAC, St. Joseph's College, Autonomous, Tiruchirappally	30.06.2020 - 04.07.2020	Dr. Aprajita Krishna	"Inclusive Procedures And Processes in Assessment and Accreditation by NAAC"	Zoom

DEPARTMENT OF CHEMISTRY : 06

Sl. No	Name of program	Date	Name of Faculty who attended	Topic	Venue
1.	Online Faculty Development Programme (FDP)	15.05.2020 - 21.05.2020	Dr. Jyoti Chandra	"Moodle Learning Management System"	Zoom platform
2.	12 weeks Online Faculty Development Programme (FDP)	27.01.2020 - 17.04.2020	Dr. Jyoti Chandra	"Essentials of Biomolecules Nucleic Acids and Peptides"	NPTEL, IIT Guwahati
3.	Online Faculty Development Programme(FDP)	21.09.2020 - 25.09.2020	Dr. Jyoti Chandra	Learning Management System	Institute of Technical Teachers Training and Research (NITTR)
4.	One week Online Faculty Development Programme (FDP) organized by IQAC, A.N. College, association with IIT Bombay	11.05.2020 - 17.05.2020	Dr. Jyoti Chandra	LaTex&Xfig	Zoom
5.	International Virtual Conference organized by Department of Chemistry, Annamalai University	27.08.2020 - 28.08.2020	Ms. Amita Prasad	"Surface Chemistry-SUCH 2020"	Zoom
6.	National	22.02.2020	Ms. Amita Prasad	ICT Tools for	Zoom

	Workshop Organized by Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College, University of Delhi	1		Chemistry Teachers	
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DEPARTMENT OF BOTANY : 14

Sl. No	Name of program	Date	Name of Faculty who attended	Topic	Venue
1.	Online Faculty Development Programme(FDP) NPTEL-AICTE, MHRD, Govt. of India	Jan-Feb, 2020.	Dr. Shilpi Kiran	Human Molecular Genetics	Swayam
2.	Online Workshop Organized by Dept. Of MCA, Patna Women's College	29.4.2020 — 30.04.2020	Dr. Pinky Prasad Dr. Urvashi Sinha Dr. Anjana Verma Dr. Piyush Kumar Rai	Effective tools for Online Meeting and Teaching	Google Meet
3.	Two week online workshop for Teaching and Non-Teaching Staff Organized by Ramanujan College, Delhi University in association with RCMOCS University for Digital Education.	25.05.2020 – 05.06.2020	Dr. Anjana Verma	“From e-Learning to eTraining: A Comprehensive Guide for all your Administrative Work”	Zoom
4.	National level Workshop Organized by Wilson College, Mumbai	15.05.2020 – 16.05.2020	Dr. Piyush Kumar Rai	“Person with Disabilities In Higher Education: Inclusion & Employment”.	Zoom
5.	Online Faculty Development Program Organized by	22.05.2020 – 26.05.2020	Dr. Piyush Kumar Rai <i>M. Pankaj</i> Principal 25-6-21	Artificial Intelligence	Zoom <i>Asha</i> Coordinator 25-6-21

	Sridevi Women's Engineering College				
6.	One Week Online FDP Organized by Department of MCA & Computer Science, Patna Women's College in association Spoken Tutorial, IIT, Mumbai	15.05.2020 – 21.05.2020	Dr. Pinky Prasad Dr. Urvashi Sinha Dr. Anjana Verma Dr. Piyush Kumar Rai Dr. Shilpi Kiran Ms. HenaNaz	Moodle LMS- <i>Exploring New Horizons of Teaching-Learning</i>	Zoom
7.	FDP Organized by Academic Governance Team, Avinash Group of Institutions, Hyderabad.	11.06.2020	Dr. Anjana Verma	Hone Your Skills"	Zoom
8.	National Workshop Organized by Xavier Board of Higher Education in India, Bangalore in collaboration with EPIGNOSIS (USA) – EDIFYERS (INDIA).	04.05.2020 – 05.05.2020	Dr. Pinky Prasad	"Online Teaching-Learning-Evaluation"	Zoom
9.	5 Day Online FDP Organized by IQAC, Patna Women's College, Patna	28.09.2020 – 3.10.2020.	Dr. Pinky Prasad Dr. Urvashi Sinha Dr. Anjana Verma Dr. Piyush Kumar Rai Dr. Shilpi Kiran Ms. HenaNaz	'Curriculum Development for Outcome Based Education	Zoom
10.	Online National Workshop Organized by IQAC, Patna Women's College, St. Aloysius College, Autonomous, Jabalpur under the aegis of UGC	29.05.2020 – 30.05.2020	Dr. Pinky Prasad	"NAAC Assessment & Accreditation: Preparation and Training"	Zoom

	PARAMARSH Scheme				
11.	15 day FDP Organized by University of Delhi Miranda House and SarlaDevi Center, Bhubneshwar.	24.08.202 0 – 07.09.202 0	Dr. Urvashi Sinha	Gender contours of the pandemic :reinventing public policy and leadership transformation	Zoom
12.	FDP Organized by AICTE New Delhi	21.09.202 0 – 25.09.202 0	Dr. Pinky Prasad Dr. Urvashi Sinha Dr. Anjana Verma Dr. Shilpi Kiran Dr. Piyush Kumar Rai Ms. HenaNaz	Training and Learning Academy	Zoom
13.	E- Refresher Course on Organized by Department of Biotechnology, A.K.S University, Satna M.P.	3.09.2020 – 28.10.202 0	Dr. Anjana Verma	21 st Century: The Era of Biotechnology to innovate by advance Biotechnology learning.	Zoom
14.	E- Refresher Course on Organized by Department of Biotechnology, A.K.S University Satna, M.P.	17.10.202 0	Dr. Anjana Verma	21 st Century: Plant Tissue Culture- scope and learning	Zoom

DEPARTMENT OF COMPUTER SCIENCE : 34

Sl. No	Name of program	Date	Name of Faculty who attended	Topic	Venue
1.	Online Workshop Organized by M.J.P. Rohilkhand University, Bareilly	08.06.202 0 – 17.06.202 0	Ms. Amrita Prakash Ms. Renu Kumari	Performing and Designing Experiments on Virtual Platform	Zoom
2.	FDP Organized by St. Thomas College of Teacher Education in	19.05.202 0 – 25.05.202 0	Ms. Amrita Prakash <i>M. R. Prakash</i> Principal 25-6-21	Creative Adaptation - Reaching Out through Digital	Zoom <i>Adha</i> Coordinator 25-6-21

	collaboration with UGC - HRDC, University of Kerala			Classrooms	
3.	FDP Organized by Maharshi Markendeshwar Deemed University, Ambala	26.10.2020 – 31.10.2020	Mr. Ajit Kumar Singh	International Research Oriented Program	Zoom
4.	FDP Organized by NSIT, Patna	23.06.2020 – 29.06.2020	Ms. Amrita Prakash	Digital Marketing and E-Commerce	Zoom
5.	FDP Organized by Patna Women's College (Autonomous), Patna University	28.09.2020 – 03.10.2020	Ms. Manisha Prasad Ms. Amrita Prakash Mr. Sudhir Kumar	Curriculum Development for Outcome Based Education	Zoom
6.	FDP Organized by Department of Mathematics, Central University of Jharkhand, Ranchi	06.11.2020 – 10.11.2020	Mr. Sudhir Kumar Sinha	Recent Development in Mathematical Sciences (RDBMS)	Zoom
7.	FDP Organized by Vimala College, Autonomous, Thrissur	19.10.2020 – 23.10.2020	Ms. Manisha Prasad Ms. Renu Kumari	Research and Career	Zoom
8.	FDP Organized by Xavier Board of Higher Education in India in Collaboration with Edifyers Global Solutions LLP, India and EPIGNOSIS, USA	04.05.2020 – 05.05.2020	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari	Teaching - Learning Evaluation using TALENT LMS	Zoom
9.	FDP Organized by Guru Nanak Institutions Technical Campus (Autonomous)	05.10.2020 – 10.10.2020	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari	Emerging Trends in Digital Analytics	Zoom

10.	Online Course Organized by Amity University	06.07.2020	Ms. Amrita Prakash	Enhancing Programming Skill Using Advance CPP (C++)	Online
11.	FDP on International Business Management Institute, Berlin	03.05.2020	Ms. Deepa Sonal	Project Management Course	Zoom
12.	FDP Organized by Babu Banarasi Das Northern India Institute of Technology	19.06.2020 – 21.06.2020	Ms. Amrita Prakash	Role of LaTeX in Scientific Writing	Zoom
13.	AICTE Training And Learning (ATAL) Academy, Patna Women's College	21.09.2020 – 25.09.2020	Ms. Amrita Prakash	Technology Management	Zoom
14.	AICTE Training And Learning (ATAL) Academy, Symbiosis Institute of Technology	8.12.2020 – 12.12.2020	Ms. Amrita Prakash	Advancement in 3D printing and its future scope	Zoom
15.	FDP Organised by Birla Institute of Technology Mesra, Noida campus	11.05.2020 – 16.05.2020	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari	Moodle LMS: Exploring New Horizons of Teaching-Learning	Zoom
16.	FDP Organized by St. Xavier's College, Kolkata	30.07.2020	Ms. Amrita Prakash	NAAC Assessment and Accreditation Process	Zoom
17.	FDP Organized by Teaching Learning Centre, Ramanujan College, D U	18.05.2020 – 03.06.2020	Ms. Amrita Prakash	Managing Online Classes And Co- Creating Moocs:2.0	Zoom
18.	Workshop Organized by Shri Mallikarjun & Shri Chetan Manju Desai college, Canacona	08.06.2020 – 14.06.2020	Ms. Amrita Prakash Ms. Renu Kumari	Institutional Benchmarking of Best Practices	Zoom
19.	Online Training	17.04.2020	Ms. Amrita Prakash	Basics of Robotics	Google

	Organized by TechproLabz, School of Robotics	0 – 23.04.202 0		using Arduino	Meet
20.	FDP Organized by Department of MCA & Computer Science, Patna Women's College	15.05. 2020 – 21.05.202 0	Ms. Anshu Ms. Renu Kumari Ms. Nimisha Manan Ms. Deepa Sonal	Moodle LMS:Exploring New Horizons of Teaching-Learning	Zoom
21.	Online Training Organized by Amity University	27.07.202 0	Ms. Amrita Prakash	Training on Recent Trends and Opportunities in Science and Technology by Amity School of Engineering	Zoom
22.	FDP Organized by St Joseph's College Autonomous , Tiruchirapalli, Tamil Nadu	30.06.202 0 – 04.07.202 0	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari	FDP on Inclusive Procedures and Processes in Assessment and Accreditation	Zoom
23.	Birla Institute of Technology, Mesra, Noida Campus	16.05.202 0	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari	R Training by Spoken Tutorial Project, IIT Bombay	Zoom
24.	FDP Organized by Babu Banarasi Das Northern India Institute of Technology, Lucknow	19.06.202 0	Ms. Amrita Prakash	Recent Trends and Opportunities in Science and Technology by Department of Mathematics	Zoom
25.	Online Training Organized by Bodoland University	15.04.202 0	Ms. Manisha Prasad Ms. Amrita Prakash Ms. Renu Kumari	Moodle Learning Management System by Spoken Tutorial Project, IIT Mumbai	Zoom
26.	AICTE Sponsored Short Term Training Programme(Series 2) AICTE Sponsored Short Term Training	5.10.2020 – 10.10.202 0	Ms. Renu Kumari	Emerging Trends in Digital Analytics	Zoom

	Programme(Series 2) on School of Management Studies, GNITC				
27.	FDP AICTE Sponsored Short Term Training Programme(Series 2) on P.G Department of Gender Studies and Sarala Devi Center for Gender Research Rama Devi Women's University ,Odisha in collaboration with Policy Centre and Gender Lab of Miranda House ,DU	24.08.2020 – 07.09.2020	Ms. Renu Kumari	Gendered Contours of the Pandemic :Reinventing Public Policy and Leadership transformation	Zoom
28.	Faculty development Programme Organized by Exceeds Academy (AatmNirbhar Bharat Self Reliant Course)	27.07.2020 – 02.08.2020	Ms. Renu Kumari	"Protecting your Computer yourself without repair or Maintenance Expenses"	Zoom
29.	FDP Organized by International School of Management, Patna	22.05.2020	Ms. Deepa Sonal	Writing Quality Research Paper and Proposal	Zoom
30.	FDP Organized by Department of MCA, Patna Women's College, Patna University	29.04.2020 – 30.04.2020	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari Ms. Deepa Sonal	Effective Tools for Online Meeting and Teaching	Google Meet
31.	FDP Organized by St Joseph's College Autonomous , Tiruchirapalli, Tamil Nadu	30.06.2020 – 4.07.2020	Ms. Manisha Prasad Ms. Anshu Ms. Amrita Prakash Ms. Renu Kumari	Performing and Designing experiments on virtual platform	Zoom

32.	Online Certification Course Organized by Department of Computer Science and Applications, St. Aloysius College, Jabalpur, MP	01.06.2020 – 07.06.2020	Ms. Manisha Prasad Ms. Renu Kumari	Python and Machine Learning	Zoom
33.	FDP Organized by CSI Student Branch-NSIT, Patna	04.06.2020 – 10.06.2020	Ms. Deepa Sonal	Machine Learning	Zoom
34.	Online Training Organized by Department of Computer Engineering, Marathwada Mitra Mandals College of Engineering, Pune, Maharashtra	08.06.2020 – 12.06.2020	Ms. Deepa Sonal	Advancement of IoT	Zoom

DEPARTMENT OF MICROBIOLOGY : 08

Sl. No	Name of program	Date	Name of Faculty who attended	Topic	Venue
1.	Online FDP Organized by Internal Quality Assurance Cell (IQAC) in collaboration with the Department of Education, Patna Women's College, Autonomous	08.05.2020 – 09.05.2020	Dr. Jaya Philip Dr. NitiYashvardhini Dr. PreetiSwarupa Dr. Arti Kumari Dr. Satyamvada Swayamprabha	The Role of E-Learning during Lockdown: Academic Challenges and the Road Ahead	Zoom
2.	Online Faculty Development Programme Organized by Department of MCA & Computer Science, Patna Women's College in association with	15.05.2020 – 21.05.2020	Dr. Jaya Philip Dr. NitiYashvardhini Dr. PreetiSwarupa Dr. Arti Kumari Dr. Satyamvada Swayamprabha	Moodle LMS: Exploring New Horizons of Teaching-Learning	Zoom

M. R. Khan
Principal 25-6-21

Ashra
Coordinator 25-6-21

	Remote Learning through Spoken Tutorial, IIT,				
3.	Online Workshop Organized by Department of MCA Patna Women's College	29.04.2020 – 30.04.2020	Dr. Jaya Philip Dr. Niti Yashvardhini Dr. Preeti Swarupa Dr. Arti Kumari Dr. Satyamvada Swayamprabha	Effective Tools for Online Meeting and Teaching	Google Meet
4	Online national workshop Organized by the IQAC, Patna Women's College (Autonomous), Patna University, Patna	29.05.2020 - 30.05.2020	Dr. Jaya Philip	National Workshop on NAAC assessment and accreditation: preparation and training	Zoom
5.	Workshop "organized by F.E.T, M.J.P. Rohilkhand University, Bareilly	06.06.2020	Dr. Jaya Philip	VIRTUAL LAB	Zoom
6.	Webinar Organized by Marwari College, Bhagalpur in association with CSI Patna Chapter University, Bareilly	7.06.2020	Dr. Jaya Philip	"ARTIFICIAL INTELLIGENCE"	Zoom
7.	Online Faculty Development Programme Organized by EdFly	11.06.2020	Dr. Jaya Philip	Creating Tech-Savvy Teachers For future Classrooms- EdFly Training	Zoom
8.	Online Workshop organized by Indian National Young Academy of Sciences and Department of Botany, Central University of Punjab, Bathinda,	31.05.2020 – 5.06.2020	Dr. Niti Yashvardhini Dr. Preeti Swarupa	Tangled bank' encompassing 15 lectures	Zoom

M. K. Dasgupta
Principal
25-6-21

India in connection with World Environment Day				
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9.10. Exhibitions/seminars /training courses conducted: -

DEPARTMENT OF PHYSICS				
Sl. No	Name of Program	Date	Resource person	No. of Beneficiaries
1.	International Webinar on Effective tools for Research & Scientific presentation	14 th & 15 th May 2020	Dr. Anamika Prasad, Dept. of Mechanical Engineering, South Dakota State University, USA	100
2.	Quiz on Optics: Interference of Light	6.06.2020 – 11.06.2020	Dr. Rohit Singh	1600
3.	National Webinar under DBT Nurturing Research Culture and Enhancing Teaching Learning	17.06.2020 & 18.06.2020	1. Prof. Shashi Tyagi, Professor, Gargi College, D.U. 2. Dr. Rajendra Shinde, Principal, St. Xaviers College, Mumbai 3. Dr. Tumul Singh, Coordinator, Star College Scheme, Udai Pratap College, Varanasi	300
4.	Training program under DBT on the topic Robotics and its applications (Online)	29 th July'2020 to 6 th Aug'2020.	Mr. Vivek Katore, Chief Technology Officer, Techprolabz School of Robotics, Patna	100
5.	Virtual Patriotic Song competition under Star college scheme of DBT	14 th Aug'2020	(i) Dr. Rekha Kumari, Director Higher Education, Govt. of Bihar, Patna (ii) Dr. Akhilesh Gupta, Assistant Professor, Patna Science College (iii) Prof. Minakshi Prasad, Principal, Ganga Devi	100

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			Mahila College	
6.	e quiz on Basics of Classical Mechanics	22.12.2020- & 23.12.2020	Dr. Amrita	150
DEPARTMENT OF CHEMESTRY				
1.	Working Model Competition on e-waste	24.02.2021		15
DEPARTMENT OF ZOOLOGY				
1.	A two days National Webinar on 'Road Map for Wildlife Conservation and Use of Technologies'	September 22.09.2020 & 23.09. 2020	<p>Day-1 :</p> <p>1. Shri Dipak Kumar Singh (IAS) Principal Secretary, Department of Forests and Environment, Govt. of Bihar.</p> <p>2 Dr. Tasneem Habib, Chief Scientist, Madhya Pradesh Council of Science & Technology (MPCST), Department of Science & Technology, Government of MP.</p> <p>3. Dr. Gopal Sharma, Scientist-E & Joint Director, Zoological Survey of India, Government of India.</p> <p>4. Shri Gyanant Singh, Advocate, Supreme Court of India.</p> <p>Day-2 :</p> <p>The Keynote Speaker :</p> <p>1. Shri PK Gupta, Chief Wildlife Warden, Department of Forests and Environment, Government of Bihar.</p> <p>The Resource Persons :</p> <p>2. Dr. Sanjay Babu, Consultant, Indo-German Co-operative Organization, Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ),</p>	317

			<p>New Delhi.</p> <p>3. Dr. Samir Kumar Sinha, Deputy Director & Head of Conservation in Wildlife Trust of India (WTI), New Delhi.</p> <p>4. Dr. Hilloljyoti Singha, Professor & Head Department of Zoology, Bodoland University, Assam.</p> <p>5. Shri Arvind Mishra , State Co-ordinator, Indian Bird Conservation Network, Bihar Chapter.</p>	
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DEPARTMENT OF BOTANY

1.	National webinar on the topic "Covid 19 vaccine: Ifs and Buts".	06.02.2021	<p>1. Dr. Kunal Prasar, Consultant, Patna AIIMS</p> <p>2. Dr. Abhinav Singh Consultant, Jeeveshika Niketan Patna</p>	300
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DEPARTMENT OF COMPUTER SCIENCE

1.	National Webinar under DBT Nurturing Research Culture and Enhancing Teaching Learning	17.06.2020 & 18.06.2020	<p>1. Prof. Shashi Tyagi, Professor, Gargi College, D.U.</p> <p>2. Dr. Rajendra Shinde, Principal, St. Xaviers College, Mumbai</p> <p>3. Dr. Tumul Singh, Coordinator, Star College Scheme, Udai Pratap College, Varanasi</p>	300
2.	Internet of Things (IoT) Raspberry Pi	20.11.2019 - 09.01.2020	<p>1. Mr. Riyaz Jamaal, R & D Associate, Techprolabz</p> <p>2. Mr. Vivek Dadarao Katore, Techprolabz</p>	80
3.	Gesture Robotics	13.01.2020 -	1. Mr. Vivek Dadarao Katore,	140

		01.02.2020	Techprolabz 2. Ms. Nitika Raizada, Techprolabz	
4.	Wireless Robotics	03.02.2020 - 04.03.2020	Mr. Vivek Dadarao Katore, Techprolabz	80
5.	Drone	13.01.2020 - 06.02.2020	1. Mr. Jaynendra Sharma, Co-founder, Techprolabz 2. Mr. Vivekanand Prasad, Founder and Director, Techprolabz	80
6.	Network Security	07.02.2020 - 13.03.2020	1. Mr. Riyaz Jamaal, R & D Associate, Techprolabz 2. Mr. Vivekanand Prasad, Founder and Director, Techprolabz	160
7.	Short Film Making Competition	29.02.2020	1. Dr. Anuradha Krishna, Govt. Polytechnic, DST 2. Dr. Chandra Shekhar Singh Joint Director Govt. Polytechnic, DST 3. Dr. Anant Kumar Joint Director Govt. Polytechnic, DST	150

9.11. Books/journals subscribed from grants: -

Details of the books purchased in the Department of Physics

Annexure 1: BOOKS PURCHASED FROM DBT FUND (No of Books -15)



Sl. No.	Title of the books	Name of the Authors	Price (MRP) in Rs.	Billing Price
1	Modern Physics	Raymond A. Serway	725	610
2	Modern Physics	Randy Harris	809	710
3	Nanotechnology: Principles & Practices	Sulabha K. Kulkarni	695	626
4	Quantum Mechanics (Schaum's Outline Series)	Yoav Peleg, Reuven Pnini, et al	775	690

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5	Lectures on Quantum Mechanics	Paul A. M. Dirac	599	490
6	Thermodynamics	Enrico Fermi	250	225
7	Complex Variables and Applications	J.W. Brown	725	610
8	Group Theory for Physicists: With Applications	Pichai Ramadevi, Varun Dubey	495	430
9	Quantum Computation and Quantum Information	Nelson and Chuang	750	640
10	Getting Started with MATLAB	Rudra Pratap	335	305
11	Electrical & Electronics Projects Paperback – 2017	Nikhil Shukla	295	255
12	Concepts of Modern Physics	Arthur Beiser	750	675
13	Python Programming	Reema Thareja	575	520
14	Introduction to Nanotechnology	Frank Owens Charles Poole	729	610
15	Material Science and Metallurgy	Jindal	489	430
Total			8996	7826

9.12 Outreach activities: -

DEPARTMENT OF COMPUTER SCIENCE				
Sl.	Event	Topic	Resource Persons	Collaboration
1.	Outreach Programme for Slum Children	Personal Hygiene and COVID – 19 Awareness & Protection	Ms. Manisha Prasad Ms. Renu Kumari, Deptt. of Computer Sc. and Students of BCA VI Sem.	In collaboration with Mishra Social Skills (NGO) Bailey Road, Patna
2.	Outreach Programme for Slum Children	Tutorials and Painting Competition	Ms. Anshu, Ms. Amrita Prakash Ms. Nimisha Manan, Deptt. of Computer Sc. and students of BCA VI Sem.	In collaboration with Mishra Social Skills (NGO) Bailey Road, Patna
<p>  Principal 25-6-21 Patna Women's College Autonomous Patna University Bailey Road, Patna - 1 </p> <p>  Coordinator 25-6-21 Star College Scheme Patna Women's College Bailey Road, Patna-1 </p>				

DEPARTMENT OF PHYSICS

Awareness Program for Covid-19
Distribution of Mask Sanitizer by Students

CHEMISTRY BOTANY ZOOLOGY MICRIBIOLOGY	Due to Pandemic Contact programme was not conducted but virtual training programs were done
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9.13. Colleges mentored to apply for DBT Star College:- applied in 2019 and scheme ongoing

Mentoring	Status
Patna Science College	Received Grant
A.N.College, Patna	Received Grant
Ganga Devi College, Patna	Not Accepted after presentation
R.D and D.J College Munger	Rejected at initial stage
Jamalpur College	Rejected at initial stage

- A.N. College, Patna
- Patna Science College (Both of these colleges got the Star scheme)
- Seven Colleges of Munger University

9.14. Invited Lectures: - Name, designation, host institute of guest faculty invited

DEPARMENT OF PHYSICS					
Sl. No	Name of Resource person	Topic of Lecture	Date	Host Institute	No. of Beneficiaries
1.	Dr. Akhilesh Kumar Gupta	A Broader spectrum of Mechanics	18 th Dec'2020-19 th Dec'2020(online)	Patna Science College	150
DEPARMENT OF ZOOLOGY					
1.	Dr. Faiza Abbasi Wildlife Biologist, Assistant Professor cum Assistant Director of UGC Human Resource Development	Darwinian Evolution and Impending Ecological Collapse in the post COVID-19 Era	12.09.2020	Aligarh Muslim University	198

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	Centre, AMU				
DEPARMENT OF BOTANY					
1.	Prof. M. P. Trivedi, Head, Department of Botany, Patna Science College, P. U.	Online Guest Lecture on "Environmental problems in India"	28/08/2020	Patna Science College, P. U.	150
DEPARMENT OF COMPUTER SCIENCE					
Sl. No	Name of Resource person	Topic of Lecture	Date	Host Institute	No. of Beneficiaries
1.	Mr. Azad Deepak Director & Ms. Sonam Kumari Master Trainer	Software Development Process	06.02.2021	Aztech Technology and Engineers Pvt, Ltd , Patna	78
2.	Mr. Vivekanand Prasad Founder and Director	Technology and Startups	31.01.2021	Techprolabz Pvt. Ltd, Patna	78

NOTE: Annexure Photographs Attached.

10. Self Evaluation

DEPARTMENT OF PHYSICS

Objective(as stated in proposal)

Project Work - as stated in Proposal

1. Synthesis and characterization of Nanoparticles
2. Characterization of archaeological artefacts with the help of non-invasive techniques

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Project Work Undertaken 2020

Sl. No.	Title of the Project	Supervisor
1.	Material Characterization of Munger Fort	Dr. Aprajita Krishna
2.	A study of Comparative analysis of monuments and buildings from ancient era	Dr. Aprajita Krishna
3.	Synthesis and XRD, XRF characterization of Zinc Ferrite nanoparticles	Dr. Kavita Verma
4.	Crystal structure of noble metals	Dr. Rohit Singh
5.	Model and analysis of password and RFID door lock	Dr. Amrita
6.	Studies of Water in different vessels	Dr. Kavita Verma
7.	Evolution of Artificial intelligence and how its applications in different fields are transforming the world	Dr. Kavita Verma

Project Work % Achieved - 100%

Summer Training- as stated in Proposal

To visit Hospitals and to provide exposure to the medical instruments working under the principles of physics, like CT, MRI and NMR scanning explained through PPT in Physics Lab

Summer Training Undertaken

1. Due to Covid, visit to the Hospitals were not done but the instruments like CT, MRI and NMR were demonstrated and explained in online mode.
2. Online Training was conducted . Only 50% is achieved due to Pandemic.

Summer Training % Achieved - 50%

Industrial Visit - as stated in Proposal

1. To visit the manufacturing unit of transformer at Electricity department and to learn different types of transformers.
2. To visit industries involve in production of electrical wire so that students can learn the process of insulation etc.

Industrial Visit % Achieved – 50%

Reasons for underachievement / If achieved, state in quantitative metrics

Industrial Visit Could not be conducted due to the Pandemic.

DEPARTMENT OF CHEMISTRY

Objective (as stated in Proposal)

Project Work – as stated in Proposal

1. Physico chemical quality of various ponds of Patna.
2. Analysis of drinking water quality.
3. Analysis of micro and macro elements in soil.

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Project Work Undertaken 2020

Departmental Project Using DBT Grant	Name of Student	Faculty Supervisor
Toxic metal in different brands of chocolate	1. Anamika (205) 2. Reecha (166) 3. Zareen (215) 4. Rajshree (152) 5. Rashvi (58)	Dr. Nandini Kumari
Extraction & formulation of perfume from plants	1. Palak 2. Shweta 3. Pragya	Ms. Amita Prasad
Extraction of Nicotine sulphate from sample of cigarette	1. Kanchan Kumari (323) 2. Ananya Tariani (234) 3. Akanksha Kumari (197) 4. Sukriti Sagar (74)	Dr. Madhu Rani Sinha
Extraction of nutraceutical components from various bioactive food items	1. Trishna (37) 2. Shiwangi (30) 3. Tejasvita Siddhi (48) 4. Pammi Rani (51)	Dr. Jyotsana Kumari

Project Work % Achieved – 100%

Summer Training - as stated in Proposal

1. To visit IIT's and NCL to study the working of different instruments and gain exposure to analytical instrumentation techniques.
2. To visit Sudha Dairy to learn about adulteration of milk.
3. To visit Rajendra Memorial Research Institute and learn different instruments.

Summer Training – Not Achieved

Reasons for underachievement / If achieved, state in quantitative metrics

- Due to Covid summer training was not but the instruments were demonstrated and explained in online mode.

Industrial Visit - as stated in Proposal

To visit industries at Electroplating & gold plating unit to gain knowledge about the basic Principles involved in electroplating process.

Industrial Visit – Not Achieved

Reasons for underachievement / If achieved, state in quantitative metrics

- Due to pandemic situation, the programs could not be conducted

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DEPARTMENT OF ZOOLOGY

Objective (as stated in Proposal)

Project Work – as stated in Proposal

1. Efficacy of earthworms species to bio accumulate heavy metals or other contaminants of water.
2. Identification and control of stored grain pest.
3. Biological control of mosquito larvae.
4. Hormonal assays in females (Thyroid T3, T4, TSH)

Project Work Undertaken 2020

S. No.	Topic of Project	Faculty Supervisor
1.	Bioaccumulation Of Heavy Metals In Indigenous Species From River Ganga, Patna	Mr. Sumeet Ranjan
2.	Prevalence Of Various Types Of Menstrual Disorders Among The College Girls And Their Relation With Life Style Factors : A Survey Based Study	Dr. Anupma Kumari
3.	Identification Of Arsenic Contaminated Groundwater Sources In Villages Situated Along River Ganges In Bihar	Mr. Sumeet Ranjan
4.	Impact of Mental Health And Sanitizations And Its Related Issues During COVID-19 Pandemic In Universities Students	Mr. Rajeev Ranjan
5.	Efficiency Of Antibacterial Soaps And Handwashes	Mr. Sumeet Ranjan
6.	Survey On Association Of ABC Blood Group With Dengu Fever	Dr. Sapna Kumari

Project Work % Achieved – 100%

Summer Training - as stated in Proposal

1. To visit Zoological Survey of India, Patna Circle.
2. To visit Sri Krishna Science Center.
3. To visit Zoological park of Patna.

Summer Training % Achieved – Not Achieved

Reasons for underachievement / If achieved, state in quantitative metrics

- Due to Covid summer training was not but the instruments were demonstrated and explained in online mode.

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Industrial Visit - as stated in Proposal

1. To learn the immunological techniques and to study histo pathological slides in Pathology laboratory.
2. Tie – up with hospitals / pathological labs to learn pathological testing.

Industrial Visit undertaken

- Instead of Pathology Lab, the Immunological techniques were studied in Central Research Laboratory, Patna Women's College

Industrial Visit % Achieved – 50%

Reasons for underachievement / If achieved, state in quantitative metrics

- Instead of Pathology Lab, the Immunological techniques were studied in Central Research Laboratory, Patna Women's College
- Due to pandemic situation, the programs could not be conducted.

DEPARTMENT OF BOTANY

Objective (as stated in Proposal)

Project Work – as stated in Proposal

1. To study the plant biodiversity in Patna by collection of plants and preparation of herbarium sheets.
2. To estimate the level of pesticides in the vegetable grown in Patna Region with help of HPLC.
3. Hydro culture

Project Work Undertaken 2020

S. No.	Name of the Project	Name of Supervisor
1.	Phytochemical analysis of Papaya leaves and comparison of the therapeutic role of each compound with standard medicines.	Dr. Pinky Prasad
2.	Determination of iron in drinking water.	Dr. Piyush Kumar Rai
3.	Antibacterial effect of onion.	Dr. Piyush Kumar Rai
4.	Electricity generation from living plants using plant microbial fuel cell technology	Dr. Pinky Prasad
5.	Study of effect of chemical and bio pesticide on soil and growth parameters in plants.	Dr. Pinky Prasad

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6.	Effect of <i>Aloe vera</i> gel on morphology and phenolic content of <i>Hibiscus rosa sinensis</i> .	Dr. Urvashi Sinha
7.	Isolation of microorganisms from soil sample by serial dilution using aseptic techniques.	Dr. Anjana Varma

Project Work % Achieved –100%

Summer Training - as stated in Proposal

1. Micro propagation of various herbal plants.
2. Training in Molecular biology Techniques.

Summer Training Undertaken

Training was given in the Central Research Laboratory only. Achieved because of increased grant for each research projects. Learning opportunities beyond class rooms have considerably improved, providing skill enhancement workshops on the topics like cultivation of mushroom and soilless organic farming.

Summer Training % Achieved –50%

Industrial Visit - as stated in Proposal

To visit Plant Tissue culture labs and Mushroom production lab around Patna

Industrial Visit % achieved – not achieved

Reasons for underachievement / If achieved, state in quantitative metrics

Last year and industrial visit was 100% but this year none of the industries and institutions entertained visit or training due to COVID-19 pandemic.

DEPARTMENT OF COMPUTER SCIENCE

Objective (as stated in Proposal)

Project Work – as stated in Proposal

1. To design a drone-based sensor and implement it to prepare a database for the Heritage sites in Bihar.
2. To monitor environmental pollution – air, noise and water.

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Project Work Undertaken 2020

Sl. No.	DBT Research Topic	Supervisor's Name
1.	A Study of Perception of Youth about Online Education in Patna during COVID-19.	Ms. Manisha Prasad
2.	Application of Machine Learning and Artificial Intelligence for COVID-19 Pandemic.	Ms. Anshu
3.	A Comparative Study on Different Teaching Learning Application Used in Pandemic Period	Ms. Amrita Prakash
4.	Impact of Social Media on youth of age group 15 to 24 years	Ms. Renu Kumari
5.	A Study on the Impact of Human Computer Interaction on the people of Bihar	Ms. Nimisha Manan
6.	An IoT-Based Model: Defending Against COVID-19	Ms. Deepa Sonal

To design a drone-based sensor and implement it to prepare a database for the Heritage sites in Bihar

Project Work % Achieved – 100%

Summer Training - as stated in Proposal

1. Hardware course
2. Web Designing
3. Financial Accounting

Summer Training Undertaken

- Instead of 3D Animation and Web Designing, the department had conducted In – House training programmes throughout the year for students such as, Network Security, Raspberry Pi (IOT)
- In the Hardware Course, different training programs were conducted as Arduino programming, Basics of Robotics.
- Also, the department had conducted, Faculty Development Programme for the faculties of Science Departments on “Python Programming”
- Industrial Visit was planned at end Semester but not done due to Covid pandemic.
- Students are involved in the development of software, applications and websites under different Projects.

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- Summer training – Instead of 3D animation, the students underwent ten days 3D Printing training programme.
- This year department had also conducted one week summer training programme in Computer Skills for the Non teaching staff of Patna Women's College.

Summer Training % Achieved – 100%

Industrial Visit - as stated in Proposal

1. To visit IT parks of India
2. Leading software industries

Industrial Visit Undertaken

Summer training –Students of BCA Final year visited Techprolabz Pvt. Ltd. (Incubatee of IIT Patna) to familiarise themselves with the avenues of Entrepreneurship in Technological Domain and Aztech Technology and Engineers Pvt. Ltd.(ISO 9001 certified Software Development Company registered under MSME and Ministry of corporate affairs) for Software Development Process.

Training programme on Machine Learning using Python is in the pipeline which could not be conducted earlier due to Pandemic Lockdown.

Industrial Visit % Achieved – 100%

Reasons for underachievement / If achieved, state in quantitative metrics

- Students are involved in the development of software, applications and websites under different Projects.
- Summer training – Instead of 3D animation, the students underwent ten days 3D Printing training programme.
- This year department had also conducted one week summer training programme in Computer Skills for the Non teaching staff of Patna Women's College.
- Students of BCA Final year visited Techprolabz Pvt. Ltd. (Incubatee of IIT Patna) to familiarise themselves with the avenues of Entrepreneurship in Technological Domain and Aztech Technology and Engineers Pvt. Ltd.(ISO 9001 certified Software Development Company registered under MSME and Ministry of corporate affairs) for Software Development Process.
- Training programme on Machine Learning using Python is in the pipeline which could not be conducted earlier due to Pandemic Lockdown.

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DEPARTMENT OF MICROBIOLOGY

Objective (as stated in Proposal)

Project Work – as stated in Proposal

1. Isolation of Micro organisms from the heritage sites.
2. Isolation of Micro organisms from the Ganga Belt.

Project Work Undertaken 2020

DBT Group	Topic	Student's name	Supervisor
DBT I	Isolation, characterization and identification phytopathogenic fungi from plants.	Eram Warsi (21), Ayesha Saubia (06), Sana Anjum (32), Saba Anjum (31), Sadaf Jamal (27)	Dr. Jaya Philip
DBT II	Assessment of bacterial load of some fresh and canned fruit juices in Patna.	Aarohi Shukla (28), Aditi Choudhary (13), Ashiya Maryam (24), Mariam Khan (02), Sabreen Siddique (23), Sefalika (22)	Dr. Niti Yashvardhini
DBT III	Characterization of bacterial diversity of vegetables from different markets of Patna	Apoorva (11), Aparna (30), Kanu Priya (05), Supriya (08)	Dr. Preeti Swarupa
DBT IV	Prevalance and antimicrobial resistance pattern of methicillin resistance <i>Staphylococcus aureus</i> strains isolated from clinical specimens.	Ashwini (07), Ekta (16), Rachna (18), Dania Mallick (03)	Dr. Arti Kumari
DBT V	Antibiotics resistance in <i>E. coli</i> isolated from UTI patients	Ayurvashi (20), Ayushi (24), Muskan (09), Kriti Novel (14), Sharbeen Fatma (01)	Dr. Shilpi Kiran

Project Work % Achieved – 100%

Summer Training - as stated in Proposal

Isolation of Potential micro organisms from the archaeological sites.

Summer Training % Achieved – Not Achieved (could not be done due to Covid)

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Industrial Training - as stated in Proposal

1. Sudha Dairy and Hindustan Coca – Cola Beverages Pvt.
2. Research Lab visit (Mahavir Cancer Sansthan, AIIMS Patna).
3. To visit Plant Tissue culture labs and Mushroom production lab around Patna

Industrial Visit % Achieved – Not Achieved

Reasons for underachievement / If achieved, state in quantitative metrics

Last year summer training and industrial visit was 100% but this year none of the industries and institutions entertained visit or training due to COVID-19 pandemic.

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Dr. Sister M. Rashmi A.C.
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Aprajita Krishna *25-6-21*
Dr. Aprajita Krishna
Coordinator
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Q 9. Key performance indicators

Photographs of Events

Department of Physics



International Webinar – 14th and 15th May'2020



Training program on Robotics: 29th July- 6th August'2020

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PATNA WOMEN'S COLLEGE
AUTONOMOUS
PATNA UNIVERSITY
3rd Cycle NAAC Accredited at 'A' grade with CGPA 3.60 / 4
"College with Potential for Excellence" (CPE) status accorded by UGC

Under the aegis of Star College Scheme : Department of Biotechnology

Department of Physics
is organizing
Inter Department Virtual Patriotic Song Competition
for undergraduate Science students
on 14th August 2020

Panel of Judges

Prof. Dr. Rakita Kumar
Director Higher Education
Govt. Of Bihar

Prof. Dr. Himanshu Prasad
Principal
Khyati Public College

Dr. Akhlesh Gupta
Assistant DIT Coordinator
Patna Science College

Rules

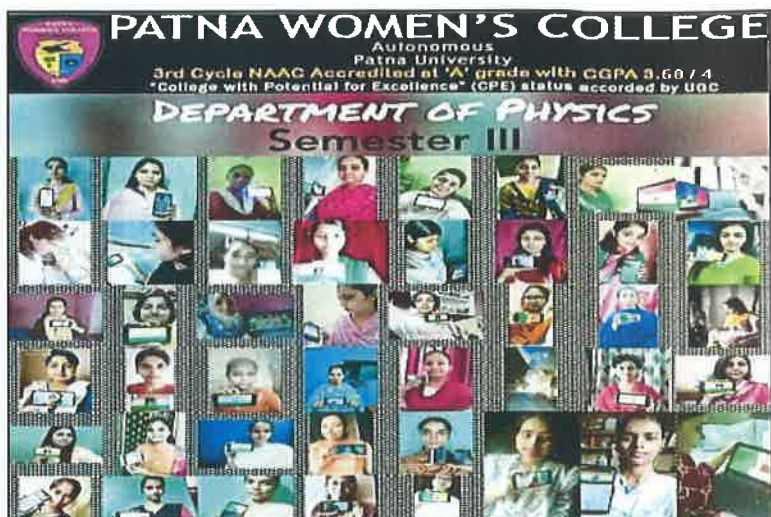
- Each group consists of max 5 and min 3 participants
- Max 2 groups from each Department (one from each semester)
- Recorded audio format for 3 min
- Last Date of submission 14.8.2020
- Prizes for 1st, 2nd & 3rd position

Chairperson
Dr. Shilpi Mishra, IAC
Principal

Chairman
Dr. Apurva Krishna
DIT Coordinator

Organizing Secretary
Dr. Karthikeya
Organizing Secretary

Organizers
Dr. Anurag
Dr. Anjali Singh
Ms. Shikha Samal



Independence day program,- 14.08.2020

Department of Chemistry



Collage Competition held under Vigyan Utsav

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Model Making Competition on e – waste management held on 24.02.2021



DBT Research Project Presentation held on 24.02.2021

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Department of Zoology



Speech Contests, Vigyan Utsav 2021



Guest Lecture on Darwinian Evolution Impending Ecological Collapse in Post Covid -19 Era

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National Webinar on Road Map for Wildlife Conservation and Use of Technologies

Department of Botany



Hands on experiment on DNA extraction Technique

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Hands on experiment on Aquaponic culture of Mushroom



Hands on experiment of preliminary screening of phytochemicals from plants

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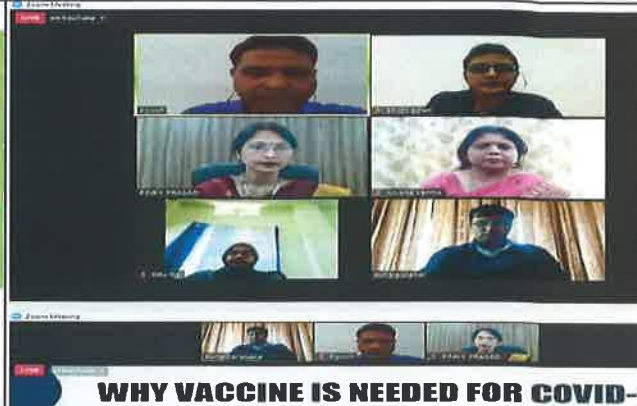


Organizing Members-
Dr. Pinky Prasad - Head,
 Dept. Of Botany,
 Patna Women's College
 (Autonomous)
Dr. Urushi Sinha
 Assistant
 Dr. Piyush Kumar Rai
 Dr. Aranya Verma
 Dr. Shipri Kiran
 Ms. Hema Nax

Thematic background - The emergence of the new COVID-19 vaccines has raised questions around their safety in different scenarios. From whether it's safe to have vaccine, to being vaccinated if you're already had COVID-19. A basic understanding of immunology can answer all these questions. If we are ever to return to normality, then the world's population needs to be immune to SARS-CoV-2, the virus that causes COVID-19. The National webinar on "COVID-19 Vaccination: Ifs and Buts" offers an effective platform for sharing expertise and ideas regarding vaccination.

Our Eminent Speakers
06 February 2021
 Time: 2:00 - 3:30 PM
 Registration link: <https://forms.gle/49N42797533v9y7>

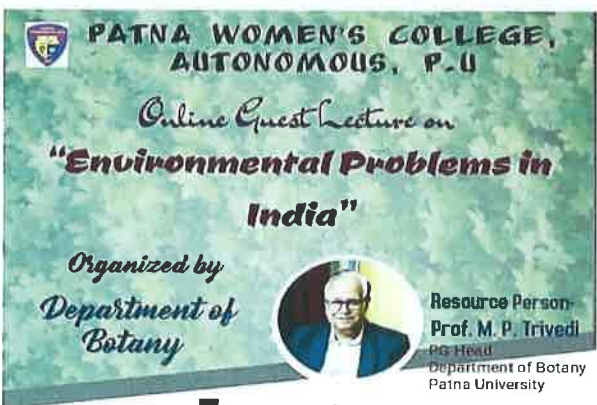
**NATIONAL WEBINAR ON
 "COVID 19 VACCINATION: IFS AND BUTS"
 ORGANIZED BY
 DEPARTMENT OF BOTANY
 PATNA WOMEN'S COLLEGE (AUTONOMOUS), PATNA UNIVERSITY
 UNDER THE AEGIS OF
 DEPARTMENT OF BIOTECHNOLOGY, GOVT. OF INDIA**



WHY VACCINE IS NEEDED FOR COVID-19



National Webinar On "Covid 19: Ifs and Buts" held on 06.02.2021



**PATNA WOMEN'S COLLEGE,
 AUTONOMOUS, P.U**

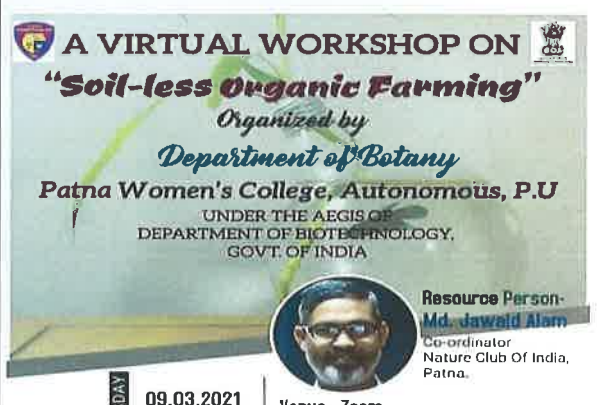
Online Guest Lecture on
**"Environmental Problems in
 India"**

Organized by
**Department of
 Botany**

Resource Person-
Prof. M. P. Trivedi
 PG Head
 Department of Botany
 Patna University

**FRIDAY 21.08.2020
 11:00 am**

Venue - Google Meet



**A VIRTUAL WORKSHOP ON
 "Soil-less Organic Farming"**

Organized by
Department of Botany

Patna Women's College, Autonomous, P.U
 UNDER THE AEGIS OF
 DEPARTMENT OF BIOTECHNOLOGY,
 GOVT. OF INDIA

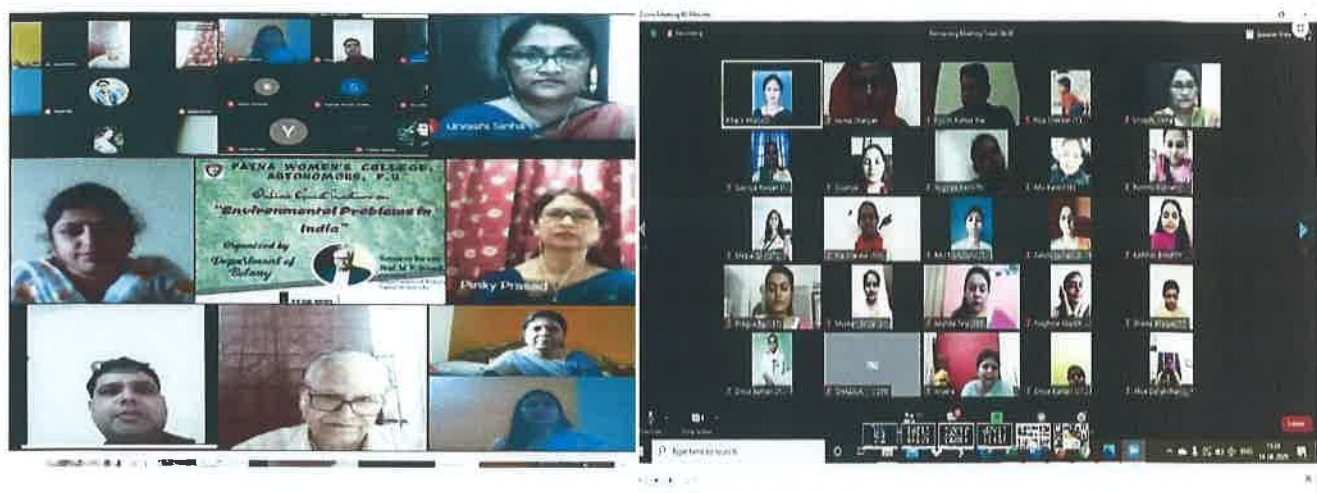
Resource Person-
Md. Jawaid Alam
 Co-ordinator
 Nature Club Of India,
 Patna.

**TUESDAY 09.03.2021
 3:00-5:00 PM**

Venue - Zoom
Registration Link:
<https://forms.gle/RanPd07h3jy4mjuR7>

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Guest lecture by Prof. M.P.Trivedi on the topic “Environmental problems of India”



National Webinar under DBT “Nurturing Research Culture and Enhancing Teaching Learning” on 17.6.2020 &18.6.2020

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Department of Computer Science



Faculty Development Programme under DBT “Moodle LMS Exploring New Horizons of Teaching Learning” on 15.05.2020 to 21.5.2020



Training Under DBT “Non-Teaching Staff of PWC Training” on 22.6. 2020 to 27.6. 2020



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हुनर

छात्राएं लिथोपेन लैंप भी कर रहीं तैयार

थ्रीडी प्रिंटिंग से बनाया फेस शिल्ड

अर्पिता ॥ पटना

पटना वीमेंस कॉलेज के कंप्यूटर साइंस विभाग की दो छात्राओं ने थ्रीडी प्रिंटिंग तकनीक का प्रयोग कर फेस शिल्ड और लिथोपेन लैंप तैयार किया है. विभाग की एसओडी मनोषा प्रसाद ने बताया कि द्वितीय वर्ष की छात्राओं को स्टार कॉलेज स्कीम के तहत दस दिनों की थ्रीडी प्रिंटिंग की ट्रेनिंग दी गयी थी. छात्राओं को ट्रेनिंग टेकप्रोलेन्ज के ट्रेनर जयदीप शर्मा और विवेकानंद प्रसाद ने दिया. छात्राओं को प्रोजेक्ट तैयार कर देना था, जिसमें नूर फातिमा और उनकी टीम (अर्पिता, खुशबू) ने लिथोपेन लैंप तैयार किया. परिधि प्रिया और आयशा जुनेस ने फेस शिल्ड तैयार किया है. कॉलेज की प्राचार्या डॉ. सिस्टर मारिया रजिम एमसी ने छात्राओं के इस प्रयास की सराहना की.



कॉलेज के स्टाफ को दिया गया फेस शिल्ड

परिधि प्रिया बताती है कि जिस तरह से कोविड 19 ने फिर से दरतक दे दी है, ऐसे में सक्रमण का खतरा काफी

बढ़ा है. फेस शिल्ड से हम खुद को काफी हद तक सुरक्षित रख सकते हैं. यही वजह है कि मैंने थ्रीडी प्रिंटिंग की मदद से शिल्ड का गैज तैयार किया और बाजार से ओपीएच शीट लिया, जिसकी डिजाइनिंग फेस शिल्ड की तरह की. यह शिल्ड काफी पॉकेट फ्रेंडली है. फ्लिडाल 20 फेस शिल्ड तैयार किया था, जिसे कॉलेज के स्टाफ को दिया गया है.

कॉलेज का थ्रीडी इमेज दिखाता है लिथोपेन लैंप

नूर बताती है कि लिथोपेन लैंप तैयार करने के लिए उन्होंने ड्रोन की मदद से कॉलेज का अलग-अलग एंगल से फोटो लिया था. इसके बाद इन फोटो का 3डी प्रिंटिंग प्रोग्राम तैयार किया और एलडडी लाइट लगाया. लाइट ऑन करते ही लैंप पर कॉलेज के अलग-अलग एंगल में थ्री डी इमेज दिखाई देती है.

Hands on Training "3D Printing"



Experiment on "Image Processing Using OpenCV"



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Experiment on “Encryption and Decryption Techniques using Java Programming Language”



Guest Lecture: Software Development on 06.02.2021



Guest Lecture: Technology and Startups on 31.01.2021



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Outreach Programme for Slum Children

Personal Hygiene, Covid – 19 awareness Programme, Tutorial and Painting Competition

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Vigyan Utsav :Short Film Making Competition

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DBT Research Project Presentation on 25.02.2021

Department of Microbiology



DBT project participants with supervisors and judges



Evaluation of models by Judges

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Models displayed by different participants



Students performing the experiments during the hands on training

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Extraction of plasmid DNA being performed by the students on Day1



Plasmid isolation was visualized by gel electrophoresis after staining with ethidium bromide.

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