

Department of Biotechnology

Proforma for submission of Annual Progress Report supported under Star College Scheme

1. Name of the College : Acharya Narendra Dev College
2. Name of Coordinator, designation, Address, Phone nos.

S. No.	Department	Details of Coordinators
1	Biomedical Science	Dr. Archana Pandey Designation: Associate Professor Complete Address: Department of Biomedical Science Phone: 9811525520 Email: archanapandey@andc.du.ac.in
2	Botany	Dr. Rashmi Sharma Designation: Associate Professor Complete Address: Department of Botany Phone: 7011301160 Email: rashmisharma@andc.du.ac.in
3	Chemistry	Dr. Sunita Hooda Designation: Associate Professor Complete Address: Department of Chemistry Phone: 9311830222 Email: sunitahooda@andc.du.ac.in
4	Computer Science	Dr. Harita Ahuja Designation: Associate Professor Complete Address: Department of Computer Science Phone: 9818511338 Email: haritaahuja@andc.du.ac.in
5	Electronics	Dr. Ravneet Kaur Designation: Associate Professor Complete Address: Department of Electronics Phone: 9810836367 Email: ravneetkaur@andc.du.ac.in
6	Physics	Dr. Arijit Chowdhuri Designation: Associate Professor Complete Address: Department of Physics Phone: 9811124002 Email: arijitchowdhuri@andc.du.ac.in
7	Zoology	Dr. Seema Makhija Designation: Professor Complete Address: Department of Zoology Phone: 9136563762 Email: seemamakhija@andc.du.ac.in

3. **Assessment duration :** 01/04/2020 to 31/03/2021 **Duration in years :** 1 year

4. **Details of Departments Supported**

S. No.	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty members	
			With Ph.D.	Without Ph.D.
			Total =54	
1	Biomedical Science	B.Sc.	05	00
2	Botany	B.Sc.	07	00
3	Chemistry	B.Sc. and M.Sc.	13	00
4	Computer Science	B.Sc.	06	00
5	Electronics	B.Sc.	04	01
6	Physics	B.Sc.	10	01
7	Zoology	B.Sc.	06	01

5. **Number & Date of Advisory committee meeting:** One online meeting was held on **September 29, 2020**.

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

The grant has helped in escalating hands-on trainings through workshops/ research projects/ routine lab work conducted under DBT-STAR college scheme. Because of which, students have got opportunity to get involved in several interdisciplinary projects (**Appendix I**). This in turn, has given our students an edge among their peers and helped them to shine at undergraduate level and bring accolades to the college in form of student publications, awards and fellowships (**Appendix II**). Students have continued to develop their skills by attending several training programs (**Appendix III**).

During this pandemic, students participated in various online training programs on the emerging and interesting topics of contemporary relevance. The Covid-19 pandemic has impacted the education system world-wide. However, as they say necessity is the mother of invention, it has also provided us an opportunity to pave way for introducing novel ways of teaching and learning. It has brought in the concept of e-education that replaced contact based face-to-face learning in real – time and helped the community to thrive. Despite the availability of limited resources and the new concept of online classes, the teaching at our college continued with the same zest and zeal. Teachers devised improvised yet instant out-of-the box solutions to enhance concept comprehension. Many a times, student's own kitchen was turned into a laboratory. In addition following the safety guidelines for Covid-19, students created their own virtual lab experiments in the college that could be demonstrated to their outstation batch mates and was added to our collection of virtual lab experiment library. These activities helped them acquire new skill-sets for data acquisition, fusion and interpretation. The links of all these at home activities and videos are given in (**Appendix IV**).

The students of computer science department tried their hands-on expertise on creation of new databases and innovative shell scripts. Using Python packages like matplotlib and turtle, the students used their creative ability and logical thinking to analyze, visualize and plot data. Moving a step towards creation of animation, the students used graphic package to obtain beautiful patterns. Last but not least, the students tried their hands-on developing apps required on day to day basis in a college environment like calculator app, time table app (**Appendix V**).

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

Introduced

1. Owing to online classes during pandemic, many assignment based experiments were created for better understanding of students.
2. Workshops and invited lectures were conducted to educate students about current scientific developments.
3. Organized panel discussion of department's alumni with current batches to create awareness among students for their future career prospects.
4. Virtual laboratory experiments were created (**Appendix III**).

Planning

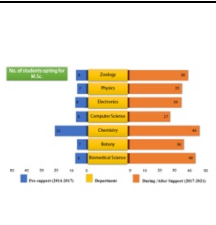
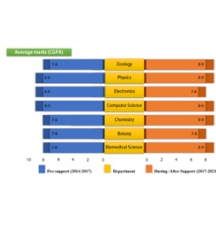
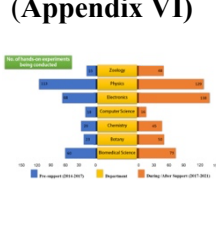
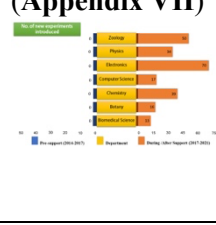
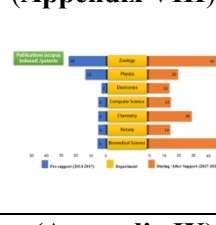
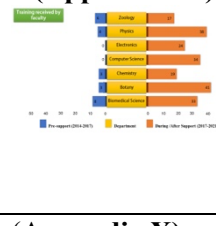
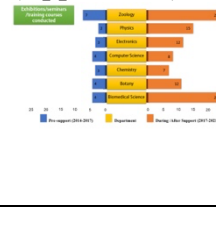
1. To organize faculty development programmes for both teaching and non-teaching staff.
2. To introduce more hands-on offline as well as virtual lab experiments and MOOC's.
3. Encourage Science communication by providing financial aid to students and faculties for publishing research papers and attending useful seminars/workshops.
4. Virtual trips to various research institutes to broaden student network and scientific exposure.

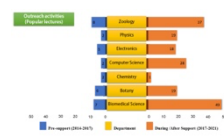
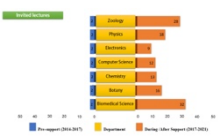
8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).

1. The Covid-19 pandemic has paved way for introducing newer ways of teaching and learning through online mode. Demonstration by introducing virtual lab experiments has provided a new dimension to students to understand the procedure and concept of the techniques in a better way.
2. Conduction of Interdisciplinary projects/ workshops/ seminars has helped the students' in their holistic development which will eventually broaden up their horizon of knowledge.
3. Initially there were problems with PMFS but with the co-operation of DBT Staff members, everything was sorted smoothly.

9. Key performance indicators

S. No.	Indicator	Pre-support (2014-2017)	During /After Support (2017-2021)	Remarks														
1	No. of students admitted	Total =1975								Total = 2700								
		M= 1316				F= 659				M=1816				F=884				
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	
		164	54	401	697	78	33	136	412	245	84	587	900	106	38	202	538	
2	No. of students passing out (%) Students Admitted/passing out (pass %)	100%								100%								
3	Drop-out rates (%)	Biomedical Science: 35 Botany: 46 Chemistry: 25 Computer Science: 21 Electronics: 22 Physics: 28 Zoology: 19								Biomedical Science: 17 Botany: 16 Chemistry: 07 Computer Science: 20 Electronics: 12 Physics: 16 Zoology: 19								

4	No. of students opting for MSc	Biomedical Science: 09 Botany: 07 Chemistry: 21 Computer Science: 08 Electronics: 09 Physics: 07 Zoology: 08	Biomedical Science: 44 Botany: 36 Chemistry: 46 Computer Science: 27 Electronics: 17 Physics: 35 Zoology: 38	
5	Average marks (CGPA)	Biomedical Science: 7-8 Botany: 7-8 Chemistry: 7-8 Computer Science: 8-9 Electronics: 8-9 Physics: 8-9 Zoology: 7-8	Biomedical Science: 8-9 Botany: 7-8 Chemistry: 8-9 Computer Science: 8-9 Electronics: 7-8 Physics: 8-9 Zoology: 8-9	
6	No. of hands-on experiments being conducted	Biomedical Science: 60 Botany: 23 Chemistry: 26 Computer Science: 18 Electronics: 68 Physics: 113 Zoology: 15	Biomedical Science: 73 Botany: 50 Chemistry: 45 Computer Science: 16 Electronics: 138 Physics: 129 Zoology: 48	(Appendix VI) 
7	No. of new experiments introduced	NIL	Biomedical Science: 13 Botany: 16 Chemistry: 39 Computer Science: 17 Electronics: 70 Physics: 34 Zoology: 50	(Appendix VII) 
8	Publications (scopus indexed) /patents, if any	Biomedical Science: 05 Botany: 04 Chemistry: 04 Computer Science: 04 Electronics: 02 Physics: 12 Zoology: 25	Biomedical Science: 49 Botany: 14 Chemistry: 28 Computer Science: 15 Electronics: 13 Physics: 20 Zoology: 45	(Appendix VIII) 
9	Training received by faculty	Biomedical Science: 08 Botany: 03 Chemistry: 03 Computer Science: 00 Electronics: 00 Physics: 04 Zoology: 06	Biomedical Science: 33 Botany: 41 Chemistry: 19 Computer Science: 34 Electronics: 24 Physics: 38 Zoology: 17	(Appendix IX) 
10	Exhibitions/seminars /training courses conducted	Biomedical Science: 04 Botany: 04 Chemistry: 03 Computer Science: 04 Electronics: 03 Physics: 02 Zoology: 07	Biomedical Science: 24 Botany: 12 Chemistry: 07 Computer Science: 10 Electronics: 12 Physics: 15 Zoology: 24	(Appendix X) 
11	Books/journals subscribed from grants		Books were not purchased as enough grant is available with the College for the purchase of library books	

12	Outreach activities (Popular lectures)	Biomedical Science: 07 Botany: 06 Chemistry: 02 Computer Science: 02 Electronics: 05 Physics: 02 Zoology: 08	Biomedical Science: 49 Botany: 19 Chemistry: 01 Computer Science: 28 Electronics: 18 Physics: 19 Zoology: 37	(Appendix XI) 
13	Colleges mentored to apply for DBT Star College grants	NA	NA	
14	Invited lectures	Biomedical Science: 02 Botany: 02 Chemistry: 02 Computer Science: 02 Electronics: 02 Physics: 02 Zoology: 02	Biomedical Science: 32 Botany: 16 Chemistry: 13 Computer Science: 12 Electronics: 09 Physics: 18 Zoology: 28	(Appendix XII) 

Self-Evaluations

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Biomedical Science	1. To expose undergraduate students to cutting edge technologies existing worldwide in frontier areas of science and more so which are important from the Indian perspective.	100%	2
	2. Impart hands-on practical training and exposure to latest tools for promotion of interdisciplinary studies.	100%	2, Due to Pandemic, online workshops/training programs were conducted
	3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops	100%	2
	4. Promote networking and strengthening of ties amongst research laboratories, institutions and industry for resource sharing and increasing efficiency	100	2
	5. Enhance capabilities of core instrumentation resources by	100%	2

	procuring latest equipment and upgrading of existing facilities..		
Botany	1. To expose undergraduate students to cutting edge technologies existing worldwide in frontier areas of science and more so which are important from the Indian perspective.	100%	2
	2. Impart hands-on practical training and exposure to latest tools for promotion of inter-disciplinary studies.	100%	2, Due to Pandemic, online workshops/training programs were conducted
	3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops	100%	2
	4. Promote networking and strengthening of ties amongst research laboratories, institutions and industry for resource sharing and increasing efficiency	100%	2
	5. Enhance capabilities of core instrumentation resources by procuring latest equipment and upgrading of existing facilities.	100%	2
Chemistry	1. To expose undergraduate students to cutting edge technologies existing worldwide in frontier areas of science and more so which are important from the Indian perspective.	100%	2
	2. Impart hands-on practical training and exposure to latest tools for promotion of inter-disciplinary studies.	100%	2, Due to Pandemic, online workshops/training programs were conducted
	3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops	100%	2
	4. Promote networking and	100%	2

	<p>strengthening of ties amongst research laboratories, institutions and industry for resource sharing and increasing efficiency</p> <p>5. Ignite a flavor of research in the minds of young undergraduate students so that get inspired to take up research as a viable career option.</p>	100%	2
Computer Science	<p>1. To expose undergraduate students to cutting edge technologies existing worldwide in frontier areas of science and more so which are important from the Indian perspective.</p>	100%	2
	<p>2. Impart hands-on practical training and exposure to latest tools for promotion of inter-disciplinary studies.</p>	100%	2, Due to Pandemic, online workshops/training programs were conducted
	<p>3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops</p>	100%	2
	<p>4. Train faculty and support staff in the arena of latest scientific research culture and methodology</p>	100%	2
	<p>5. Promote networking and strengthening of ties amongst research laboratories, institutions and industry for resource sharing and increasing efficiency</p>	100%	2
Electronics	<p>1. To expose undergraduate students to cutting edge technologies existing worldwide in frontier areas of science and more so which are important from the Indian perspective.</p>	100%	2
	<p>2. Impart hands-on practical training and exposure to latest tools for promotion of</p>	100%	2, Due to Pandemic, online workshops/training programs were conducted

	<p>inter-disciplinary studies.</p> <p>3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops</p> <p>4. Train faculty and support staff in the arena of latest scientific research culture and methodology</p> <p>5. Promote networking and strengthening of ties amongst research laboratories, institutions and industry for resource sharing and increasing efficiency</p>	100%	2
		100%	2
		100%	2
Physics	<p>1. To expose undergraduate students to cutting edge technologies existing worldwide in frontier areas of science and more so which are important from the Indian perspective.</p> <p>2. Impart hands-on practical training and exposure to latest tools for promotion of inter-disciplinary studies.</p> <p>3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops</p> <p>4. Train faculty and support staff in the arena of latest scientific research culture and methodology</p> <p>5. Promote networking and strengthening of ties amongst research laboratories, institutions and industry for resource sharing and increasing efficiency</p>	100%	2
		100%	2, Due to Pandemic, online workshops/training programs were conducted
		100%	2
		100%	2
		100%	2
Zoology	<p>1. To expose undergraduate students to cutting edge technologies existing</p>	100%	2

	<p>worldwide in frontier areas of science and more so which are important from the Indian perspective.</p> <p>2. Impart hands-on practical training and exposure to latest tools for promotion of interdisciplinary studies.</p> <p>3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops</p> <p>4. Enhance capabilities of core instrumentation resources by procuring latest equipment and upgrading of existing facilities.</p> <p>5. Ignite a flavor of research in the minds of young undergraduate students so that get inspired to take up research as a viable career option.</p>	<p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p>	<p>2, Due to Pandemic, online workshops/training programs were conducted</p> <p>2</p> <p>2</p> <p>2</p>
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