

**Department of Biotechnology**

**Proforma for submission of progress reports for evaluation to Star status by colleges 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: <a href="mailto:archanapandey@andc.du.ac.in">archanapandey@andc.du.ac.in</a>
2	Botany	<b>Dr. Rashmi Sharma</b> Designation: Assistant Professor Complete Address: Department of Botany Phone: 7011301160 Email: <a href="mailto:rashmisharma@andc.du.ac.in">rashmisharma@andc.du.ac.in</a>
3	Chemistry	<b>Dr. Sunita Hooda</b> Designation: Associate Professor Complete Address: Department of Chemistry Phone: 9311830222 Email: <a href="mailto:sunitahooda@andc.du.ac.in">sunitahooda@andc.du.ac.in</a>
4	Computer Science	<b>Dr. Harita Ahuja</b> Designation: Assistant Professor Complete Address: Department of Computer Science Phone: 9818511338 Email: <a href="mailto:haritaahuja@andc.du.ac.in">haritaahuja@andc.du.ac.in</a>
5	Electronics	<b>Dr. Ravneet Kaur</b> Designation: Assistant Professor Complete Address: Department of Electronics Phone: 9810836367 Email: <a href="mailto:ravneetkaur@andc.du.ac.in">ravneetkaur@andc.du.ac.in</a>
6	Physics	<b>Dr. Arijit Chowdhuri</b> Designation: Assistant Professor Complete Address: Department of Physics Phone: 9811124002 Email: <a href="mailto:arijitchowdhuri@andc.du.ac.in">arijitchowdhuri@andc.du.ac.in</a>
7	Zoology	<b>Dr. Seema Makhija</b> Designation: Associate Professor Complete Address: Department of Zoology Phone :9136563762 Email: <a href="mailto:seemamakhija@andc.du.ac.in">seemamakhija@andc.du.ac.in</a>

3. **Assessment duration :** 22/05/2017 to 15/07/2020 **Duration in years:**3 years

**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:** Requested but could not be held

6. **Qualitative improvements due to DBT support.**

- a. Under this scheme, more UG students have been exposed to frontier areas of science and also got opportunity to get involved in interdisciplinary projects (**Annexure I**). Results from the projects undertaken have allowed students to present their data in National and International conferences and have won prizes also (**Annexure II**). This has not only helped students' gain confidence but also inspire them to take up science as a viable career option.
- b. The inclination and commitment of UG students to do research at this early instance has resulted in them getting trained on hands-on projects in National Research laboratories and pursuing summer training in reputed research institutes under renowned scientists (**Annexure III**).
- c. UG Students have been successful in publishing their research findings in peer reviewed journals (**Annexure IV**). This has ignited a strong desire in them to acquire necessary skill-sets for the road ahead especially in fields of cutting-edge research.
- d. The support has instrumental in promoting active learning through the interactions between students and the concept of peer-to-peer learning (P2P) has been set in motion. Students by themselves have been able to organized hands-on intra/inter college workshops on topics in emerging areas of science involving seamless transfer of knowledge.
- e. Last but not the least, students have broken out of the realms of classroom teaching and rote learning to enjoy science by doing hands-on experiments. Introduction of new experiments on-the-bench which hitherto were only demonstrated helped them acquire new skill-sets for data acquisition, fusion and interpretation (**Annexure V, VI**)

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

**Introduced**

- a. Acharya Narendra Dev College under the aegis of DBT Star College Scheme organized a one-day Interdisciplinary Exhibit Presentation on 'New Frontiers in Science' in the College premises on October 22, 2019.
- b. Some of the workshops which were conducted by students of one department to provide hands-on training to students of other departments/colleges.

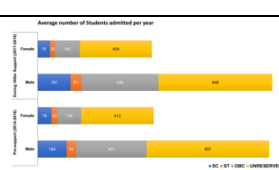
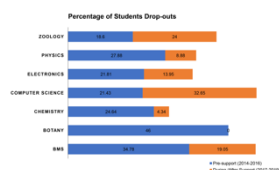
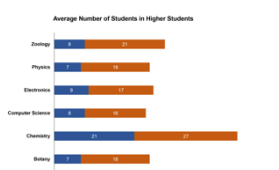
**Planning**

- a. To hold National level poster exhibition of all star colleges.
- b. College is helping faculty to be trained in novel pedagogical tools in teaching methods.

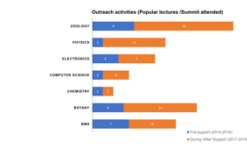
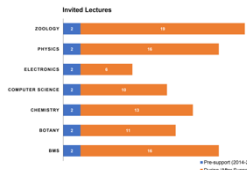
**8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant.**

- a. Introduction of interdisciplinary projects helped students to work in team and to take informed decisions.
- b. It is very essential to catch them young, therefore involving school students in workshops/projects would help to generate their interest towards science.
- c. Initially there were problems with PMFS but with the co-operation of DBT Staff members, everything was sorted smoothly. Would also like to request for maintenance grant for the instruments and contingency grant.

**9. Key performance indicators**

S. No	Indicator	Pre-support (2014-2016)	During /After Support (2017-2019)	Remarks												
1	No. of students admitted	Total =1975														
		M= 1316		F=659												
		S C	S T	O B C	G	S C	S T	O B C	G	S C	S T	O B C	G			
1 6 4	5 4	4 0 1	697	7 8	3 3	1 3 6	412	1 8 7	6 1	4 3 9	646	7 0	2 8		1 4 2	409
2	No. of students passing out	100%		100%												
3	Drop-out rates (%)	Biomedical Science: 35 Botany: 46 Chemistry: 25 Computer Science: 21 Electronics: 22 Physics: 28 Zoology: 19	Biomedical Science: 19 Botany: 00 Chemistry: 04 Computer Science: 33 Electronics: 14 Physics: 09 Zoology: 24													
4	No. of students opting for MSc/year	Biomedical Science: 09 Botany: 07 Chemistry: 21 Computer Science: 08 Electronics: 09 Physics: 07 Zoology: 08	Biomedical Science: 19 Botany: 18 Chemistry: 27 Computer Science: 16 Electronics: 17 Physics: 18 Zoology: 21													

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	<p><b>Percentage of Students with 8 or more CGPA after 1st Year</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Pre-support (2014-2016)</th> <th>During After Support (2017-2019)</th> </tr> </thead> <tbody> <tr> <td>ZOOLOGY</td> <td>48</td> <td>44.42</td> </tr> <tr> <td>PHYSICS</td> <td>26</td> <td>32</td> </tr> <tr> <td>ELECTRONICS</td> <td>29</td> <td>28</td> </tr> <tr> <td>COMPUTER SCIENCE</td> <td>28</td> <td>28.33</td> </tr> <tr> <td>CHEMISTRY</td> <td>20</td> <td>21.25</td> </tr> <tr> <td>BOTANY</td> <td>17</td> <td>20.19</td> </tr> <tr> <td>BMS</td> <td>10</td> <td>10.54</td> </tr> </tbody> </table>	Subject	Pre-support (2014-2016)	During After Support (2017-2019)	ZOOLOGY	48	44.42	PHYSICS	26	32	ELECTRONICS	29	28	COMPUTER SCIENCE	28	28.33	CHEMISTRY	20	21.25	BOTANY	17	20.19	BMS	10	10.54
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BMS	10	10.54																										
6	No. of hands-on workshops/experiments being conducted	Biomedical Science: 60 Botany: 23 Chemistry: 26 Computer Science: 18 Electronics: 68 Physics: 113 Zoology: 15	Biomedical Science: 69 Botany: 36 Chemistry: 41 Computer Science: 21 Electronics: 94 Physics: 130 Zoology: 28	Annexure V <p><b>Number of Hands-on Practicals</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Pre-support (2014-2016)</th> <th>During After Support (2017-2019)</th> </tr> </thead> <tbody> <tr> <td>ZOOLOGY</td> <td>15</td> <td>13</td> </tr> <tr> <td>PHYSICS</td> <td>113</td> <td>130</td> </tr> <tr> <td>ELECTRONICS</td> <td>68</td> <td>94</td> </tr> <tr> <td>COMPUTER SCIENCE</td> <td>18</td> <td>21</td> </tr> <tr> <td>CHEMISTRY</td> <td>26</td> <td>41</td> </tr> <tr> <td>BOTANY</td> <td>23</td> <td>36</td> </tr> <tr> <td>BMS</td> <td>60</td> <td>69</td> </tr> </tbody> </table>	Subject	Pre-support (2014-2016)	During After Support (2017-2019)	ZOOLOGY	15	13	PHYSICS	113	130	ELECTRONICS	68	94	COMPUTER SCIENCE	18	21	CHEMISTRY	26	41	BOTANY	23	36	BMS	60	69
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7	No. of new experiments introduced	Zero	Biomedical Science: 09 Botany: 13 Chemistry: 15 Computer Science: 03 Electronics: 26 Physics: 17 Zoology: 13	Annexure VI <p><b>Number of New Experiments Introduced</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Pre-support (2014-2016)</th> <th>During After Support (2017-2019)</th> </tr> </thead> <tbody> <tr> <td>ZOOLOGY</td> <td>0</td> <td>13</td> </tr> <tr> <td>PHYSICS</td> <td>0</td> <td>17</td> </tr> <tr> <td>ELECTRONICS</td> <td>0</td> <td>26</td> </tr> <tr> <td>COMPUTER SCIENCE</td> <td>0</td> <td>3</td> </tr> <tr> <td>CHEMISTRY</td> <td>0</td> <td>15</td> </tr> <tr> <td>BOTANY</td> <td>0</td> <td>13</td> </tr> <tr> <td>BMS</td> <td>0</td> <td>9</td> </tr> </tbody> </table>	Subject	Pre-support (2014-2016)	During After Support (2017-2019)	ZOOLOGY	0	13	PHYSICS	0	17	ELECTRONICS	0	26	COMPUTER SCIENCE	0	3	CHEMISTRY	0	15	BOTANY	0	13	BMS	0	9
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BMS	0	9																										
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: 22 Botany: 05 Chemistry: 18 Computer Science: 12 Electronics: 09 Physics: 15 Zoology: 30	Annexure VII <p><b>Publications (Scopus indexed) patents</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Pre-support (2014-2016)</th> <th>During After Support (2017-2019)</th> </tr> </thead> <tbody> <tr> <td>ZOOLOGY</td> <td>0</td> <td>25</td> </tr> <tr> <td>PHYSICS</td> <td>0</td> <td>15</td> </tr> <tr> <td>ELECTRONICS</td> <td>0</td> <td>9</td> </tr> <tr> <td>COMPUTER SCIENCE</td> <td>0</td> <td>12</td> </tr> <tr> <td>CHEMISTRY</td> <td>0</td> <td>18</td> </tr> <tr> <td>BOTANY</td> <td>0</td> <td>5</td> </tr> <tr> <td>BMS</td> <td>0</td> <td>22</td> </tr> </tbody> </table>	Subject	Pre-support (2014-2016)	During After Support (2017-2019)	ZOOLOGY	0	25	PHYSICS	0	15	ELECTRONICS	0	9	COMPUTER SCIENCE	0	12	CHEMISTRY	0	18	BOTANY	0	5	BMS	0	22
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9	Training received by faculty	Biomedical Science: 08 Botany: 03 Chemistry: 03 Computer Science: 00 Electronics: 00 Physics: 04 Zoology: 06	Biomedical Science: 13 Botany: 10 Chemistry: 13 Computer Science: 07 Electronics: 07 Physics: 03 Zoology: 12	Annexure VIII <p><b>Training Received by Faculty</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Pre-support (2014-2016)</th> <th>During After Support (2017-2019)</th> </tr> </thead> <tbody> <tr> <td>ZOOLOGY</td> <td>6</td> <td>6</td> </tr> <tr> <td>PHYSICS</td> <td>4</td> <td>3</td> </tr> <tr> <td>ELECTRONICS</td> <td>0</td> <td>7</td> </tr> <tr> <td>COMPUTER SCIENCE</td> <td>0</td> <td>7</td> </tr> <tr> <td>CHEMISTRY</td> <td>3</td> <td>10</td> </tr> <tr> <td>BOTANY</td> <td>3</td> <td>7</td> </tr> <tr> <td>BMS</td> <td>8</td> <td>5</td> </tr> </tbody> </table>	Subject	Pre-support (2014-2016)	During After Support (2017-2019)	ZOOLOGY	6	6	PHYSICS	4	3	ELECTRONICS	0	7	COMPUTER SCIENCE	0	7	CHEMISTRY	3	10	BOTANY	3	7	BMS	8	5
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10	Exhibitions/seminars/training courses conducted	Biomedical Science: 04 Botany: 04 Chemistry: 03 Computer Science: 04 Electronics: 03 Physics: 02 Zoology: 07	Biomedical Science: 13 Botany: 08 Chemistry: 05 Computer Science: 07 Electronics: 09 Physics: 11 Zoology: 18	Annexure IX <p><b>Exhibitions/seminars/training courses/Projects /visits conducted</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Pre-support (2014-2016)</th> <th>During After Support (2017-2019)</th> </tr> </thead> <tbody> <tr> <td>ZOOLOGY</td> <td>7</td> <td>11</td> </tr> <tr> <td>PHYSICS</td> <td>2</td> <td>9</td> </tr> <tr> <td>ELECTRONICS</td> <td>3</td> <td>6</td> </tr> <tr> <td>COMPUTER SCIENCE</td> <td>4</td> <td>3</td> </tr> <tr> <td>CHEMISTRY</td> <td>3</td> <td>5</td> </tr> <tr> <td>BOTANY</td> <td>4</td> <td>4</td> </tr> <tr> <td>BMS</td> <td>4</td> <td>9</td> </tr> </tbody> </table>	Subject	Pre-support (2014-2016)	During After Support (2017-2019)	ZOOLOGY	7	11	PHYSICS	2	9	ELECTRONICS	3	6	COMPUTER SCIENCE	4	3	CHEMISTRY	3	5	BOTANY	4	4	BMS	4	9
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1	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 /Summit attended)/visits	Biomedical Science: 07 Botany: 06 Chemistry: 02 Computer Science: 02 Electronics: 05 Physics: 02 Zoology: 08	Biomedical Science: 09 Botany: 14 Chemistry: 02 Computer Science: 05 Electronics: 07 Physics: 12 Zoology: 19	Annexure X 
13	Colleges mentored to apply for DBT Star College grants	NA	NA	NA
14	Invited lectures	Biomedical Science: 02 Botany:02 Chemistry:02 Computer Science:02 Electronics:02 Physics:02 Zoology:02	Biomedical Science: 16 Botany: 11 Chemistry: 13 Computer Science: 10 Electronics: 06 Physics: 16 Zoology: 19	Annexure XI 

## 10. Self evaluation

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
<b>Biomedical Science</b>	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
	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
<b>Botany</b>	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
	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
<b>Chemistry</b>	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
	3. Up-grading existing undergraduate teaching and training framework to include state-of-the-art technical research projects and summer training workshops	100%	2

	<p>4. Promote networking and 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>	<p>100%</p> <p>100%</p>	<p>2</p> <p>2</p>
<b>Computer Science</b>	<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>	<p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p>
<b>Electronics</b>	<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</p>	<p>100%</p> <p>100%</p>	<p>2</p> <p>2</p>

	<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>	<p>100%</p> <p>100%</p> <p>100%</p>	<p>2</p> <p>2</p> <p>2</p>
<b>Physics</b>	<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>	<p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p>



<b>Zoology</b>	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
	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. Enhance capabilities of core instrumentation resources by procuring latest equipment and upgrading of existing facilities.	100%	2
	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.	100%	2

**11. 2 new dimensions that shall be added if accorded Star status (within 200 words)**

- a. Mentoring colleges in remote areas and help them frame a proposal to acquire DBT sponsored STAR support. Specifically, we would like to target aspirational district colleges and make them aware of the opportunities available besides hand-holding them to draft the proposal for support. It is envisaged that our prior experience will help them aware of the pit-falls and actively inspire them to identify and shape their proposal towards their strong points. In this way the college envisions giving it back to the society and promote peer-to-peer learning processes.
  
- b. Our faculty has already garnered some training in development of e-content. In the current pandemic environment hybrid learning has profound importance and is expected to dominate future of teaching-learning process. In view of this there is a requirement of development of MOOCs (Massive Online Open Courses). MOOCs are typically characterized by their ability to reach large populations that are separated by distance and time. MOOCs identify with education sans frontiers and are expected to do away with existing barriers of high fees, language and technology.



Acharya Narendra Dev College  
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Govindpuri, Kalkaji  
New Delhi-110019

**Dr Ravi Toteja**  
**Course Coordinator**  
**(With Seal)**



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(University of Delhi)  
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New Delhi-110019

**Dr Ravi Toteja**  
**Head of the Institution**  
**(With Seal)**

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