ENLIGHTENMENT TO PERFECTION

SELF-STUDY REPORT

for submission to
the National Assessment & Accreditation Council

VOLUME III

Departmental Profile
(Faculty Council for PG Studies in Science)

DECEMBER 2015

UNIVERSITY OF NORTH BENGAL

[www.nbu.ac.in]

Raja Rammohunpur, Dist. Darjeeling

Declaration by the Head of the Institution

I certify that the data included in this Self-Study Report (SSR) are true to the best of my knowledge.

This SSR is prepared by the institution after internal discussions, and no part thereof has been outsourced.

I am aware that the Peer team will validate the information provided in this SSR during the peer team visit.

Somnath Ghosh 1.12.2015

Signature of the Head of the institution
Vice-Chancellor
University of North Bengal

Prof. Somnath Ghosh
Vice-Chancellor
University of North Bengal
Dist. Darjeeling-734013

Place: University of North Bengal

Date: 01.12.2015

TABLE OF CONTENTS

Evaluative Reports of the Departments/Centres under the Faculty of Science

1. Name of the Department: **Anthropology**
2. Year of Establishment: **2001**
3. Is the Department part of a School/Faculty of the university? : **Faculty of the University**
4. Names of programme offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Se., D.Litt., etc.): **PG, Ph.D.**
5. Interdisciplinary programmes and departments involved: **Nil**
6. Courses in collaboration with other universities, industries, foreign institutions, etc.
7. Details of programmes discontinued, if any, with reasons: **Nil**
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System: **Semester System**
9. Participation of the department in the courses offered by other departments
10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professor/ Asst. Professors/ others)

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	-	-	-
Associate Professor	1	1	1
Asst. Professors	4	2	2
Others	1	1	1

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of years of Experience	No. of Ph.D./ M. Phil. students guided for the last 4 years
Dr. Jaydip Sen	Ph.D.	Associate Professor	Physical Anthropology & Human Genetics	9 years in UG level and 8 years in PG level	One
Dr. Samar Kumar Biswas	M.Sc. Ph.D.	Assistant Professor	Social-Cultural Anthropology	13 years in PG level	Nil
Dr. Pinak Tarafdar	M.Sc. Ph.D.	Assistant Professor	Social-Cultural Anthropology	9 years in PG level	Nil

12. List of Senior Visiting Fellow, adjunct, emeritus professors

i) Prof. Buddhadeb Choudhuri (Retd.)

ii) Prof. S.K. Ghosh Moulik

iii) Prof. Paramananda Dash Shama

iv) Prof. Kaushik Sankar Bose

13. Percentage of classes taken temporary faculty-programme-wise information

14. Programme-wise Students Teacher Ratio

Semester 2nd 2014-2015- 7:3

Semester 4th 2014-2015-10:3

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual.

Technical Staff: N/A, Administrative: 1 sanctioned & filled.

16. Research trust areas as recognized by major agencies

Medical Anthropology, Human Nutrition, Environmental degradation, tribal studies, Dalit studies etc.

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

Year	ongoing Projects	Completed	Funding Agencies	Total grants received
2006-2007 & 2007-2008	3	-	UGC	200000
2008-2009	-	3	UGC	625700
2009-2010	1	1	UGC	
2010-2011		2	UGC and SSMSED	
2011-2012	1	1	UGC and ICSSR	
2012-2013	1	1	UGC and ICSSR	
2013-2014	2	1	UGC and NBU	777100

18. Inter-institutional collaborative projects and associated received

a) National Collaboration **N/A** b) International Collaboration **N/A**

19. Departmental Projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received:

2013-2014: UGC and NBU Rs. 777100/=

20. Research facility/ centre with

State recognition

National recognition

International recognition

21. Special research laboratories sponsored by/ created by industry or corporate bodies. **N/A**

22. Publications: **Please see volume IV of SSR.**

23. Details of patents and income generated **N/A**

24. Areas of consultancy and income generated **N/A**

25. Faculty selected nationally/internationally to visit other laboratories/ institutions/industries in India and abroad **N/A**

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify) **Three**

27. Faculty recharging strategies (UGC, ASC, Refresher/orientation programmes/ workshops, training programmes and similar programs).

UGC Refresher Course Organized by the Department of Anthrropology: **3**

28. Students projects

o Percentage of students who have done in-house projects including inter-departmental

projects **N/A**

o Percentage of students doing projects in collaboration with other universities/ industry/

institute **N/A**

29. Awards/ recognitions received at the national and international level by

o Faculty **N/A**

o Doctoral/ post doctoral fellows **N/A**

o Students **N/A**

30. Seminar/ Conferences/Workshops organized and the source funding

(national/international) with details of outstanding participants, if any.

i)Annual Conference of the Indian Anthropological Society 9-11 December, 2006

ii) Anthropology and Emerging Issue 16-17 February, 2009

iii) Emerging Areas in Anthropology 21-22 March, 2011

iv) Modern trends in Anthropology 21-22 March, 2013

v) Anthropology in the 21st Century 25th -26th March 2014

31. Code of ethics for research followed by the departments

32. Students Profile programme-wise

Name of the Programme (refer to question no.4)	Applications Received	Selected		Pass Percentage	
		Male	Female	Male	Female
Semester 2nd	-	3	4		
Semester 4th	-	0	10		
Ph.D.	2	1	1	100	100

33. Diversity of students

Name of the Programme 90 refer to question no.4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
PG 2nd Semester 2014-2015	6 (85.71%)	0	1 (14.28%)	0
PG 4th Semester 2014-2015	10 (100%)	0	0	0

Ph.D. 2014-2015	2 (100%)	0	0	0

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET,

GATE and other competitive examinations? Give details category-wise.

NET Qualified 14

SET Qualified 2

35. Student progression

Student progression	Percentage against enrolled
UG to PG	
PG to M. Phil.	
PG to Ph.D.	Current session 10%
Ph.D. to Post Doctoral	
Employed o Campus selection o Other than campus recruitment	
Entrepreneurs	

36. Diversity of staff

Percentage of faculty who are graduates	
Of the same university	
From other universities within the State	**100%**
From universities from other States from	
Universities outside the country	

37. Number of faculty who were awarded M. Phil., Ph.D. D.Sc. and D. Litt. During the assessment period: **2**

38. Present details of departmental infrastructural facilities with regards to

a) Library: **468 books in the seminar library**

b) Internet facilities for staff and students: **In office room, laboratory rooms, teachers rooms and seminar library room.**

c) Total number of class rooms: **3**

d) Class rooms with ICT facility: **2**

e) Students Laboratories: **3**

f) Research Laboratories: **N/A**

39. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/ university : **Presently 15**

b) from other institution/ universities : **Presently 04**

40. Number of post graduate students getting financial assistance from the university. **Presently 3**

41. Was any need assessment exercise undertaken before the development of new programme (S)? If so, highlight the methodology **N/A**

42. Dose the department obtain feedback from

a) Faculty on curriculum as well as teaching- learning-evaluation? If yes, how the department utilize the feedback? **N/A**

b) Students of staff, curriculum and teaching- learning-evaluation and how dose the department utilize the feedback? **N/A**

c) alumni and employers on the programme offered and how dose the department utilize the feedback? **N/A**

43. List the distinguished alumni of the department (maximum 10)

i) Nitish Mondal

ii) Somenath Bhattacharjee

iii) Biswanath Gan

iv) Amit Ghosh

v) Mandip Tamang

vi) Ranjit Sengupta

vii) Suvendu Kundu

44. Give details of student enrichment programmes (special lectures/ workshop/ seminar) involving external experts.

Special Lectures: 09

45. List the teaching methods adopted by the faculty for different programmes.

Class rooms, Smart Boards

46. How dose the department ensure that programme objectives are constantly met and learning outcomes are monitored?

Faculty environment by study new

47. Highlight the Participation of students and faculty in extension activities. **N/A**

48. Give details of "beyond syllabus scholarly activities" of the department. **N/A**

49. State whether the programme /department is accredited / graded by other agencies? If yes, give details. **N/A**

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

51. Details five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

The strengths are its thrust areas in medical anthropology, human nutrition, tribal studies etc. another thrust areas the field studies.

However, the department is suffering from a lack of sufficient faculty and space.

52. Future plans of the department.

Some job-oriented courses may be opened. Inter-University collaboration is needed. Multi-

Disciplinary research is also needed.

1. Name of the Department: **Department of Biotechnology**

2. Year of establishment: 2001-02

3. Is the Department part of a School/Faculty of the University?

Faculty

4. Names of programmes offered (UG,PG,M.Phil,Ph.D., Integrated Masters; Integrated Ph.D, D.Sc., D.Litt., etc.

M.Sc., and Ph.D

5. Interdisciplinary programmes and departments involved.

Interdisciplinary Research Programmes (evident by research projects funded by different funding agencies)

Biotechnology & Chemistry: 03 research projects (02, completed; 01, ongoing)

Biotechnology & Physics: 01 innovative research project (ongoing)

Biotechnology & Zoology: 03 research projects (01, completed; 02, ongoing)

Biotechnology & Botany: 02 research projects (completed)

6. Courses in collaboration with other universities, industries, foreign, institutions, etc.

(i) First Training Programme titled on "Hands-on Horti-Floriculture Training for Economic upliftment of selected rural youth from Indian Border areas" ; duration: 30.8.2011- 07-09.2011; No. of trainees-**13**; training on Gerbera, hybrid tomato, Mushroom, Gladiolus, broccoli, and Capsicum; Jointly organized with SSB, Siliguri Frontier, Ministry of Home Affairs, Govt. of India.

(ii) Second Training Programme titled on "Hands-on Horti-Floriculture Training for Economic upliftment of selected rural youth from Indian Border areas" ; duration: 20.9.2011- 30-09.2011; No. of trainees-**18**; training on Gerbera, hybrid tomato, Mushroom, Gladiolus, broccoli, and Capsicum. Jointly organized with SSB, Siliguri Frontier, Ministry of Home Affairs, Govt. of India.

(iii) Third Training Programme titled on "Hands-on Horti-Floriculture Training for Economic upliftment of selected rural youth from Indian Border areas" ; duration: 17.10.2011- 29-10.2011; No. of trainees-**10**; training on Gerbera, hybrid tomato, Mushroom, Gladiolus, broccoli, and Capsicum. Jointly organized with SSB, Siliguri Frontier, Ministry of Home Affairs, Govt. of India.

(iv) Fourth Training Programme titled on "Hands-on Horti-Floriculture Training for Economic upliftment of selected rural youth from Indian Border areas" ; duration: 27.2.2012- 07-03-2012; No. of trainees-**18**; training on Gerbera, hybrid tomato, Mushroom, Gladiolus, broccoli, and Capsicum. Jointly organized with SSB, Siliguri Frontier, Ministry of Home Affairs, Govt. of India.

(v) Fifth Training Programme titled on "Hands-on Horti-Floriculture Training for Economic upliftment of selected rural youth from Indian Border areas" ; duration: 19.3.2012- 28-03.2011; No. of trainees-**13**; training on Gerbera, hybrid tomato, Mushroom, Gladiolus, broccoli, and Capsicum, Jointly organized with SSB, Siliguri Frontier, Ministry of Home Affairs, Govt. of India.

7. Details of programmes discontinued, if any, with reasons

NA

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System.

Semester system

9. Participation of the department in the courses offered by other departments.

(i**) Refreshers courses in Life Science**, organized by Academic Staff College, NBU.

(ii) **Orientation courses**, organized by Academic Staff College, NBU

(iii) **Refreshers course (s)** in Geography and Applied geography, Women studies, & Anthropology

(iv) **Participation in the Extension Programme** of the Center for Women Studies

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/other).

	Sanctioned	**Filled**	**Actual (including CAS & MPS)**
Professor	00	00	00
Associate Professors	01	01	01
Asst. Professors	04	03	04
Technical Assistant	01	00	01

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance.

Name	Qualification	Designation	Area of Specialization	No. of years of Experience	No. of Ph.D/ M.Phil. Students Guided for The last 4 Years
Dr. Ranadhir Chakraborty	M.Sc., Ph.D.	Associate Professor	Molecular Microbiology, Biomolecular Technology	19 years of Teaching; (Post-Ph.D)19 years of teaching experience	10
Dr. Dipanwita Saha	M.Sc., Ph.D.	Assistant Professor	Molecular Biochemistry and Plant Biotechnology, Eco-pathology	11 years of Teaching; (Post-Ph.D)16 years of research experience	09
Dr. Shilpi Ghosh	M.Sc., Ph.D.	Assistant Professor	Molecular Biotechnology	11 years of Teaching; (Post-Ph.D)16 years of research experience	08
Dr. Anoop Kumar	M.Sc., Ph.D.	Assistant Professor	Cancer Biology, Molecular & Cellular Biology	06 years of Teaching & demonstration; (Post-Ph.D) 06 years	02

12. List senior Visiting Fellows, adjunct faculty, emeritus professors.

GUEST FACULTY FROM OTHER DEPARTMENTS OF THE UNIVERSITY

Name/ Department	designation	specialization	Period
Prof. B. K. Das (Chemistry)	Professor	Bio-inorganic & Spectroscopy	2002-06
Prof. S. N. Bose (Chemistry)	Professor	Organic Chemistry	2006-15

Prof. A. K. Chakravarty (Zoology)	Professor	Immunology	2002-15
Prof. T. K. Chaudhury (Zoology) 2002-2006	Professor	Immunology	
Dr. A. Saha (Botany) 2002-2005	Associate Professor	Mycology & Tissue culture	
Mr. C. R. Naik (Comp. Center)	System Engineer	Computer & Statistics	2002-2015
Prof. J. K. Mandal (Comp. Science) [served till his resignation]	Professor	Computer science & Application	2002-2015

FACULTY (other than core faculty) INVOLVED IN SUPERVISING PROJECTS

Name/ Department	department	Project on
Prof. A. K. Chakravarty (Zoology)	Professor	Immuno-biotechnology
Prof.		
Prof. A. Mukherjee (Zoology)	Professor	Insect-biotechnology
Prof. T. K. Chaudhury (Zoology)	Professor	Immunology
Prof. J. Pal (Zoology)	Professor	Fish biotechnology
Dr. A. Saha (Botany)	Reader	Plant biotechnology

13. Percentage of classes taken by the faculty – programme –wise information.

Semester 1:					
Sr. No.	Subject Name	Theory/Practical	Compulsory/ Elective	Credits	Name of Faculty Member(s) teaching the subject **(Kindly the full name i.e. Surname**

					followed by the First Name)
1	Biochemistry	Theory	Compulsory	3	Saha Dipanwita
2	Cell & Developmental Biology	Theory	Compulsory	3	Ghosh Shilpi; Saha Dipanwita;Kumar Anoop (from. 2013)
3	Molecular Biology	Theory	Compulsory	3	Chakraborty Ranadhir, Ghosh Shilpi,
4	Analytical Techniques	Theory	Compulsory	3	Bose Samarendra Nath, Ghosh Shilpi
5	Biostatistics and Computer Applications	Theory	Compulsory	3	Nayak Chittaranjan; Chakraborty Ranadhir
6	Seminar/Journal Club/Assignment	Theory	Compulsory	1.5	Chakraborty Ranadhir, Ghosh Shilpi, Saha Dipanwita, Kumar Anoop
7	Lab I-Biochemistry and Analytical Techniques	Practical	Compulsory	5	Saha Dipanwita, Ghosh Shilpi
8	Lab II-Molecular Biology	Practical	Compulsory	5	Chakraborty Ranadhir, Ghosh Shilpi
Semester 2:					
Sr. No.	Subject Name	Theory/Practical	Compulsory/ Elective	Credits	Name of Faculty Member(s) teaching the subject
1	Immunology	Theory	Compulsory	3	Chakravarty Ashim Kumar
2	Microbiology and Industrial Applications	Theory	Compulsory	3	Chakraborty Ranadhir, Saha Dipanwita
3	Genetic Engineering	Theory	Compulsory	3	Chakraborty Ranadhir, Ghosh Shilpi, Saha Dipanwita,

					Kumar Anoop
4	Genetics	Theory	Compulsory	3	Chakraborty Ranadhir, Saha Dipanwita
5	Genomics & Proteomics	Theory	Compulsory	3	Ghosh Shilpi; Saha Dipanwita
6	Seminar/Journal Club/Assignment	Theory	Compulsory	1.5	Chakraborty Ranadhir, Saha Dipanwita, Ghosh Shilpi, Kumar Anoop
7	Lab III- Immunology	Practical	Compulsory	3	Saha Dipanwita, Kumar Anoop
8	Lab IV- Microbiology	Practical	Compulsory	3	Chakraborty Ranadhir
9	Lab V-Genetic Engineering	Practical	Compulsory	4	Chakraborty Ranadhir, Ghosh Shilpi, Saha Dipanwita
Semester 3:					
Sr. No.	Subject Name	Theory/Practical	Compulsory/ Elective	Credits	Name of Faculty Member(s) teaching the subject
1	Bioprocess Engineering & Technology	Theory	Compulsory	3	Chakraborty Ranadhir, Saha Dipanwita
2	Immunotechnology	Theory	Compulsory	3	Chakravarty Ashim Kumar
3	Molecular Virology	Theory	Compulsory	3	Saha Dipanwita
4	IPR & Biosafety	Theory	Compulsory	3	Chakraborty Ranadhir, Saha Dipanwita, Kumar Anoop
5	Elective-I			3	Ghosh Shilpi
6	Elective-II			3	Chakraborty Ranadhir, Saha Dipanwita
7	Lab VI- Bioprocess Engineering & Technology	Practical	Compulsory	3	Chakraborty Ranadhir, Saha Dipanwita
8	Lab VII- Based on Elective	Practical	Compulsory	3	Ghosh Shilpi, Chakraborty

					Ranadhir, Saha Dipanwita, Kumar Anoop
9	Project Proposal Presentation	Practical	Compulsory	2.5	Chakraborty Ranadhir, Saha Dipanwita, Ghosh Shilpi, Kumar Anoop
List of Electives Subjects					
Sr. No.	Subject Name	Theory/Practical	Compulsory/ Elective	Credits	Name of Faculty Member(s) teaching the subject
1	Microbial Technology			3 (Th.) + 3 (Pr.)	Chakraborty Ranadhir, Saha Dipanwita
2	Plant Biotechnology			do	Ghosh Shilpi
3	Computational Biology			do	Chakraborty Ranadhir
4	Animal Biotechnology			do	Kumar Anoop
5					
6					
7					
8					
9					
10					
Semester 4:					
Sr. No.	Subject Name	Theory/Practical	Compulsory/ Elective	Credits	Name of Faculty Member(s) teaching the subject
1	Bioentrepreneurship	Theory	Compulsory	4	Chakraborty Ranadhir, Kumar Anoop
2	Project Work	Practical	Compulsory	20	Chakraborty Ranadhir, Saha Dipanwita, Ghosh Shilpi, Kumar Anoop
3	Entrepreneural Project Proposal	Submission of project &	Compulsory	2.5	Chakraborty Ranadhir, Saha

	Presentation	defense of the said bankable project			Dipanwita, Ghosh Shilpi, Kumar Anoop

14. Programme-wise Student Teacher Ratio.

M.Sc (biotechnology): 2 : 1

Ph.D Course Work: 2:1

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual.

16. Research thrust areas as recognized by major funding agencies.

(i) Development of focused Research to address Six major issues:

a. To seek biotechnological solutions in order to check economic loss of Tea industry (basic backbone of economy of the region where the University is situated) due to pests and diseases.

b. To search for novel anti-diabetic, and anti-proliferative agents in preventing diabetes, and cancer.

c. To study molecular mechanism(s) of stress (nutritional, abiotic, and biotic) resistance in macroorganism, and microorganisms using high-throughput techniques including genome-wide transcriptomics.

d. To find biomedical solution(s) [novel drug design (Docking and molecular dynamics simulations)]; Synthesis of metal-nanoparticles using both conventional and Green synthesis, applications on MAR pathogens; studying synergistic effect(s) using natural quorum quenchers and antibiotics, NPs/NP-conjugates and antibiotics on MAR pathogens] to curb the menace of multiple-antibiotic-resistant pathogens, anti-cancer plant-based drug screening using different cell lines and mode of action, Search for drugs for the control of Alzheimers disease- regulation and study of mode-of-action in appropriate cell-lines.

e. To catapult research causing fundamental breakthrough in understanding the molecular basis of oligotrophy in bacteria

f. Environmental genomics

g. Applied microbial research: cloning and expression of biotechnologically important metabolic enzymes

h. Search for lead antifungal compounds of plant origin

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received Give the names of the funding agencies, project title and grants received project-wise.

Sl.No.	Title of the Project/PI & CoPI	Funding Agency	Duration From To	No. of Scientists/ Associates working under the project	Total Approved Cost of the Project (in Rs.) [in Lakh]
ONGOING PROJECTS OF THE FACULTY MEMBERS					
1.	Isolation of Carbohydrate polymer-producing bacteria from waters of city-waste polluted Mahananda River at Siliguri and Characterization of suitable biopolymers exhibiting high flocculating activities [P.I: **Dr. R. Chakraborty**]	UGC, New Delhi	2012-15	01	Rs. 16.0 Lakh
2.	Search for novel quorum sensing modulators of biofilm-forming microbes from plant sources [Mentor & Co PI: **Dr. R. Chakraborty**]	DBT-BioCare Programme {P.I: Dr. Runu Ghosh}	2012-15	02 (including the P.I)	Rs. 50.0 Lakh
3.	A model study aimed at First-line Screening and evaluation of real prevalence of metallo-B-lactamases in antibiotic-resistant bacteria present in city-waste waters of Siliguri.[P.I: **Dr. R. Chakraborty]**	University research Support	2014-15	-	Rs. 0.75 Lakh
4.	Development of high-resolution optical detector for growth monitoring of bacteria in liquid culture[P.I. Dr. M.K. Das, Deptt. Of Physics; CoPI: **Dr. R. Chakraborty,** Deptt. Of Biotechnology]	UGC Innovative Project in Science	2015-18	01	Rs. 18.0 Lakh
5.	Formulation of	DBT, Govt. of West	2015-18	01	Rs.18.83

	Probiotics for Major and Minor Carps [P.I: Dr. S. Barat, Deptt of Zoology; CoPI: Dr. **R. Chakraborty**, Deptt. Of Biotechnology	Bengal			Lakh
6.	Bioprospecting thermophilic lignocellulose deconstructing microbial consortium: Mining of cellulolytic glycoside hydrolases for biotechnology[P.I: **Dr. Shipi Ghosh**; CoPI: **Dr. R. Chakraborty**]	DST, GoI	2015-18	01	Rs. 40.0 Lakh
7.	Cloning and expression of a novel microbial phytase in *Pichia pastoris* for extracellular secretion and optimization of its of its production: An attempt to develop a commercial phytase production system[[P.I: **Dr. Shilpi Ghosh]**	UGC, New Delhi	2012-15	01	Rs. 12.9Lakh
8.	Physicochemical studies of Bacterial/other membranous interfaces with nonsteroidal anti-inflamatory drugs [P.I: **Dr. A. K. Panda**, Deptt. Of Chemistry; CoPI: **Dr. Shilpi Ghosh**]	DBT, New Delhi	2014-17	01	Rs. 40.0 Lakh
9.	Studies on occurrence and distribution of antibiotic resistance and virulence genes among *Aeromonas* species in sub-Himalayan West Bengal and their conjugational spread in other bacteria [P.I: **Dr. Dipanwita Saha**, Deptt. Of Biotechnology; CoPI: **Dr.J. Pal,** Deptt. Of Zoology]	UGC, New Delhi	2014-17	01	Rs. 13.5 Lakh
10.	To determine the dose	University research	2013-14	-	Rs. 0.75

	of skim milk essential to grow mammalian breast cancer cells in gradual decrease of growth factors (serum) at ambient temperature[P.I: **Dr.Anoop Kumar]**	Support			Lakh
	Evaluation of friedelan triterpenoid as anti-cancer agent	University research Support	2013-14	-	Rs. 0.75 lakh
ON-GOING AD-HOC PROJECTS SUPERVISED BY THE FACULTY MEMBERS					
11.	Name of the Fellow: **Sri Vaskar Das** Supervisor: *Dr. Shilpi Ghosh*	UGC, Rajiv Gandhi National Fellowship	Initiation: 2014-15	-	Rs. 3.0 Lakh/annum
12.	Name of the Fellow: Smt. Khusboo Lepcha Supervisor: *Dr. Shilpi Ghosh*	DST, INSPIRE fellowship	Initiation: 2014-15	-	Rs. 3.0 Lakh/annum
13.	Name of the Fellow: Sri Vivek Kr. Ranjan Supervisor: *Dr. R. Chakraborty*	DBT-BET- JRF	Initiation: 2013-14		Rs. 3.0 Lakh/annum
14.	Name of the Fellow: Sri Subhanil Chakraborty Supervisor: *Dr. R. Chakraborty*	DST, INSPIRE fellowship	Initiation: 2015-16	-	Rs. 3.0 Lakh/annum
COMPLETED PROJECTS OF THE FACULTY MEMBERS					
1.	The application of insertion sequences to analyse iron and sulfur oxidizing variants of *Acidithiobacillus ferrooxidans* in relation to their effect on bioleaching activity[Project Manager: **Dr. R. Chakraborty**]	CSIR, New Delhi	2002-05	01	Rs. 10.0 Lakh
2.	Entrepreneurship Development and Production of Planting material for the development of Floriculture in North Bengal [Project Manager: **Dr. R. Chakraborty**]	Department of Food Processing & Horticulture, Government of West Bengal	2006- 2011	07	Rs. 225 Lakh (2.25 crores)
3.	Molecular Surveillance on genetic fluidity of	DBT, New Delhi	2007- 2010	03	Rs. 30 Lakh

	antibiotic resistance genes in environment-bacteria employing techniques and tools of Microbial genetics and genomics: A model study on riverine bacteria of Mahananda in Siliguri [P.I: **Dr. R. Chakraborty]**				
4.	Glutamine synthetase isoenzymes in Rice plants: differential regulation and organ specific expression in relation to drought stress and comparison with resurrection plant isoforms. [P.I: **Dr. Shipi Ghosh]**	CSIR, New Delhi	2007-2010	01	Rs. 18 Lakh
5.	Characterization and Application of Botanicals for controlling important Foliar fungal diseases of Tea [P.I: **Dr. Dipanwita Saha]**	CSIR, New Delhi	2006-2009	01	Rs. 09 Lakh
6.	Screening, Characterization and application of microbial antagonists for control of major diseases of tea[P.I: **Dr. Dipanwita Saha]**	UGC, New Delhi	2007-2010	01	Rs. 7.21 Lakh
7.	Isolation, Characterization, Molecular gene cloning and sequencing of diverse phytase gene(s) from Rhizosphere and wood decomposing bacteria[P.I: **Dr.Shilpi Ghosh]**	UGC, New Delhi	2007-2009	-	Rs. 4.53 Lakh
8.	Optimizing Petal yield and Process Standardization of Extraction, Purification, and precise Estimation of Marigold Lutein and	DBT, GoWB	2009-11	01	Rs. 12.0 Lakh

	lutein-esters for Technology transfer to Entrepreneurs of Floriculture-based Industry in West Bengal [P.I: **Dr. R. Chakraborty**, Deptt. Of Biotechnology; CoPI: Dr. A.K. Nanda, Deptt. Of Chemistry]				
9.	Developing specific biological control strategies for obtaining long lasting, economical and eco-friendly measures for controlling major fungal diseases of some widely cultivated horticultural crops of West Bengal[P.I: **Dr. D.Saha**]	DBT, GoWB	2009-11	01	Rs. 5.52 Lakh
COMPLETED POST-DOC RESEARCH PROJECTS					
10.	Revealing the genetic system responsible for a novel inducible nickel resistance in a bacterial isolate of Torsa river: An approach towards the development of a microbe-based-Biosensor	DBT- Post-Doc Project [Dr. Suchitra Sarkar (recipient had Ph.D from other University)]	2005-2007 (completed, August, 2007)	-	Rs. 4.0 Lakh
11.	Assessment of diversity within cassette pool of free flowing water system by Environmental gene cassette metagenome approach [Research Associate Program (post. Doc)]	CSIR- Research Associate Program [Dr. Sriparna Mukherjee(recipient had Ph.D from NBU)]	2008-2010	-	Rs. 5.0 Lakh
		CSIR-SRF program [Dr. Gargee Dhar Purakayastha; M.Sc (Calcutta)]	2013-15		Rs. 7.5 lakh
COMPLETED AD-HOC RESEARCH PROJECTS					
12.	Study on the dynamics of metal resistant bacterial population of Torsa river water with special emphasis on	CSIR-JRF [***Sri Bhaskar Bhadra*** (recipient had M.Sc in Botany from NBU)]Supervisor: Dr. R. Chakraborty	2001-2005	-	Rs. 4.5 Lakh

	identifying genes encoding resistance to Nickel and Cobalt in suitable gram negative isolates				
13.	Studies on oligotrophic bacteria of River Mahananda with special emphasis on integron genomics	DBT-BET Research Project [***Sri Arvind Kumar*** (recipient had M.Sc in Biotechnology from other University)]Supervisor: Dr. R. Chakraborty	2006-2010	-	Rs. 5.0 Lakh
14.	Screening for High Pathogenicity Island (HPI) in Antibiotic resistant copiotrophic bacteria of River Mahananda.	CSIR-JRF Project[***Smt. Prashantee Singh*** (recipient had M.Sc in Biotechnology from other University)] Supervisor: Dr. R. Chakraborty	2007-2010	-	Rs. 5.0 Lakh
15.	Revealing Molecular physiology of Oligophily in river bacteria	University supported Research Fellow[***Sri Amit Kumar Mandal*** (recipient had M.Sc in Microbiology from NBU)]Supervisor: Dr. R. Chakraborty	2007-2010	-	Rs. 5.0 Lakh
16.	Studies on copper toxicity on cultivated varieties of tea of North East India	Rajiv Gandhi National Fellowship [***Smt. Sima Mandal***(recipient had M.Sc in Botany fromNBU)] Supervisor: Dr. D. Saha	2008-13	-	Rs. 8.75 Lakh
17.	Revealing Microbial biodiversity of Acid mine drainage samples of Sikkim using metagenome tools and techniques	DBT-BET Research Project [***Smt. Sonam Doma Bhutia*** (recipient had M.Sc in Biotechnology from other University)]Supervisor: Dr. R. Chakraborty	2008-2010	-	Rs. 3.75 Lakh
18.	Screening and characterization of antifungal phytochemical component from plant extracts against some fungal pathogens	ICMR-JRF[***Sri Ramashish Kumar*** (recipient had M.Sc in Biotechnology from NBU)]Supervisor: Dr. D. Saha	2009-14	-	Rs. 11.32 Lakh

18. Inter-institutional collaborative projects and associated grants received.

a) National collaboration b) International collaboration

(ii) Promotion of easy access to research partners:

a. With other departments of the University of North Bengal:

Chemistry, Zoology, Botany, Microbiology, Geography and Applied Geography

b. With departments/ centres of National Research Institutes & Organization/ Foreign Universities

INDIA:

Department of Microbiology, Bose Institute, Kolkata.

Department of Biochemistry & Bioinformatics Centre , Bose Institute, Kolkata.

Division of Plant Science, Bose Institute, Kolkata

Deparment of Pharmaceutical Technology, Jadavpur University.

Centre for Cellular and Molecular Biology, Hyderabad.

Department of Chemistry, Vidyasagar University, Midnapore, West Bengal.

Microbiology Division, National Institute of Cholera and Enteric Diseases, Kolkata

Department of Physiology, West Bengal State University

Indian Institute of Chemical Biology, Kolkata

Indian Institute of Technology, Department of Biotechnology, Kharagpur

FOREIGN:

Department of Microbiology, Wageningen University, The Netherlands.

Department of Microbiology, Universiteit Gent, Belgium

Department of Plant Pathology, King Monpu Institute, Bangkok, Thailand

PROFESSIONAL CONTACTS WITH NATIONAL INSTITUTES FOR AVAILING PAID SERVICES & DATA SHARING OR USAGE OF THEIR REPOSITORIES:

a. IMTech, Chandigarh (for deposition of strains and accessing numbers against submission of isolates)

b. University of Delhi South Campus (for availing sequencing services).

c. IIT Chennai, IIT Bombay, IIT Kharagpur

d. CDRI, Lucknow

e. NEHU, Shillong

PROFESSIONAL CONTACTS WITH CONTRACT RESEARCH ORGANIZATION

a. Xcelris Genomics

PROFESSIONAL CONTACTS WITH INTERNATIONAL INSTITUTES FOR AVAILING PAID SERVICES & DATA SHARING OR USAGE OF THEIR REPOSITORIES:

a. DSMZ, Germany; b. BCCM/LMG, Belgium; c. CCUG, Japan; d. TIGR,

b. France; e. NCBI, USA; & EMBL.

19. Departmental Projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT,ICSSR, AICTE, etc.; total grants received.

DBT-BOOST program- **Rs. 30.0 Lakh**

20. Research facility/centre with

❖ State recognition

Centre of Floriculture and Agribusiness Management (COFAM)

Looking at the potential of this region and realizing the existing constraints, University of North Bengal has set up a Center of Floriculture and Agri-Business Management (COFAM), in 2006, with initial support from the ***Department of Food Processing and Horticulture (FPI&H), Government of West Bengal.*** This center has been serving as an instrument for sustainable rural development through application of scientific and technological knowledge in horticulture sector and integrated farm management. The mandate of this Center is the transfer of technologies through on farm demonstration and training. Thus, the primary activity of COFAM is to cater services in the form of rendering practical courses to different target groups and entrepreneurs related and interlinked with the overall process of development of horticulture industry. Mass production of quality planting materials through conventional and micro-propagation technology is another important area where COFAM has curved a niche. Hands on training courses have been developed to empower the small farmers/growers of this region and to establish producer-consumer direct pathway applying proper information communication system as needed to address the competitive economy. COFAM is destined to undertake projects/programs to study, develop, standardize, implement, commercialize and popularize innovative and sustainable rural technologies with special

emphasis on making traditional, rural enterprises more profitable and bring new income generating opportunities through induction of novel enterprises in rural areas. Many of the COFAM activities were covered in different print and audio-visual media.

Infrastructure developed in COFAM for Community engagement and Research

Sl. No.	Name of the Infrastructure	Size	Status
1	Office cum Service Centre	905 sq ft	Operating
2	Training Pavillion for farmers	511 sq ft	Operating
3	Orchid Repository	584.22 sq ft	Operating, with a collection of 600 mother plants of 6 varieties of orchids namely, Cattleya, Dendrobium, Phalaenopsis, Vanda, Oncidium and Ephidendron.
4.	Automated Greenhouse	1240 sq mt	Two chambered; Primary hardening unit (413 sq mtr) and Secondary hardening unit (827 sq mtr). Operating
5.	Separate 110 KVA electrical connection		Operating
6.	Tissue Culture Laboratory fortified with all Hi-Tech facilities and equipment	196.34 sq mtr	Double storied. Operating

- ❖ National recognition
- ❖ International recognition

Citation of the activities of North Bengal University's COFAM in <u>International Forum and documented in the form of Publication</u>

Research article entitled **"Gauging the Impact of Community University Engagement Initiatives in India"** authored by Wafa Singh, Participatory Research in Asia (PRIA), published in the Proceedings of The ***2nd AsiaEngage Regional Conference 2014*** ISBN 978-602-96679-7-4,Published by: Directorate of Research and Community Engagement Universitas Indonesia Gedung ILRC Kampus UI Depok, Depok 16424. INDONESIA, has the following lines as one of the case studies from India. <u>The following, paragraph, **verbatim**, mentioned below, is the part of the said article.</u>

"North Bengal University (NBU), Siliguri

The Department of Biotechnology, North Bengal University, through its various agri-based initiatives has been engaging with the local rural community for knowledge exchange and dissemination of best practices in agricultural sector. The Centre of Floriculture and Agri-Business Management (COFAM) has been the key factor behind such practices and initiatives. At the dialogue on 'Strengthening Community Engagement in Higher Education Institutions', held at NBU, Dr Ranadhir Chakraborty (Head, Department of Biotechnology) shared with the participants as to how the process of community engagement is integrated into the structure and design of the unit. COFAM is mandated to provide hands-on practical training to the growers/entrepreneurs on various aspects of floriculture, produce disease free quality planting material by tissue culture, and establish linkage between growers and buyers. Through various initiatives, the COFAM unit at NBU was engaging with the nearby communities, in order to strengthen their capacities in the field of floriculture and agriculture. It also sought to use the indigenous local knowledge and expertise of the communities in the plantation of different types of crop varieties. The unit then also supported the community by helping them find a market for their products and earn a sustainable living in the process. As a result of such engagement, not only did COFAM expand its technological data-base, the communities too experienced a sea change by way of secure and sustainable livelihoods. New technologies, which combined academic expertise and traditional knowledge, resulted in increased returns from agriculture, which in turn contributed to a better and sustainable mode of living of the local communities"

21. Special research laboratories sponsored by/created by industry or corporate bodies.

NA

22. Publications: **Please see volume IV of SSR.**

23. Details of patents and income generated.

Patent: **A Novel Surface-functionalized ZnO Nanoparticles exhibiting therapeutic properties, and process for preparing the same Application No. 1032/KOL/2012; Date of Publication: 8.12.13; J. No. 06/2013.**

24. Areas of consultancy and income generated.

(i) Financial Year: 2010-11

Mission: Helping Enterprise Launching and providing technical consultancy to Entrepreneur for commercial cultivation of Orchids in the Darjeeling Hills

Darjeeling Garden Pvt. Ltd. (DGPL) has set up a commercial project of orchid cultivation particularly Cymbidium at Mirik.

Regular visits to DGPL by the technical personnel of COFAM are being conducted to monitor cultural practices, plant health, occurrences of pests and diseases, physico-chemical data of the greenhouse, and prescription of remedial measures.

Starting number of Cymbidium plantlets: 70,000

Expansion in 2011-12: 1,50,000

Revenue earned from technical consultancy: **Rs. 1,20,000/-**

(ii) Financial Years: 2011-12 to 2014-15

Mission: Affordable Biotechnology and Advanced Production Technology interventions for quick-return-high-value floriculture in non-traditional production areas for sustainable development.

Major crops: Hybrid Tomato, Capsicum, Broccoli, Drumstick, Strawberry, Dragon Fruit, salad Crops.

Total Revenue earned through Sale of Quality seedling/plantlets of High-Value Quick Return horticultural crops in plug trays : **Rs. 3,89,729/-**

25. Faculty selected nationally/internationally to visit other laboratories/institutions/ industries in India and abroad.

(i) **Nature Travel Grant**, Nature Publishing Group awarded to *Dr. A. Kumar* for attending Atherosclerosis conference organised by **Gordon Research Conference** at Salve Regina University, in Newport, RI, United States, 2011.

(ii) On invitation by Professor Didier Mazel, Director, ***Plasticite du Genome Bacterien*** (Genomics Centre), **INSTITUT PASTEUR**, Paris, France, Dr. Ranadhir Chakraborty, visited the centre, delivered talk and interacted with the faculty members of the research unit of Pasteur Institute from 16- 19 September, 2014.

(iii) Dr. Ranadhir Chakraborty was Invited as one of the distinguished speakers from Clinical Research & Academic Institution in the 3rd ANNUAL NEXT GENERATION SEQUENCING DATA CONGRESS held in London, UK, from 15 to 16th June 2015, organized by OXFORD GLOBAL, United Kingdom.

(iv) Dr. Dipanwita Saha delivered invited lecture on "Biological control of anthracnose in eggplant (Solanum melongena) caused by Colletotrichum gloeosporioides with some microbial antagonists" at the International conference on Integration of Science and Technology for Sustainable Development, KMITL, Bangkok, Thailand 26-27 April 2007, on invitation from Dr. Kasem Soytong, Department of Plant Pest Management, Faculty of Agricultural Technology, King Mongkut's Institute of Technology (KMITL), Bangkok 10520, Thailand.

(v) Dr. Dipanwita Saha delivered lecture on Oxidative stress in tea (Camellia sinensis) induced by high copper concentration at the Annual Botanical Conference on Dec 11, 2010 on the invitation of the Bangladesh Botanical Society. Additionally, acted as judge at the same conference for the selection of best paper presentation in the competition category.

(vi) Dr. Dipanwita Saha acted as Organizing Secretary in National Symposium on "Micro- and Macro- resources In Biomolecular Technology, 19th-20th February, 2013. Organized by Department of Biotechnology, NBU.

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

i) **Dr. Ranadhir Chakraborty, Guest Editor**- Special Issue-"***Antibiotic Resistance Of Bacteria***" (2015), BioMed Research International, Hindawi Publishing Corporation. Vol. 2015

ii) **Dr. Ranadhir Chakraborty** , presently member of the BOOST Committee, Department of Biotechnology, Government of West Bengal.

iii) **Dr. Ranadhir Chakraborty** Member of the PG Board of Studies, Centre for Biotechnology, VisvaBharati (until 2014)

iv) **Dr. Ranadhir Chakraborty** presently Member of the Research Board of Studies in Microbiology, Sikkim Central University

v) **Dr. Ranadhir Chakraborty,** presently, Advisory Committee member of the DBT, GoI, funded P.G course in Biotechnology, TM Bhagalpur University.

27. Faculty recharging strategies (UGC, ASC, Refresher/ orientation programs, workshops, training programs and similar programs).

28. Students projects

- Percentage of students who have done in-house projects including inter departmental projects.

- Percentage of students doing projects in collaboration with other universities/industry/institute.

Sl.No.	Name of the	Title of the Dissertation/ Thesis	Faculty who supervised
1.	Smt Swagata Nag	To study the diversity of acidophilic microorganisms in acid rock samples through metagenomic approach	Dr. Ranadhir Chakraborty
2.	Sri Abhishek Kumar Singh	Characterization of Arsenic-resistant bacteria from acid mine drainage samples of Gorubathan, West Bengal, India: An attempt to relate the phenotype with the extranuclear genetic element	Dr. Ranadhir Chakraborty
3.	Sri Saikat Chakraborty	Studies on antagonistic fungal isolates against fungal pathogens of tea	Dr. Dipanwita Saha
4.	Sri Awdhesh Kumar Mishra	Studies on screening of antifungal compounds from plant leaf	Dr. Dipanwita Saha
5.	Smt. Amrita Ghosh	Isolation and Characterization of Bromelain from Pineapple (*Ananus comosus*) stem, leaf and fruit	Dr. Shilpi Ghosh
6.	Sri Ravi Kumar		Dr. Shilpi Ghosh
2011-12	SUBHABRATA DATTA	Isolation of Xylanase producing bacteria from soil and optimization of enzyme production using a cheap agro-waste	Dr. Shilpi Ghosh, Asstt. Professor, Deptt. of Biotechnology, NBU
,,	SUMIRAN KUMAR GURUNG	Effect of microbial isolates of Vermiwash on growth of chickpea (*cicer arietinum* L.) seedlings: A comparison with Vermiwash and defined plant medium	Dr. Shilpi Ghosh , Asstt. Professor, Deptt. of Biotechnology, NBU
,,	RAJA DEY SARKAR	Molecular Characterization of *Colletotrichum gloeosporioides*, studies on Host-pathogen intraction and its biological control	Dr. Dipanwita Saha, , Asstt. Professor, Deptt. of Biotechnology, NBU
,,	PRIYANKA MEHRA	Synthesis and biological evaluation of quinazoline-4-3H-ones derivatives as antitumor agents: Molecular docking	Dr. R. Chakraborty, , Assoc. Professor, Deptt. of

		study to infer inhibition of human dihydrofolate reductase enzyme	Biotechnology, NBU
,,	HRUSHIKESH SUNIL GORE	Identifying some functional genes with prediction of regulatory loci of metabolically active operons in copiotrophy and oligotrophy of a facultative oligotrophic bacterium *Klebsiella pneumonia* PB12 with transcriptomic data mapped on reference genome of *K. pneumonia* 342	Dr. R. Chakraborty, , Assoc. Professor, Deptt. of Biotechnology, NBU
2012-13	RUPASREE MITRA	Purification and characterization of phytochemicals from *Murraya koenigii* and *Adhotada vasica* with an in vitro antioxidant and oxidative DNA damage protective activities	Dr. Dipanwita Saha, , Asstt. Professor, Deptt. of Biotechnology, NBU
,,	ZIRMIRE RAVINDRA KAILARAO	Solubility enhancement and physicochemical characterization of inclusion complexes of quinazoline-4(3H)-ones and beta-cyclodextrin	Dr. R. Chakraborty, , Assoc. Professor, Deptt. of Biotechnology, NBU
,,	PUJA SIKDAR	Bactericidal effect of green synthesized silver nanoparticles against gram-negative multiple antibiotic-resistant bacteria	Dr. R. Chakraborty, , Assoc. Professor, Deptt. of Biotechnology, NBU
,,	DEBAPRIYAA KUMAR	Isolation and characterization of plant growth promoting rhizobacteria and its effect on the growth on chickpea plants (*Cicer arietinum)*	Dr. Shilpi Ghosh, Asstt. Professor, Deptt. of Biotechnology, NBU
,,	NIRZA MOKTAN	Studies of lipopeptide producing *Bacillus* strains isolated from rhizosphere soil	Dr. Dipanwita Saha, , Asstt. Professor, Deptt. of Biotechnology, NBU

29. Awards/recognitions received at the national and international level by

- Faculty
- Doctoral/post doctoral fellows
- Students

(i) **Awarded Certificate of Merit** in appreciation and recognition of active participation in the scientific deliberation on “HOT TOPICS IN PEDIATRICS” in the

PEDIATRICS CONFERENCE-2006, at Siliguri, West Bengal, during May 27 th & 28th 2006, organized by THE INDIAN ACADEMY OF PEDIATRICS

(ii) **Second best poster presentation award** received for presenting paper authored by B. Saha, D. Saha and A. Saha at 32 nd Annual conference of Indian Society of Mycology and Plant Pathology, 2010 held at Junagarh Agricultural University, Junagarh, Gujarat during 24th -27th November, 2010.

(iii) Dr. Shilpi Ghosh was awarded **INSA Summer Fellowship**(2010)

(iv) **Second best Poster Award** (2011) in Young Research Conference, Institute of Chemical Technology, University of Mumbai held in January 13-14, 2011B (Sri Arvind Kumar, DBT-SRF, presenting author; Dr. Ranadhir Chakraborty, Communicating author)Title: Molecular Characterization and Expression of a Novel Dihydrofolate reductase gene (coding for Trimethoprim resistance) from a new Multi-Drug Resistant strain of *Klebsiella pneumonia*

(v) Representation in the **FEMS2011Congress of European Microbiologists** at Geneva, Switzerland, June 26-30, 2011, by Researchers of the Department of Biotechnology, NBU.***Four*** peer reviewed Research papers (Dr. R. Chakraborty as communicating authors) was accepted and officially registered for presentation in the International Congress, FEMS2011Congress of European Microbiologists at Geneva, Switzerland, June 26-30, 2011. Dr. Shriparna Mukherjee and Ms Suparna Bhowal presented the papers.All four presenters were awarded with **Travel fellowships** of CSIR, DST , and DBT (two of them availed the Travel Awards).

(vi) **INTERNATIONAL TRAVEL AWARD** to Dr. Ranadhir Chakraborty by SCIENCE AND ENGINEERING RESEARCH BOARD to attend **FEBS EMBO CONFERENCE-2014** at PARIS, FRANCE during 30/08/2014- 04/09/2014

(vii) **Travel Fellowship award** by CENTRE FOR INTERNATIONAL CO-OPERATION IN SCIENCE (CICS) REGISTERED SOCIETY (Promoted by INSA, New Delhi in Association with Scientific Agencies and Departments) to attend FEBS EMBO CONFERENCE-2014 at PARIS, FRANCE during 30/08/2014- 04/09/2014.

(viii) **Invited as one of the distinguished speakers** from Clinical Research & Academic Institution in the **3rd ANNUAL NEXT GENERATION SEQUENCING DATA CONGRESS** held in London, UK, from 15 to 16th June 2015, organized by OXFORD GLOBAL, United Kingdom.

(ix) **Prof. K.S. Bilgrami award for best poster presentation 2009:** Purkayastha G. D., Saha A. and **Saha D**. 2009. Characterization of antagonistic bacteria isolated from tea rhizosphere in Sub-Himalayan West Bengal as potential biocontrol agents in tea. 31st Annual Conference of ISMPP and Symposium on Microbial Wealth-Plant Health, October 23-25, 2009 University of North Bengal.

(x) **Best poster presentation award:** S. Dasgupta, A. Saha, P. Mondal and **D. Saha** at National Conference on Medicinal and Aromatic plants organized by Gulbarga University, Karnataka, 2007.

(xi) Received DST international travel grant award for presenting paper entitled "**Screening of tea varieties for susceptibility to *Lasiodiplodia theobromae* by ELISA and induction of resistance by *Acalypha indica* leaf extract**" at the 9th International Plant Molecular Biology Congress, 2009 at St. Louis, University of Missouri, USA during October 25-30, 2009.

(xii) Received International travel grant award from DST and DBT for presenting paper entitled "**Screening of commercially cultivated varieties of tea for resistance to *L. theobromae* by indirect ELISA**" at the XV th Congress of the Federation of European societies of Plant Biology during July 17-21, 2006, in Lyon, France.

b)

30. Seminars/Conferences /Workshops organized and the source of funding (national/international)with details of outstanding participants, if any.

Title of the National Seminar/ UGC Refresher Course organized by the Department of Biotechnology, NBU	**Duration**
1. National Seminar on "***Micro and Macro Bioresources in Biomolecular Technology***"	February 25-26, 2013
2. UGC Refresher Course in '***Life Science***', Academic Staff College, NBU	September 19 – October 09, 2013

Sl. No.	**Title**	**Duration**	**Target group**
1	Brainstorming session on "**Structuring Floriculture Market in North Bengal"**	10 September 2007	100 participants, Horticulture Officers, Entrepreneurs, banking Officials, Florists, Flower Traders
2	**Hands-On Residential ""Propagation and cultivation of Tropical Orchids"**	27 – 29th Jan. 2007	**50 farmers**
	Hands-On Residential "Propagation and cultivation of Gladiolus and Marigold."	25 – 27th Feb. 2007	**50 farmers**
4.	**Hands-On Residential "Training Programme on Propagation and Cultivation of tropical Orchids"**	27th – 29st May 2007	**50 farmers**
5.	**Hands-On Residential "Training Programme on Propagation and**	29 – 31 May 2007	**50 farmers**

	Cultivation of Cymbidium **Date :** 29 – 31 May 2007		
6.	**Hands-On Residential "Training Programme on Cultivation of Gerbera under Low Cost Greenhouse:** **Date :**	20-22nd Sep. 2007	**50 farmers**
7.	**Hands-On Residential "Training Programme on Cultivation of Gerbera under Low Cost Greenhouse"** **Date :**	23- 25th Sep. 2007	**50 farmers**
8.	**Hands-On Residential "Training Programme on Cultivation of Gerbera under Low Cost Greenhouse"** **Date :**	28th- 30 sep. 2007	**50 farmers**
9.	**Hands-On Residential "Training Programme on Cultivation of Gladiolus, Gerbera and Marigold"** **Date :** 24th- 25 Feb. 2008	24th- 25 Feb. 2008	**50 farmers**
10.	**One-Day "Awareness cum Training Programme on Cultivation of Flowers as a means of alternative income generation"**	28th Feb. 2008	**125 participants (flower growers, entrepreneurs, governmental Officers)**
11.	Workshop on **"Strawberry Cultivation: varietal selection and production Technology'**	02 d (18-19 September, 2012)	250 participants (SHG women)
12.	Hands-on Training Programme on **'Production technology of Gladiolus, Gerbera, and Marigold'**	07 d (16-22 August, 2012)	10 participants; Unemployed Rural youth
13.	Seminar cum Workshop on **'Vermicompost Technology'**	01 day	35 participants; Graduate students of Sikkim
14.	Hands-on residential training on **'Production of Mushroom spawn'**	10 d (03-12 May 2013)	10 participants; Selected mushroom growers from SHGs
15.	Hands-on training programme on **'Micropropagation of orchids'**	15 d (30th July to 13th August 2013)	05 selected post-graduate students outside the state of West Bengal
16.	One day workshop on **'Strawberry cultivation in commercial scale: its prospect and challenges in Northern west Bengal' [Invited speaker: Bob Nottleman, USA]**	05th August 2013	150 participants, Agriculture extension officers, CADC, NABARD officials, Entrepreneurs, farmers
17.	Hands-on training on **'Vermicompost technology for large-scale production'**	03 d (25-27 July 2013)	05 participants; Rural entrepreneurs

31. Code of ethics for research followed by the departments

32. Student profile programme-wise: Dependent on the JNU panel

Name of the Programme (refer to question no.4)	Applications Received	Selected		Pass Percentage	
		Male	Female	Male	Female

33. Diversity of students

Name of the (refer to question no.4)	% of Students From the Same University	% of students from other Universities Within the State	% of students from other Universities Outside the State	% of students From other Universities
	30	00	70	

34. How many students have cleared Civil Services and Defense Services examinations NET, SET, GATE and other competitive examinations? Give details categories-wise.

Name and Permanent address of the Student	Year of admission	Year of passing out	Performance in NET/GATE/ DBT-BET/ICMR/others	Employment details
Sri Mukesh Kumar C/o Sri Upendra Jha, Shivpuri, Dumra, PIN: 843301 (BIHAR)	2003	2005	NET-JRF, GATE	Ph.D (AIIMS, New Delhi)
Sri Jai Prakash Sharma, C/o Gayatri Sadan, Ward No. 8. Makan No. 31, Ganeshpura, Nawalgarh, Dist: Jhunjuhunu, Rajasthan, Pin: 333042	2003	2005	DBT-BET JRF, CSIR-JRF	Ph.D (NBRC, Gurgaon)
Smt. Piyali Sengupta, C/o Gautam Sengupta, HIMUL, P.O. Matigara (Siliguri), Dist: Darjeeling, West Bengal, Pin: 734428	2003	2005	-	Assistant Teacher in Biotechnology, Army School, Khaprail, Siliguri
Smt. Gargi Ghosh, C/o T. K. Ghosh, 37- Baghajatin Park, Siliguri- 734401, West Bengal	2003	2005	-	Asstt. Teacher in Life Science, Govt. Sponsored HS School
Smt. Pragya Mittal, C/o Siddarth Steel Industries, Lower Road, Gurung Basty, P.O. Pradhannagar, Siliguri- 734403, West Bengal	2003	2005	CSIR-JRF	Ph.D (CCMB, Hyderabad)
Smt. Sonam Gupta, C/o Prakash	2003	2005	-	Quality Control

Brothers, Biharmore, P.O. Bagdogra, Dist: Darjeeling, Pin: 734422, West Bengal				Officer, CALYPSO-Bengal, Bidhannagar
Sri Bankim Mondal, C/0 Sri N. N. Mondal, Collgepara, P.O. Islampur, Uttar Dinajpur, Pin: 733202, West Bengal	2003	2005	NET-Lectureship	Asstt. Professor in Biotechnology, Govt. Sponsored College, Murshidabad, West Bengal
Sri Shubhrajyoti Das, C/o Gurupada Das, Milan Mandir Road, Subhaspally, Siliguri, West Bengal;	2003	2005	Post-graduate diploma in Bio-informatics, Jadavpur University	Chief Microbiologt, HIMUL Water Plant, West Bengal
Sri Laxmi Narayan, S/o Dr. Ravindra Kumar Mishra, Jhilganjthakurbari Gali, P.o. NewGodown, Gaya, Pin: 824118, BIHAR	2003	2005	CSIR-JRF, GATE	Ph.D (JNCASR, Bangalore)
Sri Dinesh Kumar Tiwary, S/o Harsh Narayan Tiwari, Village-Ramgarh, P.O. Raniganj, Dist: Pratapgarh, Pin: 230304, Uttar Pradesh	2003	2005	NET	Ph.D (NIRRH, Mumbai)
Sri Pankaj Prabhakar, S/o Sri Nand Kishor Pd. Singh, P.O: Jamalabad via Umanagar, Dist: Muzaffarpur, Pin 842004	2004	2006	GATE	Ph.D (AIIMS, New Delhi)
Sri Yogendra Prakash Singh, S/o Jai Prakash Singh, Singrauli, NCL Colony, Qtr. No. TI/24, Distt: SIDHI, Pin: 486889, M.P.	2004	2006	GATE	Project Fellow, (IGIB, New Delhi)
Sri Satyendra Kumar Yadav, S/o Rambrickh Yadav, P.O. Deolas, Dist: Mau, Vill. Salempur, U.P.	2004	2006	GATE, NET	Asstt. Professor in Biotechnology, College, U.P.
Sri Kamal Krishna Singh, S/o Arjun Singh, Vill: Lenger Kekai, P.O. Dumari, P.S. Chenari, Dist: Rohtas, Pin: 821104, BIHAR	2004	2006	GATE	Ph.D, Deptt. of Biotechnology, Univ. of North Bengal
Smt. Debjani Sarkar, C/o S.K Sarkar, 'Geetanjali" Co-operative Housing, Near Dudhmore, P.O. Rabindra Sarani, Siliguri, Pin: 734406	2004	2006	GATE	Ph.D, Jute Research Institute, Kolkata.
Sri Sandeep Aggarwal, S/o O. P. Gupta, B-773/774 Sainik-Bihar, Sardhana Road, Meerut-Cantt, U.P-250001	2004	2006	Course in Patent & IPR	Service as Patent Expert, SUN-Pharma, Mumbai
Sri Manab DebAdhikari, C/o Prafulla Deb Adhikari, Purbapara, P.O. Haldibari, Dist: Coochbehar, 735122, West Bengal	2004	2006	GATE	Ph.D (IIT, Guwahati)
Smt Shreya Das, C/o Amalendu	2004	2006	-	Chief Analyst,

Das, East Vivekananda Pally, P.O. Rabindra Sarani, Siliguri- 734406				Peak Chemicals, Siliguri
Sri Vikram Kumar, C/o Narendra Kumar, PHED Quarter, Road No. 1, Near NH East Division, Rajbanshi nagar, Patna- 23, BIHAR	2005	2007	GATE	Project Fellow, TERI, New Delhi
Sri Shasank Misra, C/o Virendra Kumar Misra, 11/243, Souterganj, Kanpur- 208001, U.P.	2005	2007	GATE	Industrial Analyst, Molecular Diagnostic Industry
Sri Dinesh Kumar, C/o Sudama Ram, Vill- Ashok Nagar	2005	2007	NET	Ph.D, DRDO, Guwahati
Smt. Sayantani Basu, C/o Ashis Kumar Basu, Matelli T.E., P.O. Matelli, Dist. Jalpaiguri, Pin: 735223	2005	2007	-	Asstt. Teacher in LifeScience, HS School., Jalpaiguri
Smt Shubhra, D/o Dr. R.S. Arya, P.U. Professors' Quarter, Krishna ghat, Patna- 800005, BIHAR	2005	2007	-	Housewife
SriDipanshu Kumar Vishwas, S/o Ramkrishna Vishwas, Vill: Amberpur (Shahapara), P.O. Murighata, Dist: North 24 Parganas, Pin: 743251, West Bengal	2006	2008	NET-JRF	Ph.D (BHU)
Sri Anil Kumar, S/o Harihar nath Bhagat, Vill: Tetariyan, P.O. Mansagar, P.S. Charpokhari, Dist: Bhojpur, Pin: 802223, Bihar	2006	2008	GATE, CSIR-JRF	Ph.D (NCCS, Pune)
Sri Sanjay Saw, S/o Bijay Saw, Vill+ P.O. Singdaha, P.S. Topchanchi, Dist: Dhanbad Pin: 828402, JHARKHAND	2006	2008	NET-JRF	Ph.D (IGIB, New Delhi)
Sri Rakesh Kumar, S/o Jagdeo Dass, Moh- Kona Sarai (Chandanipar), P.O. Bihar Shariff, Dist- Nalanda, Pin: 803101, Bihar	2006	2008	GATE, M.Tech (Kharagpur)	Ph.D (IIT Kharagpur)
Sri Vikas Sharma, S/o Vishnu Kumar Sharma, H.No. 1565/49, G-Block, Gali No. 2, Rajendra Park, Gurgaon, Haryana	2006	2008	CSIR-JRF	Ph.D (AIIMS, New Delhi)
Sri Ramashish Kumar, S/o Bhagwat Prasad, Vill. Katari, P.O. Goraur, P.S. Chhabilapur, Dist: Nalanda, BIHAR	2006	2008	ICMR-JRF, GATE	Ph.D (Department of Biotechnology, NBU)
Sri Asim Biswas, C/o Minati Biswas, NewTown Para, Jalpaiguri-735101, West Bengal	2006	2008	DBT-BET, CSIR-JRF	Ph.D (NICED, Kolkata)
Smt. Jayita Sen, C/o Anjan Sen, Ukilpara, P.O. Jalpaiguri, West Bengal	2006	2008	Industry Trained (BCIL)	Self-employed
Sri Abhishek Kumar Singh, S/o Bechan Singh, House No. S. 12/55	2007	2009	GATE, ICMR-JRF	Ph.D (BHU)

A-1 K Piyariya Pokhary, Teliyabagh, Varanasi, U.P				
Smt. Swagata Nag, C/o Dr. Swapan Kr. Nag, Nag Kuthi, MilanPally, P.O. Siliguri Bazar, Dist: Darjeeling	2007	2009	Qualified IIIT Entrance	Ph.D (IIIT, Huderabad)
Sri Saikat Chakraborty, S/o Samir Chakraborty, Deepwar, Notunpara, Rabindra Sarani, Siliguri- 734 001	2007	2009	DBT-BET, CSIR-JRF, ICMR-JRF,	Research Scientist (BARC, Mumbai)
Sri B. Ravi, S/o Venkatramudu, Shanthinagar (P), Waddepally (M), Alampur, Mahaboobnagar, Andhrapradesh- 509144	2007	2009	CSIR-JRF	Ph.D (Hyderabad Central University)
Sri Awdhesh Kumar Mishra, S/o B. Misshra, Vill + P.O. Lakhnaur, Dist: Madhubani, BIHAR	2007	2009	GATE, ICMR-JRF, DBT-BET, CSIR-JRF	Ph.D (NBPGR, New Delhi)

Sri Prasun Kundu Khudirampally, siliguri, West Bengal	2010 (selection from NBU panel, 2008-09)	DBT-BET	Ph.D (IIT Kharagpur)
Smt. Vina Tikiyani C/o Ghanshyam Tikiyani, 586 Sindhi colony, Rajapark, Jaipur Rajasthan	2010 (JNU CEE rank-466, 2008-09)	UGC-JRF	PhD (PGIMR, Chandigarh)
Sri Bipin Kumar Pandey 83, Lal Bahadur Shastri Hall, Lucknow, UP- 226007	2010 (JNU CEE rank-476, 2008-09)	GATE, CSIR-JRF	PhD (NIPGR)
Sri Shibhari Shivasish C/o manish Kumar Gupta, AT-Sri Ram Pada Dumka, Dist- Dumka, Jharkhand-814101	2010 (JNU CEE rank-481, 2008-09)	GATE, UGC	PhD
Sri Supratim Ghosh Hakimpara, Siliguri, west Bengal	2010 (selection from NBU panel, 2008-09)	GATE, CSIR-JRF	PhD (IIT Kharagpur)
Sri Sachin Kumar, S/0 S. omprakash, P.O. Kakrana Via Ponkh, Dist: Jhunjhunu, Rajasthan- 333053	2011(JNU CEE rank-461, 2009-10)	GATE	Seeking admission to Ph.D elsewhere
Sri Kurva Jagannath, S/O Manappa, Vill & Post: Manhatti, TQ: Tandur, Mandal: Basheerabd, Dist: RanagaReddy, Andhrapradesh, PIN-501141	2011(JNU CEE rank-504, 2009-10)	GATE (All India Rank)	Research Scientist (BARC, Mumbai)
Smt. Shritama Dutta, C/o Samir K. Dutta, Station Road, P.O & Dist:	2011 (selection	-	Admitted to Ph.D Course

Jalpaiguri, Pin- 735101	from NBU panel, 2009-10)		work in NBU through Entrance
Sri Khemraj Meena, S/o Gangaram Meena, Vill: Gazipur, P.O. Kariri, Tah: Todabhim, Dist: Karauli, Rajasthan	2011 (JNU CEE rank-not mentioned, 2009-10)	GATE, DBT-BET	Seeking admission to Ph.D elsewhere
Smt. Ankita Mazumdar, C/o Anita Mazumdar (Opp: K.N. Chatterjee Memorial Nursing Home (Himalayan Polyclinic), Mahananda para, Hill Cart Road, Siliguri- 734001, West Bengal	2011 (selection from NBU panel, 2009-10)	-	Admitted to Ph.D Course work in NBU through Entrance
Smt. Sony Kumari, D/o Satya Prakash Singh, Sector- 9B, Street 16, Qtr. No. 1206, Bokaro Steel City, Bokaro, Jharkhand, Pin- 827009	2011 (JNU CEE rank-469, 2009-10)	GATE (All India Rank-7)	Ph.D (IIASSR, Bhubaneshwar)
Sri Abhinav Singh, S/o Rajendra Singh, C-471 C-Sector Sarvadham Colony, Kolar, 462042, Bhopal, Madhyapradesh	2011 (JNU CEE rank-453, 2009-10)	GATE	Seeking admission to Ph.D elsewhere
Sri Sagnik Giri, C/o Parameshwar Giri, Narmada Bagan, P.O. Champasari, Pin- 734003	2011 (selection from NBU panel, 2009-10)	GATE, UGC	PhD, NII, New Delhi

Placement details for students passed out in years 2011-12 & 2012-13

Name and permanent address of the Student	Performance in				Employment Details (with complete address of the employer)
	ICMR JRF	CSIR-NET	DBT-JRF (BET)	GATE	Ph.D. (India) Ph.D. Abroad) Teaching Industry
Sri Kurva Jagannath, S/O Manappa, Vill & Post: Manhatti, TQ: Tandur, Mandal: Basheerabd, Dist: RanagaReddy,Andhrapradesh, PIN- 501141				All India Rank	Research Scientist, BARC, Mumbai
Sri Sagnik Giri, C/o Parameshwar Giri, Narmada Bagan, P.O. Champasari, Pin-		√		√	Ph.D, NII, New Delhi

Smt. Sony Kumari, D/o Satya Prakash Singh, Sector- 9B, Street 16, Qtr. No. 1206, Bokaro Steel City, Bokaro,				All India Rank-7	Ph.D, IIASSR, Bhubaneshwar
Sri Abhinav Singh, S/o Rajendra Singh, C-471 C-Sector Sarvadham Colony, Kolar, 462042, Bhopal.				√	Ph.D, Bhopal
Smt. Ankita Mazumdar, C/o Anita Mazumdar (Opp: K.N. Chatterjee Memorial Nursing Home					Assistant teacher in Life-science
Sri Khemraj Meena, S/o Gangaram Meena, Vill: Gazipur, P.O. Kariri, Tah: Todabhim, Dist: Karauli,			√	√	Ph.D, ShimlaUniversity
Sri Sachin Kumar, S/0 S. omprakash, P.O. Kakrana Via Ponkh, Dist: Jhunjhunu,				√	Ph.D, Rajasthan University
Smt. Shritama Dutta, C/o Samir K. Dutta, Station Road, P.O & Dist: Jalpaiguri, Pin-					Qualified Ph.D Course work Examination in Biotechnology in
Sri Sumiran Kumar Gurung, C/o J.R. Gurung, Singmara, Mount Valley, P.O. North Point, Dist.		√			Ph.D, JNU, New Delhi
Sri Subhabrata Datta, C/o Kamal Ch. Datta, Nayabasti, Nivedita Sarani, P.O. Jalpaiguri, Dist: Jalpaiguri, West					Qualified Ph.D Course work Examination in Biotechnology in 2013, NBU
Sri Raja Dey Sarkar, C/o Late D.C. Dey Sarkar, Matigara Government Colony, P.O. Matigara, Dist:					Qualified Ph.D Course work Examination in Biotechnology in 2013, NBU
Sri Hrushikesh Sunil Gore New-'D'-13/1, NTPS colony, Eklahare,		√			Applying for Ph.D(Abroad)
Smt. Priyanka Mehra, 120/4 Flat No. 3, S-2, Prabhustuti Apt., Lajpat Nagar, Kanpur,					Government job

Smt. Nirza Moktan, Above Rly. Water Tank, Near Krishna Villa, Dali, H.C. Road, P.O. & Dist: Darjeeling					Central Bank of India, Probationary Officer
Sri Zirmire Ravindra Kailasrao, At Post. Patoda, TQ Ambajogai, Dist: Beed,		√		√	Ph.D, Bombay IIT
Smt. Puja Sikdar, C/o Ashim Sikdar, 30/1 Balai Das Chatterjee Road, Hakimpara,					Applying for DST-Inspire fellowship
Smt. Rupasree Mitra, C/o Sadan Mitra, Upper Bagdogra, Mini Bus Stand, Dist:					Preparing for NET
Smt. Debapriyaa Kumar, C/o Purushottam Kumar					Preparing for NET

35. Student progression

Student p	Percentage against enrolled
UG to PG	
PG to M.Phil	0.0
PG to Ph.D.	70.0
PG to Post-Doctoral	40.0
Employed ▪ Campus selection ▪ Other than campus recruitment	
Entrepreneurs	0.5

36. Diversity of Staff

Percentage of faculty who are graduates	
of the same university	25%
from other universities within the State	25%
from universities from other States from	50%
Universities outside the country	

37. Number of faculty who were awared M.Phil, Ph.D., D.Sc., and D.Litt. during the assessment period.

NA

38. Present details of departmental infrastructural facilities with regard to

a) Library

(i) Hardcopy Journals subscribed for the Department of Biotechnology

Serial No.	Name of the Journal	Indian /Foreign	Subscription from the year
1.	Nature Biotechnology	Foreign	2006
2.	PNAS	Foreign	2009
3.	Applied and Environmental Microbiology	Foreign	2009
4.	Biotechnology & Applied Biochemistry	Foreign	2006
5.	Indian Journal of Biotechnology	Indian	2002
6.	Journal of Plant Biochemistry & Biotechnology	Indian	2002
7.	Plant Cell	Indian	2002

	Biotechnology & Molecular Biology		

(i) **Total Number of Journals accessible to the students and researchers of NBU throughINFLIBNET:10,899**

Total number of 'Biotechnology' labeled journals (excluding journals of Biochemistry, molecular biology, microbiology, cell biology etc.): 32

Granting Agency	Time period	Total grants received	Number of books purchased
DBT	2004- 2011	Rs. 5,23,000/-	165
State Government grant	2002 - 2013	Rs. 5,12,072/-	278
UGC (Xth, XIIth, & XIIth Plan periods)	2003-2014	Rs. 11,03,620/-	405

b) Internet facilities for staff and students. YES, Every laboratory is equipped with Internet through LAN facility of the University

c) Total number of class rooms.# 03

d) Class rooms with ICT facility # 02

e) Students' laboratories # 01

f) Research laboratories. # 04

(i) Total area of Student laboratories: **1387 sq.ft.**

(ii) Total area for lecture halls: **1083 sq.ft**.

(iii) Infrastructure developed for Outreach program from the Center of Floriculture and Agri-business Management, funded by ASIDE through Department of Food Processing Industries and Horticulture, Government of West Bengal:

De

Sl. No.	Name of the Infrastructure	Size	Status
1	Office cum Service Centre	905 sq ft	Operating
2	Training Pavillion for farmers	511 sq ft	Operating
3	Orchid Repository	584.22 sq ft	Operating, with a collection of 600 mother plants of 6 varieties of orchids namely, *Cattleya*, *Dendrobium*, *Phalaenopsis*, Vanda, *Oncidium* and *Ephidendron*.
4.	Automated Greenhouse	1240 sq mt	Two chambered; Primary hardening unit (413 sq mtr) and Secondary hardening unit (827 sq mtr). Operating
5.	Separate 110 KVA electrical connection		Operating
6.	Tissue Culture Laboratory fortified with all Hi-Tech facilities and equipment	196.34 sq mtr	Double storied. Operating

39. List of doctoral, post-doctoral students and Research Associates.

a) from the host institution/university.

b) from other institutions / universities.

) AWARDED Ph.D

Sl. No.	Name of the Candidate	Title of the Thesis/ year of award	Supervised by:
1.	SRI BHASKAR BHADRA (From host University)	Identification of nickel resistance genes in suitable gram negative bacterial isolates with reference to the physico-chemical and sanitary status of river Torsa [Year of award- 2006]	Dr. Ranadhir Chakraborty
2.	SMT. SHRIPARNA MUKHERJEE (From host University)	Studies on antibiotic resistance patterns of bacterial population of Torsa river and molecular characterization vis-à-vis assessing the potential for genetic exchange of resistance plasmids [Year of award- 2008]	Dr. Ranadhir Chakraborty
3.	SRI BIJOY MOKTAN (From host	Studies on microbiology of traditional legume-based fermented foods of India [Year of award- 2009]	Dr. Ranadhir Chakraborty (co-supervisor)

	University)		
4.	SRI ANIRUDRA GURUNG (From host University)	Characterization of *Acidithiobacillus ferrooxidans* strains from mineral occurrence sites of Darjeeling Himalaya with special emphasis on genomic location and activity of insertion sequences [Year of Award- 2010]	Dr. Ranadhir Chakraborty

4.	Smt. Suparna Bhowal (From host University)	Studies on Microbial Biodiversity of Acidophilic heterotrophs in Acid Rock Drainage samples of Eastern Himalaya (Awarded: 2012)	Dr. Ranadhir Chakraborty
5.	Sri Arvind Kumar (From other University)	Studies on oligotrophic bacteria of River Mahananda of northern West Bengal with special emphasis on genomics of Integrons (awarded in 2013)	Dr. Ranadhir Chakraborty
6.	Sri Akan Das (From other University)	Generation and characterization of Expressed Sequence tags of Tea (Camellia sinesis L. (O) Kuntze). [awarded 2012]	Dr. Dipanwita Saha
7.	Smt. Gargee Dhar Purakayastha (From other University)	Biological control of important fungal pathogens of tea by antagonistic microorganisms isolated from tea rhizosphere[Year of enrollment- October 2007]	Dr. Dipanwita Saha
8.	Smt. Anasooya Ghosh (From host University)	Studies on soil-inhabiting siderophore producing bacteria and their role in suppression of plant root pathogens [awarded in 2013]	Dr. Dipanwita Saha
9.	Smt. Sima Mandal (From host University)	Studies on copper toxicity on cultivated varieties of Tea of North-East India [Yet to be awarded]	Dr. Dipanwita Saha
11.	Sri Krishna Kant Yadav (From other University)	Studies on molecular physiology of biofilm formation in metal tolerant bacteria-Acinetobacter junii BB1A (Acc. No. LMG 22734) [awarded in 2015]	Dr. Ranadhir Chakraborty
12.	Sri Ramashish Kumar (From host University)	Characterization and Application of some plant extracts for controlling important foliar fungal diseases of Tea [awarded in 2015]	Dr. Dipanwita Saha
13.	Sri Kamal Krishna Singh (From host University)	Studies of isozymes of glutamine synthetase in rice (*Oryza sativa*) in relation to drought stress: A comparison with resurrection plant isoforms [awarded in 2014]	Dr. Shilpi Ghosh
14.	Dr. DAMAYANTI DEY(From host University)	Study on the Entomopathogenic bacteria of major Lepidopteran tea pests and evaluation of their prospect as biopesticide [Year of Award-2011, NBU]	Dr. Ranadhir Chakraborty (co-supervisor)
15.	Dr. GOURANGA DAS (From other University)	Potential abilities of medicinal plant constituents and studies of their pharmacological and antimicrobial activities [Year of Award-2011, Jadavpur University]	Dr. Ranadhir Chakraborty (co-supervisor)
16.	Harikamal Barman	Screening, extraction and application of botanical fungicides against important fungal pathogens of some economically important	Dr. Dipanwita Saha (co-supervisor)

		crops of North Bengal[Year of Award- 2013, NBU]	
17.	Arindam Das	Studies on R-plasmids in bacteria isolated from Epizootic Ulcerative Syndrome (EUS) affected fishes[Year of Award- 2011, NBU]	Dr. Dipanwita Saha (co-supervisor)
18.	Lopamudra Das	Studies on tea seed mycoflora and resistance of young tea plants against Rhizoctonia solani, a soil borne root pathogen of germinating tea seedlings[Year of Award- 2015, NBU]	Dr. Dipanwita Saha (co-supervisor)
19.	Bikram Kumar Saha	Studies on some viral diseases of economically important crops from sub-Himalayan West Bengal and their management strategies[Year of Award- 2015, NBU]	Dr. Dipanwita Saha (co-supervisor)

40. Number of post graduate students getting financial assistance from the university.

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

42. Does the department obtain feedback from

a. faculty on curriculum as well as teaching-learning-evaluation ? If yes, how does the department utilize the feedback ?

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback ?

c. alumni and employers on the programmes offered and how does the department utilize the feedback ?

43. List the distinguished alumni of the department (maximum 10)

1. Dr. Trinadh V Satish Tammana

Faculty Scientist at Institute of Bioinformatics and Applied Biotechnology (IBAB)

Bengaluru, Karnataka

2. Dr. Madhumita Roy

Assistant Professor in Biotechnology

Department of Biotechnology

Techno India University,

Salk Lake, Kolkata-91

3. Dr. Praggya Mittal

Postdoctoral Fellow at MRC Human Genetics Unit

Edinburgh, City of Edinburgh, United Kingdom

4. Dr. Laxmi Narayan Mishra

Postdoctoral Associate

University of Rochester Medical Center

Rochester, USA

5. Dr. JaiPrakash Sharma

Postdoctoral Associate

Baylor College of Medicine

Houston, Texas

USA

6. Sri Kurva Jagannath

Research Scientist, BARC, Mumbai

7. Sri Saikat Chakraborty

Research Scientist, BARC, Mumbai

8. Dr. Shashank Tripathi

Post Doctoral Research Fellow

Icahn School of Medicine

Mount Sinai, New York

USA.

9.

44. Give details of student enrichment programmes (special lectures/workshops/seminar) involving external experts.

Visiting Fellow:

Dr. John Hallsworth (Queen Belfast University, North Ireland); 19th December 2012; **'Chaotropicity can determine the limits of life in the biosphere'.**

Prof. Dhrubajyoti Chattopadhyay (Dr. B.C Guha Centre for Genetic Engineering, Kolkata);24-25 February, 2013; '***Biomolecular interactions in the life cycle of viruses***'

Prof. S.P. Adhikary (Department of Biotechnology, Visva-Bharati), 25-26 February, 2013; '***Culture collections of micro-algae and cyanobacteria: The Indian scenario in the globe'***

Dr. Wriddhiman Ghosh (Department of Microbiology, Bose Institute), 25-27 February, 2013; '***Elucidation of microbial community structure and function by deep sequencing techniques***'.

Dr. Bomba Dam, Humboldt fellow (Department of Botany, Visva-Bharati), 25-27 February, 2013; '***RNA-seq analysis reveals differential expression of methane and nitrogen metabolism related genes in Methylocystis sp. Strain SC2 due to ammonia amendment***'

Dr. Biswajit Pal (CCMB, Hyderabad), 25-27 February, 2013; ***'Soluble Guanylate cyclase: on bench and bed side'***.

Dr. Biman Mandal (Department of Biotechnology, IIT, Guwahati), 25-27 February, 2013; '***Silk: A promising biomaterial for tissue engineering***'

Dr. Anupam Chakravarty (Sloan Kettering Cancer Research Institute, USA) delivered a lecture entitled "

Dr. Ushati Das Chakravarty (Sloan Kettering Cancer Research Institute, USA) delivered a lecture entitled "

Prof. Adhar Manna (Department of Biological Sciences, Presidency University) delivered a talk entitled "

Dr. Aninya Ghosh (department of Biotechnology, IIT, Kharagpur) delivered a talk entitled- "A tale of two enzymes"

45. List the teaching methods adopted by the faculty for different programmes.

Method-1

Prior to a formal class lecture, students are asked 10 questions on the topic to be discussed that day, 5 information-based and 5 logical-reasoning, of a total duration of 10 min

After 40 minutes lecture, same questions are asked to the students for the answers.

As a result, there is a visible change in the understanding; moreover the method enables the teacher to evaluate the efficiency of the day's teaching, allows to identify relative weaknesses among the students in grasping the matter that was taught.

Method-2

Week-end task

On any week day, class tests are taken; students are informed that the second test will follow the next week on the same set of questions.

Result: Improvement in the self-learning of the students enabling them for better scoring and to improve skill in appropriate answering.

Method-3

Creating an interactive environment in the class by (i) inviting questions from the students as well as appreciating their questions; (ii)Giving assignments on problems related to Biochemistry and Molecular Biology; (iii) acquainting students current updates during the lecture and references to original research articles (sometime hand-outs) are provided.

Method-4

Journal Club: Students present published research papers

Method-5

When a practical is set, teacher performs the same practical side-by-side the students.

Outcome of the experiment is compared.

The desired result and the obtained results by the students are compared. Faults are detected; missing steps or overdoing of a particular step leading to an altered result are detected.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored ?

Every year the Coordinator of the DBT sponsored Department of Biotechnology has to present the yearly progress report in the DBT prescribed format, in the Annual DBT Coordinators meetings held at different places in India, that are evaluated by DBT experts. Satisfactory result from this mandatory evaluation cum monitoring is a pre-condition for the continuation of the DBT grant. The filled-in DBT format speaks about the learning outcomes.

47. Highlight the participation of students and faculty in extension activities.

(iii) Development of Outreach activities & role of DBT-GoI sponsored department in transferring technology from LAB to LAND:

a. Creation of a Center titled on –' **Center of Floriculture and Agri-business Management (COFAM)**' having three important mandates- **a)** impart training to growers at grass-root level on Cultivation of Floricultural crops and high-value quick return vegetables for economic upliftment; **b)** Production of planting materials by Tissue culture; **c)** Entrepreneurship development.

48. Give details of "beyond syllabus scholarly activities" of the department.

(i) Delivering Regular Science talks for the students at School-level in the "North Bengal Science Center"

(ii) Participating in the Regular Phone-in programme in the CTBN channel for the farmers.

(iii) Participating in the Extension work on Hi-tech horticulture.

49. State whether the programme/department is accredited / graded by other agencies ? If yes, give details.

M.Sc Biotechnology Programme has been graded by DBT, Govt. of India as – B+

50. Briefly highlight the contributions of the department in generating new knowledge basic or applied.

New knowledge generated:

A. Certain biotechnological solution to check economic loss of tea industry (basic backbone of economy of this region) due to pests and diseases.

B. Certain novel compounds having potential anti-diabetic and anti-proliferative agents in prevention of diabetes, and cancer.

C. Knowledge regarding regulation of autophagy in Peripheral Blood Mononuclear Cells(PBMCs) and Cancer cells in starvation condition; find suitable alternative to FCS/FBS to make cell culture economic; and testing efficacy of Target specific oligonucleotides on cancer cells

D. Revelation of molecular mechanism of overcoming water stress in rice.

E. Certain Biomedical solution to combat menace of drug-resistant pathogenic bacteria.

F. Deeper understanding of metabolic networks under the control of quorum-sensing mechanism.

G. Coalescence of traditional medicine methods and system biology approaches to uncover the basis of multi-component remedy for formulating effective cure of infectious diseases

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Five Major Strengths:

(i) Excellent Teacher-Student ratio (taking Guest faculties into consideration) for quality education; result reflected in the placement of Post-graduate students.

(ii) Development of focused research programs in biotechnology

(iii) Development of strong ties with researchers throughout the University system

(iv) Leveraged university resources to increase competitiveness in obtaining extramural support.

(v) Enabled to become a nucleus for interdisciplinary research and training initiatives at University of North Bengal

Five Major Weaknesses:

(i) Inadequate number of permanent Faculty members and technical personnels.

(ii) Inadequate modern equipment for facilitating up-to-the mark training of the post-graduates in the cutting edge technology

(iii) Weak electrical power situation and inadequate space.

(iv) Failing to attract the top 10% CEEB (National –level) clearing students to the M.Sc program.

(v) Lesser amount of Post-doctoral research.

Five Major Opportunities:

i) Exploitation of bio-diversity research and technology.

ii) To assist in the preservation, creation, application and dissemination of knowledge by teaching, research and public service in a comprehensive range of disciplines, thereby serving the needs and enhancing the well-being of the people, in order of priority, West Bengal, India as a whole, and the wider world community.

iii) Strengthening of Community-engagement programmes.

iv) To assist Biotech-based Industry with technical know-how particularly the MSMEs.

v) To set up residential training centre for Hi-tech Horticulture

Five Major Challenges:

(i) To be acknowledged locally, nationally and internationally as a first-class teaching and research department of the university whose cultural dimensions of student education, scholarly output and contribution to the community consistently meet standards of excellence

(ii) Breaking down administrative and physical barriers to promote easy access by research partners to the NBU department of Biotechnology.

(iii) To finish our students fit for global competition.

(iv) To boost bio-entrepreneurship

(v) To pool big fund for Biotech-infrastructure development.

The articulation (verbatim) about North Bengal University's M.Sc in Biotechnology is printed in the CEEB (JNU) Brochure is stated below:

23. UNIVERSITY OF NORTH BENGAL, SILIGURI (07 seats) *

Students admitted to the four-semester (two-year) programme (as per DBT, GoI, prescribed syllabus) of the Department of Biotechnology, University of North Bengal, are eligible for the award of M.Sc degree in Biotechnology on successful completion of the course.

Growing with the years, the department has acquired critical expertise in transforming learners of the M.Sc in Biotechnology to future human resources of high quality Science and Technology Institutes of India and abroad. Five salient points of the University's M.Sc program in Biotechnology are: (i) One-to-one teacher-student (teacher student ratio: approx. 1 : 1) interactive and remedial session; (ii) Monitoring and mentoring of individual student to transcend; (iii) exposure to independent hands-on practical connected to a step-up ascent in methods involved to uncover a research problem identified afresh in the respective practical classes; (iv) In-house dissertation projects, beginning from the third semester, as per students' choice, in the fields of biomedical technology, enzyme biotechnology, bioinformatics, agricultural biotechnology, fungal biotechnology, high-throughput biology, phytochemistry, plant biotechnology, animal cell culture, nanobiotechnology, and microbial biotechnology ; and (iv) strong emphasis on learning by doing, holding regular journal club (integral part of the curriculum), presentation of cutting-edge research findings and entrepreneurial projects by students. A Ph.D level course- work and training program in research design has been developed to recruit highly qualified and motivated Ph.D students and post-doctoral associates in genomics-proteomics-metabolomics-resistome research programs supported through various extramural funding by CSIR, DBT, UGC, DST etc. and industrial contributions. The department currently provides strong research ties between NBU-department of Biotechnology and different National and international Research Institutes, and Universities. The steady increase in the quality of publications by the core faculty members of the department is an important index of vibrant intellectual environment. The profile of the sent-out post-graduates pursuing Ph.D as well as post-Ph.D research in internationally recognized centres of higher learning and research , and the quanta of qualifiers in National eligibility tests (NET, GATE, DBT-BET, ICMR) are the main reasons why students qualifying combined entrance examination are attracted to get admitted to M.Sc Biotechnology program of the University of North Bengal.

Fees to be paid at the time of Admission: Rs.878/- (Approx.) for first semester

52. **Future plans of the department**.

(i) To emphasize student-centred learning by helping faculty to adopt new roles:

- devote larger proportions of time to students
- shift from our past emphasis on what teachers wanted to teach to what students need to learn
- focus on student outcomes
- use appropriate teaching technologies

- accept our accountability for what student outcomes do occur.

(ii) To attain national recognition for excellence in research and teaching in biotechnology.

(iii) To provide expertise in a wide range of technical areas and perform biotechnological analyses on a contract or for fee basis to companies involved in biotechnology or other DNA-based products or services.

(iv) Construction of a Biosafety Laboratory for conducting researches on communicative diseases.

(v) Setting up of a Virology Laboratory for disease diagnosis, detection, and fundamental research.

(vi) To establish a Hi-tech Horticulture residential Training centre in the COFAM campus to boost green-industry in North Bengal.

1.	Name of the Department:	**BOTANY**
2.	Year of establishment:	**1984**
3.	Is the Department part of a School/**Faculty of the university**?	**Faculty of Science**
4.	Names of the programmes offered (UG, **PG**, M. Phil, **Ph. D**, Integrated Masters, Integrated Ph. D, D. Sc, D. Litt, etc.):	**P.G., Ph.D.**
5.	Interdisciplinary programmes and departments involved:	**UGC-ASC (Refreshers course: Life Sciences (multidisciplinary)**
6.	Courses in collaboration with other universities, industries, foreign institutions, etc:	**NONE**
7.	Details of programmes discontinued, if any, with reasons:	**NA**
8.	Examination System: Annual/ Semester/ Trimester/ Choice Based Credit System:	**SEMESTER**
9.	Participation of the department in the courses offered by other departments:	**Tea Science, Biotechnology, Microbiology**

10. Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others)

	Sanctioned	**Filled**	**Actual (including CAS & MPS)**
Professors	2	2	4
Associate Professors	2	2	3
Asst. Professors	6	5	2
Others			

11. Faculty profile with name, qualification, designation, area of specialization, experience and Research under guidance

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./M.Phil. students guided since 2006
Prof. Abhaya Prasad Das	Ph. D.	Professor	Plant taxonomy and biosystematics	40	Ph.D:15 ; M.Phil: 04
Prof. Bishwanath Chakraborty	Ph. D.	Professor	Molecular plant pathology and fungal biotechnology	33	Ph.D:21
Prof. Prabir Kumar Sarkar	Ph. D.	Professor	Microbiology	35	Ph.D:06
Prof. Usha Chakraborty	Ph. D.	Professor	Plant Biochemistry and Biochemical Plant Pathology	29	Ph.D:20
Dr. Aniruddha Saha	Ph. D.	Associate Professor	Molecular Plant Pathology and Plant Virology.	19	Ph.D:24
Dr. Arnab Sen	Ph. D.	Associate Professor	Cyto-Genetics and Bioinformatics	16	Ph.D:14
Dr. Subhas Chandra Roy	Ph. D.	Associate Professor	Cyto-Genetics and Bioinformatics	18	Ph.D:06
Dr. Palas Mandal	Ph. D.	Assistant Professor	Plant Physiology and Pharmacognosy	13	Ph.D:05
Dr. Monoranjan Chowdhury	Ph. D.	Assistant Professor	Plant taxonomy and biosystematics	09	Ph.D:Nil

a.	**Name:**	ABHAYA PRASAD DAS
	Qualification:	Ph.D.
	Designation:	Professor

Specialization: Plant Taxonomy and Biosystematics,

No. of Years of Experience: 40 years

No. of Ph.D. /M.Phil. students Ph.D.:15; M.Phil: 04

Guided since 2006:

Awarded

- Upakar Rai (2007) Biodiversity Characterisation of Darjeeling Part of Eastern Himalaya.
- Chandra Ghosh (2007) Biology of Tea Garden Weeds in Darjiling District of West Bengal (India).
- Monoranjan Chowdhury(2009) Plant Diversity and Vegetation Structure in the Wetlands of Malda District of West Bengal, India.
- Gopal Shukla (2010) Biomass Production and Vegetation Analysis of Chilapata Reserve Forest Ecosystem of West Bengal.
- Sonam Rinchen Lepcha (2011) Floristic Diversity of Pangolakha Wildlife Sanctuary, East Sikkim.
- Ajita Sarkar (2011) Ethnobotanical Studies of Sub-Himalayan Duars in West Bengal and Assam With Particular Reference To The Tribe Mech.

Submitted

- Animesh Sarkar(2014) Non-Timber Forest Products and their Conservation in Buxa Tiger Reserve, West Bengal, India.
- SumanNirola (2015) Monocotyledonous Flora of Darjeeling District of West Bengal, India.
- Narpati Sarma. Species Diversity and Productivity Pattern Along Altitudinal Gradients in East District of Sikkim, India.
- Goutam Saha. Spermatophytic Flora of Gorumara National Park in the Duars of West Bengal, India.
- Rajib Biswas (2015) Survey of Floristic Diversity and Vegetation Structure of Rasik Beel in the Cooch Behar District of West Bengal.

Registered

- Narpati Sarma (2011) Species Diversity and Productivity Pattern Along Altitudinal Gradients in East District of Sikkim, India.
- Kishore Biswas (2012) Impact of Plantation Forests on the Plant Diversity of Terai and Duars Region of West Bengal.
- Dibakar Choudhury (2012) Distribution and Chemotaxonomy of Some Members of Lauraceae in Terai and Duars Region of West engal.
- Anurag Chowdhury (2012) Studies on the Diversity and Ethnic Uses of Wetland Vascular Plants in Terai and Duars of West Bengal, India.
- Amalesh Bijali (2012) Leaf Architecture of Some Rutaceous Plants in East Himalayan Region.
- SauravMoktan (2013) Phytosociology charecterization of vegetation in Darjeeling Hills.

b. Name PRABIR KUMAR SARKAR

Qualification:	Ph.D.
Designation:	Professor
Specialization:	Microbiology
No. of Years of Experience:	35 years
No. of Ph.D. /M.Phil. students	Ph.D: 06
Guided since 2006:	
Awarded	• Arindam Roy (2009) Occurrence and behaviour of foodborne bacterial pathogens in some legume-based traditional fermented foods marketed in West Bengal, India • Bijoy Moktan (2010) Microbiology of some legume-based traditional fermented foods of India • Jayati Saha (2011) Screening of antimicrobial and antioxidant activities of some selected herbs used as folk medicines in Darjeeling hills.
Submitted	• Mousumi Rakshit (2014) Survivability and growth of foodborne bacterial pathogens as influenced by processing technologies during the production and storage of some legume-based traditional foods of India.
Registered	• Anand Sharma (2012) Antinutritional factors as influenced by processing parameters during the production of some traditional legume-based fermented foods of India. • Sarita Kumari (2012) Enumeration and characterisation of *Bacillus cereus* strains in the dairy environment of the district of Darjeeling, India.

c.	**Name:**	BISHWANATH CHAKRABORTY
	Qualification:	Ph.D.
	Designation:	Professor
	Specialization:	Molecular Plant Pathology and Fungal Biotechnology
	No. of Years of Experience:	33 years
	No. of Ph.D. /M.Phil. students	Ph. D: 21
	Guided since 2006:	
	Awarded	• Monica Sharma (2006) Biochemical and Immunological characterization of pathogenesis-related proteins in tea triggered by *Exobasidium vexans* Massee • Rakhee Das-Biswas (2006) Studies on multicomponent coordinated defense strategies in tea against foliar fungal pathogens and *Helopeltis theivora* • Indramani Bhagat (2007)Studies on sclerotial blight of tea and its management • Merab Basnet (2007)Investigations on plant growth promoting rhizobacteria of tea and elucidation of their mechanism of action [Co-Supervisor] • Rita Som (2008) Studies on the resistance of tea plants against *Glomerella cingulata* (Stoneman) Spauld. & Schrenk with special reference to the involvement of defense enzymes

- Subhash Chandra Roy (2009) Genomic fingerprinting of tea germplasm and analysis of transcript accumulation of a defense protein involved during induced systemic resistance
- Prabir Roy Chowdhury (2010) Exploitation of rhizosphere microorganisms of tea for protection against root rot pathogens[Co-Supervisor]
- P. Subbalaksmi (2010) Biochemical and Serological studies on Charcoal Stump Rot Disease of Tea and its Management
- Lanjey P. Bhutia (2011) Screening of phosphate solubilizing fungi from tea rhizosphere of Sikkim and formulation of bioinoculants with a plant growth promoting rhizobacterium for management of charcoal stump root disease of tea
- Pannalal Dey (2011) Search for agriculturally important microorganisms from soils of river basins, forests and crop fields in the Terai-Dooars of North Bengal and analysis of their diversity
- Kuldeep Rai (2011) Studies on rhizosphere microflora of mandarin plants and their assessment as potential biocontrol agent against root diseases
- Arka Pratim Chakraborty (2014) Studies on *Bacillus megaterium* and *Serratia marcescens* as plant growth promoters and biocontrol agents[Co-Supervisor]
- Kiran Sunar (2014) Studies on soil microbial diversity of Darjeeling hills and their evaluation for utilization in the improvement of crop health
- Utanka Kumar De (2014) Screening of Arbuscular Mycorrhizal Fungi and Plant Growth Promoting Rhizobacteria from rhizosphere of Plantation crops and their evaluation for induction of resistance in tea plants against fungal pathogens
- Sanjita Allay (2015) Screening of Arbuscular Mycorrhizal Fungi and Plant Growth Promoting Fungi from rhizosphere of *Citrus reticulata* Blanco and their assessment for management of root rot disease

Registered

- Somnath Roy (2012) Strategies for improvement in cultivation practices of Oyster Mushroom in North Bengal
- Pushpanjali Ray (2012) Search for Novel Actinomycetes from soil as potential biocontrol agent against fungal root pathogens of *Phaseolus vulgaris* (L.) and *Vigna radiata* (L.)
- Protik Chowdhury (2012) Comparative study of lignocellulose degrading enzymes during growth and development of *Pleurotus fossulatus* and evaluation of its nutritional and medicinal properties
- Sweata Khati (2012) Elucidation of multicomponent

coordinated defense strategies in rice plant against *Drechslera oryzae*

- Amrita Acharya (2013) Serological and molecular detection of foliar fungal pathogens of *Persea bombycina* Kost and activation of defense response using bioinoculants [Co-Supervisor]
- Shibu Barman (2014) Development of year long edible mushroom cultivation practices in North Bengal and field evaluation of spent mushroom substrate for crop improvement.

d.	**Name:**	USHA CHAKRABORTY
	Qualification:	Ph.D
	Designation:	Professor
	Specialization:	Plant Biochemistry and Biochemical Plant Pathology.
	No. of Years of Experience:	29 years
	No. of Ph.D. /M.Phil. students Guided since 2006:	Ph.D.:20

Awarded

- Paramita De (2006) Studies on biodegradation of pulses by storage fungi.
- Mereb Basnet (2007) Investigations on plant growth promoting rhizobacteria of tea and elucidation of their mechanism of action.
- Cyaria Tongden (2007) Biochemical characterization of temperature stress response of *Cicer arietinum* L. and induction of thermotolerance.
- Belinda Lahon (2007) Studies on heavy metal stresses in okra [*Abelmoeschus esculentus* (L.)Moench] .
- Prabir RoyChowdhury (2008) Exploitation of rhizosphere microorganisms of tea for protection against root rot pathogens.
- Hariswami Das (2008) Characterisation of active principles found in some ethnomedicinal plants.
- Gargi Saha (2009) Studies on Anthropogenic stresses in tea (*Camellia sinensis* (L.) O. Kuntze).
- Lanjey P. Bhutia (2010) Screening of phosphate solubilizing fungi from tea rhizospherre of ikkim and formulation of bioinoculants with a plant growth promoting rhizobacterium for management of charcoal stump root disease of tea [Co-Supervisor]
- Deepti Pradhan (2011) Oxidative stress signaling in soybean and lentil under temperature stress and induction of thermotolerance.
- Kuldeep Rai (2011) Studies on rhizosphere microflora of mandarin plants and their assessment as potential biocontrol agents against root diseases [Co-Supervisor].
- Arka Pratim Chakraborty (2014) Studies on *Bacillus megaterium* and *Serratia marcescens* as plant growth promoters and biocontrol agents.

- Kiran Sunar (2014) Studies on soil microbial diversity of Darjeeling hills and their evaluation for utilization in the improvement of crop health [Co-Supervisor].
- Bhumika Pradhan (2014) Influence of drought and salinity on metabolic processes in different wheat varieties.
- Rohini Lama (2014) Biochemical responses of maize (*Zea mays* L.) to water stress.

Registered

- Nishika Jaishee (2012) Phytochemical analysis of some ferns with reference to their antioxidant, hypoglycaemic and antimicrobial activities.
- Sukanta Majumdar (2012) Evaluation of Jute Rhizosphere Bacteria for Plant Growth Promotion and Disease Suppression.
- Swarnendu Roy (2012) Comparative analyses of tolerance mechanisms in salt-tolerant grasses and rice under salinity stress.
- Sandip Dev Chaudhuri (2012) Medicinal properties of some dietary herbs and spices.
- Jayanta Choudhury (2012) Studies an the antioxidative and other beneficial properties of some plants from wetlands of North Bengal
- Shibu Barman (2014) Development of year long edible mushroom cultivation practices in North Bengal and Feild evalution of spent mushroom substrate for crop improvement[Co-Supervisor]

e.	**Name:**	ANIRUDDHA SAHA
	Qualification:	NET, Ph.D.
	Designation:	Associate Professor
	Specialization:	Molecular Plant Pathology and Plant Virology.
	No. of Years of Experience:	19 years
	No. of Ph.D. /M. Phil. students Guided since 2006:	Ph. D:24

Awarded

- Surjit Sen (2007) Studies on Cymbidium rot and its management by biocontrol agents.
- Md. Mehbub Isha (2008) Studies on the resistance of *Solanum melongena* L. against *Colletotrichum gloeosporioides* (Penzig) Saccardo and control strategies of the disease.
- Parimal Mandal (2010) Induction of resistance in tea (*Camellia sinensis* (L.) O. Kuntze by Biotic and abiotic inducers against Lasiodiplodia theobromae (Pat.) Griffon & Mauble fro management of Diplodia disease.
- Chandrani Choudhuri (2010) Studies on the resistance of niger [*Guizotia abyssinica* (L. F.) Cass.] against *Alternaria*

alternata causing leaf blight and control of the disease using Botanicals and antagonists.

- Shankar Ghosh (2011) Studies on post harvest diseases of tomato, pineapple and orange and their control by microbial antagonists and botanicals.
- Md. Golam Rasul (2011) Phytochemical investigation of some medicinal plants, transformative reaction on the isolated organic compounds and studies on their biological activities [Co-Supervisor].
- Pannalal Dey (2011) Search for agriculturally important microorganisms from soils of river basins, forests and crop fields in the Terai-Doors of North Bengal and analysis of their Diversity [Co-Supervisor].
- Hari Kamal Burman (2012) Screening, extraction and application of botanical fungicides against some important fungal pathogens of economically impotant crops of North Bengal.
- Madhumita Chakraborty (2012) Studies on the antimicrobial activity of available triterpenoids and its derivatives from some medicinal plants.
- Lopamudra Das (2013) Studies on tea seed mycoflora and resistance of young tea plants against *Rhizoctonia solani*, a soil borne root pathogen of germinating tea seedlings
- Anasooya Ghosh (2014) Studies on soil-inhabiting siderophore-producing bacteria and their role in suppression of plant root pathogens [Co-Supervisor].
- Ranju Tamang (2014) Micropropagation of some orchids of Darjeeling and Sikkim Himalayas[Co-Supervisor].
- Bikram Saha (2014) Studies on some viral diseases of economically important crops from sub-Himalayan west Bengal and their management strategies.
- Gargee Dhar Purkayastha (2015) Biological control of important fungal pathogens of tea by antagonistic microorganisms isolated from tea rhizosphere [Co-Supervisor].
- Rashi Subba (2015) Isolation and characterization of phosphate solubilising microbes from Darjeeling soils for their use as potential inoculants in upland farming systems [Co-Supervisor].

Submitted

- Ramashish Kumar (2015) Characterization and application of some plant extracts for controlling important foliar fungal diseases of tea [Co-Supervisor].
- Sima Mandal (2015) Studies on copper toxicity on cultivated varieties of teaof North East India [Co-Supervisor].

Registered

- Tarun Mishra (2013) Evaluation of antioxidant properties of tea under various agro-climatic conditions of North Bengal
- Bilok Sharma (2013) Studies on optimum utilization of fertilizers for Pine apple (*Annascomosus*), cultivated in sub-Himalayan West Bengal.
- Hrisikesh Mandal (2013) Isolation and Characterization of *Ralstonia solanacearum* causing bacterial wilt of tomato and

control of the disease

- Shibu Das (2013) Induction of defense enzymes and analysis of specific transcripts in tea in response to fungal infection and chemical treatment.
- Arnab Saha (2013) Studies on some leaf and fruit diseases of *Lagenaria siceraria* (Molina) Standl. and their management
- Prosenjit Chakraborty (2014) Molecular detection, diversity analysis and management of some RNA viruses infecting crops in north-east Indian plains.
- Piyali Sarkar (2014) Studies on diversity and distribution of potyviruses infecting cultivated crops of sub-Himalayan West Bengal and their management strategies.

f.	**Name:**	ARNAB SEN
	Qualification:	M.Phil. Ph.D.
	Designation:	Associate Professor
	Specialization:	Cyto-Genetics and Bioinformatics.
	No. of Years of Experience:	16 years
	No. of Ph.D. /M.Phil. students Guided since 2006:	Ph.D: 14

Awarded

- Manprit Gill (2009) Study of genetic diversity and standardization of genetic transformation in Camellia sinensis (L.) O. Kuntze.
- Saubashya Sur (2012) Studies of codon usage, prteome analysis and evolution of nitrogen fixing genes in some microorganisms- A bioinformatic approach.
- Uttam Kumar Mondal (2013) Genomics of some pathogenic food bacteria and molecular modeling of their important oxins and their interactions.
- Bharat Basistha (2013) Genetic diversity of Frankia associated with Hippophae L. in Lachen valley of North Sikkim.
- Debadin Bose (2013) Diversity of Frankia associated with Alnus nepalensis and Casuarina equisetifolia in West Bengal.
- Subarna Thakur (2014) In silico characterization of some nitrogenase proteins found in symbiotic diazotrops and cyanobacteria.
- Arvind Kumar Goyal (2014) Study of genetic diversity and micropropagation of bamboos growing in North Bengal.
- Malay Bhattacharya (2015) Micropropagation, diversity study and detection of antioxidants in some medicinal Zingibers.

Submitted

- Tanmayee Mishra (2014) Diversity and micropropagation of Canna from West Bengal and Orissa.

Registered

- Ritu Rai (2012) Diversity study of Rhizobium from North Bengal and Sikkim through Biochemical and Molecular characterization and exploration of their role as biofertilizer.

- Ayan Roy (2012) Riddles of human intestinal microflora- a bioinformatics perspective.
- Manas Ranjan Saha (2012) Medicinal and molecular documentation of some members of Mimosaceae and their micro-symbionts.
- Sanghati Bhattacharya (2014) Characterization and diversity of selected Actinorhizal haemoglobin genes and proteins with reference to Alnus-Frankia symbiosis.
- Pallab Kar (2014) Studies of molecular diversity and chemical properties of selected medicinal members under the genus *Clerodendrum* L.

g.	**Name:**	SUBHAS CHANDRA ROY
	Qualification:	M.Tech., NET, Ph.D.
	Designation:	Associate Professor
	Specialization:	Cyto-Genetics.
	No. of Years of Experience:	18 years
	No. of Ph.D. /M.Phil. students	Ph.D.: 06
	Guided since 2006:	
	Awarded	NIL
	Submitted	• Sabina Pradhan (2015) Studies on Physiology and Biochemistry of Swertia chirayita (Roxb.) Karsten in Darjeeling Hills: Influence of Plant growth substances on growth, metabolism and yield [Co-Supervisor].
	Registered	• Sachina Yongone (2012) Isolation and biochemical characterization of L-Myo-inositol 1-phosphate synthase from *Asterella khasiana* (Griff.) Grolle and *Sphagnum junghuhnianum* Doz 7 Molk. of Darjeeling Hills. • Koushik Moitra (2013) Conservation of some selected orchid of North Bengal though *in vitro* mass-propagation. • Bidya Debi Sharma (2012) Title: Assessment of genetic variation in rice germplasm (Oryza sativa L.) based on Morpho-quality Traits and Characterization of cold tolerance QTLs for Crop Improvement. • Tanmoy Choudhury (2012) Ethnobotany of Dakshin Dinajpur district with special reference to biodiversity and conservation of *Ocimum* species.

h.	**Name:**	PALASH MANDAL
	Qualification:	NET, Ph.D.
	Designation:	Assistant Professor
	Specialization:	Plant Physiology and Pharmacognosy.
	No. of Years of Experience:	13 years
	No. of Ph.D. /M.Phil. students	Ph.D.: 05
	Guided since 2006:	
	Awarded :	NIL
	Submitted	• Mitali Ghosal (2013) Evaluation of antioxidant activities

	of some locally available edible plants of d Darjeeling Himalaya.
Registered	• Saran Kumar Gupta (2013) Elicitor induced biochemical changes associated with nitric oxide and calcium signalling during seed germination in *Trigonella foenum – graceum* L. • Arunika Subba (2015) Pharmacognostic evaluation and *in vitro* antioxidant potential of some ethnomedicines used by traditional practitioners of West Sikkim. • Suchisree Jha (2015) Studies of biochemical attributes of mulberry leaves and silkworm rearing system through elicitation by peptides and other growth regulators. • Sumira Mukhia (2015) Studies of phytochemical and antioxidant properties of selected liverworts of Darjeeling Himalaya.

i.	**Name:**	MONORANJAN CHOWDHURY
	Qualification:	NET, Ph.D.
	Designation:	Assistant Professor
	Specialization:	Plant Taxonomy and Biosystematics.
	No. of Years of Experience:	9 years
	No. of Ph.D. /M.Phil. students	Ph.D.: Nil
	Guided since 2006:	Nil

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors: **NONE**

13. Percentage of classes taken by temporary faculty – programme-wise information: **NONE**

14. Programme-wise Student Teacher Ratio: **M.Sc. – 7. 1:1; Ph.D. - 8:1**

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and Actual:

STAFF	SANCTIONED	FILLED	ACTUAL
TECHNICAL	5	3	3
ADMINISTRATIVE	1	1	1
OTHERS	3	0	0

16. Research thrust areas as recognized by major funding agencies:

- Microbiology including Mycology and Plant Pathology
- Plant Diversity
- Food Microbiology

- Plant Growth promotion and induction of resistance through PGPR, PGPF and AMF
- Abiotic stress responses in plants
- Plant Virology
- Medicinal Plant Biology
- Utilization of Rural Bioresources
- Bioinformatics

17. Number of faculty with ongoing projects from a) National b) International funding agencies and c) Total grants received. Give the name of the funding agencies, project title and grants received

Project-wise:

Faculty Name	Title	Agency	Period	Amount
Dr. P. K. Sarkar	Screening of antimicrobial and antioxidant activities of some selected herbs used as folk medicines in Darjeeling hills	CSIR	2005-2008	Rs. 12,00,000/-
Dr. B. N. Chakraborty (PI) Dr. U. Chakraborty (Co-PI)	Collection, identification and characterization of microbial diversity of North Bengal [Network Project- AMAAS]	ICAR	2006 -2014	Rs. 48,99,743/-
Dr. A. Sen (PI)	Establishment of Bioinformatics Infrastructure Facility (BIF) for promotion of biology teaching through bioinformatics (BTBI) under BTISnet program.	DBT	2006-2014	Rs. 81, 43, 500/-
Dr. S. C. Roy (PI)	Genomic Fingerprinting of Tea Germplasm using RAPD and ISSR markers for Evaluation of Genetic Diversity.	UGC	2007-09	Rs. 75, 000/-
Dr. U. Chakraborty (PI) Dr. B. N. Chakraborty (Co-PI)	Studies on two rhizobacterial isolates of tea for development as bio fertilizer and bio control agent'	DBT	2007-2010	Rs. 17, 60,000/-
Dr. U. Chakraborty (PI)	Oxidative stress signaling in soybean and lentil under temperature stress and induction of thermotolerance	UGC	2007-2010	Rs. 6,65,000/-

Dr. P. K. Sarkar	Optimization of tofu processing waste (whey) as growth media for probiotics	UGC	2008-2011	Rs. 10,00,000/-
Dr. A. P. Das (PI)	Extension of Cultivation of Medicinal Plants and the Exploration of Oil Yielding Plants in North Bengal.	RKVY project through '*Dept of Food Processing Engineering & Horticulture*', Govt of WB	2008-2012	Rs. 75, 96,000/-
Dr. A. Sen (PI)	Development of novel methodology for understanding the mechanism of nitrogen fixation through codon usage analysis of nitrogen fixation genes and proteins structure modelling of relavent gene product(protein) and its implications.	DBT	2009-2012	Rs. 19,88,935/-
Dr. A. P. Das (PI)	Establishment of Model Nursery.	National Medicinal Plants Mission, '*Dept of Food Processing Engineering & Horticulture*', Govt of WB	2010-2012	Rs. 4,00,000/-
Dr. S. C. Roy (PI)	Molecular cloning and expression of chitinase cDNA of tea plant [*Camellia sinensis*] for its functionality in plant defense system.	UGC	2010-2013	Rs. 5, 46, 500/-
Dr. P. Mandal (Co-PI)	Profile study of peptides and antioxidants of Mulberry leaves: in relation to their potential in artificial diet rearing system of silkworm (in collaboration with University of Calcutta)	UGC	2011-2014	Rs. 7, 22, 930/-
Dr. U. Chakraborty (PI) Dr. B. N. Chakraborty (Co-PI)	Amelioration of abiotic stresses in wheat varieties by osmo-tolerant and plant growth promoting rhizobacteria and elucidation of their mechanism of action	CSIR	2011-2014	Rs. 19,45,000/-
Dr. S. C. Roy (PI)	Assessment of genetic variations among the local rice (*Oryza sativa* L.) verities and QTL analysis for crop improvement	NBU	2012-2013	Rs. 75, 000/-

Dr. A. Saha (PI)	Molecular detection, diversity analysis and phylogeny of RNA viruses causing diseases of horticultural crops in north-east India for the development of easy diagnostic device	UGC	2012-2015	Rs. 9,00,000/-
Dr. A. Sen (PI)	Studies of the expression of haemoglobin genes and production Nitric Oxide in response symbiotic frankia in *Alnus nepalensis*	UGC	2012-2015	Rs. 4,30,000/-
Dr. A. Sen (PI)	Characterization of Actinorhizal Haemoglobin proteins.	NBU	2013-2014	Rs. 75, 000/-
Dr. P. Mandal (PI)	Developmental stimulation of antioxidants in dark germinated *Trigonella foenum-graecum* L. by Nitric Oxide Donors and Scavengers	NBU	2013-2014	Rs. 75, 000/-
Dr. M. Chowdhury (PI)	Study of vegetation structure and need of conservation of Mahananda Barrage Reservoir, Fulbari, Jalpaiguri.	NBU	2013-2014	Rs. 75, 000/-
Dr. B. N. Chakraborty (PI) Dr. U. Chakraborty (Co-PI)	Screening of resistance in wheat germplasm against spot blotch disease and immunological characterization of defense proteins triggered by *Bipolaris sorokiniana*	CSIR	2014-2016	Rs. 14,86,310/-
Dr. B. N. Chakraborty (PI) Dr. U. Chakraborty (Co-PI)	Development of Biformulations with PGPR, PGPF and AMF for induction of resistance in cereals and pulses against fungal pathogens and improvement of their health status [Networking Project of AMAAS]	ICAR	2014-2017	Rs. 38,72,000/-
Dr. A. Sen (PI)	A Bioinformatics perspective to impede the tubercle bacillus (TB) devastation in West Bengal	WB-DBT	2015-2017	Rs. 13, 13, 200/-

18. Inter-institutional collaborative projects associated grants received:

a) National collaboration :

Dr. B. N. Chakraborty (PI) Dr. U. Chakraborty (Co-PI)	Development of Bioformulation with AMF, PGPF and PGPRs for improvement of Health status of Muga host Plant (*Persea bombycina* Kost) and induction of resistance against foliar fungal pathogens [in Collaboration with Gauhati University]	DBT – Twinning Project	2011-2014	Rs. 17, 80,000/-
Dr. B. N. Chakraborty (PI) Dr. U. Chakraborty (Co-PI)	Establishment of Rural Bio resource Complex in North Bengal [A Collaborative Project with UBKV]	DBT	2012-2016	Rs. 46,62,400/-

b) International collaboration

Dr. B. N. Chakraborty (PI)	Defining key metabolite changes in pathogenic interactions with tea (*Camellia sinensis*). [*A collaborative project with University of Wales, UK*]	RSC, London	2007-2008	GBP 2000

Dr. B. N. Chakraborty (PI)	Metabolite profiling field responses of rice to pathogenic challenge [*A collaborative project with University of Wales, UK*]	RSC, London	2009-2010	GBP 2000
Dr. B. N. Chakraborty (PI) Dr. U. Chakraborty (Co-PI)	Metabolomic profiling of field grown wheat plants under biotic and abiotic stress [An International Collaborative Project with Aberystwyth University, Aberystwyth, UK]	RSC, London	2013-2014	£ 2000

19. Departmental projects funded by DST-FIST; UGC-SAP/ CAS, DPE; DBT, ICSSR, AICTE, etc; total

Grants received:

Investigator	Title of the Projects
UGC SAP-2002-07 (DRS I) – 56 LAKHS	
Dr. P. K. Sarkar	Microbiology of traditional legume-based fermented foods of India
Dr. B. N. Chakraborty Dr. U. Chakraborty Dr. A. Saha	Detection of mycorrhizal fungi associated with tea roots and their Exploitation
UGC SAP-2007-12 (DRS II) – 50 LAKHS	
Dr. P. K. Sarkar	Preparation of some more nutritious and safe legume-based fermented foods by evaluating and tailoring the steps of house-hold processing and isolated microbiota on the nutritional and antinutritional factors in legumes
Dr. B. N. Chakraborty Dr. U. Chakraborty Dr. A. Saha	Development of bioformulations for induction of systemic acquired resistance in tea plants against fungal pathogens
Dr. A. P. Das	Studies on the impact of different types of plantations on the biodiversity in Duars and on the Hills of Darjiling
UGC SAP – 2013-18 (DRS III) – 75 LAKHS	
Dr. P. K. Sarkar Dr. P. Mandal	Prevalence, Survival, Growth Characteristics, and Toxigenicity of Foodborne Bacterial Pathogens in Processed Foods, Marketed in the Town of Siliguri
Dr. B. N. Chakraborty Dr. U. Chakraborty Dr. A. Saha	Activation of defense in Mandarin (*Citrusreticulata*) plants against root rot pathogens using AMF PGPF and PGPR for improvement of their health status in Darjeeling Hill
Dr. A. P. Das Dr. A. Sen Dr. S. C. Roy Dr. M. Chowdhury	Habitat analysis, conservation and genomic studies of some RET plants of Terai, Duars and hills of Darjiling

20. Research facility/ centre with

State recognition:

- Conservation and Utilization of Medicinal Plants
- Bioinformatics facility

National recognition:

- UGC-Special Assistance Program (DRS I-III : 2002-2007, 2007-2012, 2013-2018)
- DBT - Rural Bio resource Centre (Estd.2012)
- NMPB - Conservation and Utilization of Medicinal Plants
- Immuno-Phytopathology Laboratory funded by DBT, Govt of India (Estd.1995)
- Mushroom Production Unit funded by DBT, Govt. of India (Estd.2014)
- Bioinformatics Centre funded by DBT, Govt of India

International recognition: NIL

21. Special research laboratories sponsored by / created by industry or corporate bodies: NIL

22. **Publications**: **Please see volume IV of SSR.**

23. Details of patents and income generated: **NONE**

24. Areas of consultancy and income generated: Environmental Impact Assessment done by the faculty members

25. Faculty selected nationally / internationally to visit other laboratories / institutions/industries

In India and abroad:

Prof. B. N. Chakraborty visited Russia in 2007

Prof. U. Chakraborty visited Russia in 2007

Dr. A. Sen visited University of New Hameshre, USA in 2007

Prof. B. N. Chakraborty visited Aberystwyth University, UK in 2008

Prof. U. Chakraborty visited Aberystwyth University, UK in 2008

Prof. B. N. Chakraborty visited Beijing, China as Indian representative Asia-Pacific region Syngenta in 2013

Prof. U. Chakraborty visited Beijing, China as Indian representative Asia-Pacific region Syngenta in 2013

Dr. A Sen visited University of Lyon, France in 2013

Dr. A. Saha visited Bangkok

Dr. S. C. Roy visited IRRI, Philipines

Dr. A. P. Das visited Nepal

26. Faculty serving in

a) National committees:

- Professor A.P.Das

External expert (UGC Nominee) SAP Advisory committee, Department of Botany, University of Jammu

- Professor B.N.Chakraborty

External expert (UGC Nominee) SAP Advisory committee, School of Life Science, University of Tezpur (2009-2013)

Chairman, Regional Research Advisory Committee,Regional Sericulture Research Centre, Kalimpong, Central Silk Board, Govt. of India (2011-2014; 2014-2017)

- Prof.P.K.Sarkar

External expert (UGC Nominee) SAP Advisory committee, Department of Botany,Gauhati University

External expert (UGC Nominee) SAP Advisory committee, Department of Botany,Utkal University

- Prof.U.Chakraborty

Member of DBT Task force " Biotechnology base Programme for Women" (2014-2017)

b) International committees: Nil

c) Editorial board:

Members of Editorial Boards of:

Indian Phytopathology,

Indian Journal of Microbiology (Springer)

Pleione

Journal of Plant Sciences,

NBU Journal of Plant Science

International Journal of Food Safety and Nutrition (Modern Scientific Press, UK)

Indian Journal of Fundamental and Applied Life Sciences (CBI Tech)

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops,

Training programs and similar programs):

- Dr. Palash Mandal participated in UGC-Refresher Course in Biochemical Science during August 16 to September 05, 2008 at ASC, University of Burdwan
- Dr. Palash Mandal participated in UGC-Refresher Course in Life Science during September 08-28, 2011 at ASC, University of North Bengal
- Dr. Manoranjan Chowdhury participated in UGC-Refresher Course in Life Science during November 19 to December 09, 2014 at ASC, University of North Bengal

28. Student projects

Percentage of students who have done in – house projects including interdepartmental

Projects: **100%**

Percentage of students doing projects in collaboration with other universities /industry /

Institute: **0%**

29. Awards /recognitions received at the national and international level by Faculty

National Level

- Professor B.N.Chakraborty received Prof. K. Natarajan Endowment Lecture Award, from CAS Department of Botany, University of Madras, Chennai, during 2010
- Professor U. Chakraborty was elected as a Fellow of Royal Society of Chemistry, London during 2010
- Professor B.N.Chakraborty received Dastur Memorial Lecture Award, from Indian Phytopathological Society, IARI, during 2011
- Professor B.N.Chakraborty was elected as President of Indian Society of Mycology & Plant Pathology for the period 2012-13

- Professor B.N.Chakraborty was elected as a Fellow of Indian Society for Plantation Crops during 2012
- Professor U. Chakraborty received Prof.Lalita Kumari Endowment Lecture Award from CAS Department of Botany, University of Madras, Chennai, during 2013.
- Professor B.N.Chakraborty received N. Prasada Memorial Lecture Award from ISMPP, Udaipur during 2014
- Professor U.Chakraborty received Woman Leadership Award for significant contribution in the field of Agricultural Microbiology from Asian PGPR Society and Banaras Hindu University, during National Workshop on " Advances in PGPR Research", October 7-8, 2014
- Professor U.Chakraborty has been elected as President of Indian Society of Mycology & Plant Pathology for the period 2014-15

Awards /recognitions received at the national and international level by Doctoral / Post Doctoral fellows

- Arka Pratim Chakraborty and others received ***K.S. Bilgrami Best Paper Award*** from ISMPP at the Second Asian Congress of Mycology and Plant Pathology at Hyderabad, during December 18-22, 2007.
- Merab Basnet received **Guman Devi Verma Best Paper Award** from ISMPP at National Symposium on Advances in Biotechnology for Plant Protection at University of Mysore, during November 17-19, 2008.
- Arka Pratim Chakraborty and others received **Best paper award** at Fifth International Conference on "Biopesticides: Stake Holders' Perspective", organized at TERI, New Delhi, during April 26-30, 2009.
- Pannalal Dey and others received ***K.S. Bilgrami Best Paper Award*** from ISMPP at 32nd Annual Conference of ISMPP and National Symposium on "Innovation in Plant Pathology Research and Human Resource Development" organized by Junagadh Agricultural University, during November 24-26, 2010
- Arka Pratim Chakraborty received **P P Singhal Memorial Pesticides India Industries Award** from ISMPP at 32nd Annual Conference of ISMPP and National Symposium on "Innovation in Plant Pathology Research and Human Resource Development" organized by Junagadh Agricultural University, during November 24-26, 2010 **.**

- Sanjita Allay received **Guman Devi Verma Best Paper Award** from ISMPP at National Symposium on Advances in Biotechnology for Plant Protection at 32nd Annual Conference of ISMPP and National Symposium on "Innovation in Plant Pathology Research and Human Resource Development" organized by Junagadh Agricultural University, during November 24-26, 2010 **.**

- Monica Sharma and others received **Prof. M.J.Narasimhan Medal** from IPS, IARI during 2011

- Lhanjey Bhutia received **P P Singhal Memorial Pesticides India Industries Award** from ISMPP at 3rd Global Conference on "Plant Pathology for Food Security" organized by ISMPP at Maharana Pratap University of Agriculture and Technology, Udaipur January 10-13, 2012.

- Pannalal Dey received P.R.Varma Award from ISMPP 2013

- Kiran Sunar received P.P.Singhal Memorial Pesticides India Award from ISMPP 2014

- Jayanwita Sarkar received Best Oral presentation in 22nd WB State Science and Technology Congress, Botany Section, at North Bengal Universitry during February 28-March 01, 2015

- Pallab Kar and others received Best Poster presentation in 22nd WB State Science and Technology Congress, Botany Section, at North Bengal Universitry during February 28- March 01, 2015

30. Seminars / Conferences /Workshops organized and the source of funding (national /International) with details of outstanding participants, if any

Sl. No.	Title	Funding Agency	Outstanding participants
1.	Advances in Plant and Microbial Research (December, 12-13, 2014)	UGC, DST	Pro. A. K. Roy (Pro-Vice Chancellor, Bhagalpur University) Dr. K. K. Biswas (Principal Scientist, IARI) Dr. D. K. Singh (Deputy Director, BSI)
2.	Recent trends in plants and Microbial Research (March, 22-23, 2013)	UGC	Prof. S. Dutta (DDG, ICAR) Dr. T. R. Sharma (Director, NRC Biotech, IARI) Dr. K. K. Biswas (Principal Scientist, IARI)
3.	Biology and Bioinformatics of Economically important plants and microbes (February 17-19, 2012)	DBT, DST, CSIR, UGC	

4.	Advances in Abiotic and Biotic Stress Management (Sep, 23-24, 2011)	INSA	Professor M. Kapoor, Canada
5.	National Seminar on "Diversity conservation and sustainable utilization of plants and traditional knowledge in Eastern Himalaya" (December 14-16, 2010)		
6.	Microbial wealth –plant heath (Oct 23-24, 2009)	DBT, DST, CSIR, UGC,ICAR, WBBB, INSA	Professor Luis A. J. Mur, UK
7.	National Seminar on "Improving productivity and quality of tea through Traditional Agricultural Practices" (November 15-16, 2008)		
8.	National Symposium on "Sustainable Utilizatipon of Plant and Microbial Resources" (February 28-March 01, 2009)		
9.	Diversity and functionality of plants and microbes (January 24-25,2008)	CSIR	
10.	Emerging plant disease, their diagnostic and management (2006)	DST, INSA,DBT, CSIR,ICAR	

31. Code of ethics for research followed by the departments : Standard ethical procedures where needed are followed. University has a Bioetical Committee for this purpose.

32. Student profile programme –wise

Name of the Programme (refer to question no. 4)	Year	Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
PG	2014-15	143	6	26	-	-
PG	2013-14	121	7	18	-	-
PG	2012-13	98	12	13	100	100
PG	2011-12	54	5	16	100	100
PG	2010-11	61	10	15	100	100

PG	2009-10	88	14	11	100	100
PG	2008-09	70	12	12	100	100
PG	2007-08	126	9	16	100	100
PG	2006-07	96	12	12	100	100

33. Diversity of students

Name of the Programme Year (refer to question no. 4)	% of students from the same university	% of students from other universities within the state	% of students from universities outside the state	% of students from other countries
PG- 2014	81	19	00	00
PG-2013	80	16	04	00
PG 2012	88	08	00	00
PG-2011	100	00	00	00

34. How many students have cleared civil services and Defence Services examinations, NET, SET, GATE and other competitive examinations Give details category wise.

NET: 07 (Swarnendu Roy, Rakhi Chakraborty, Swapan Chowdhury, Biswadeep Ghosh, Prashanta Ghosh, Binita Dev, Ishita Das)

SET: 03 (Kishor Biswas, Anup sarkar, Biswajit Das)

GATE: 05 (Rakhi Chakraborty, Swapan Chowdhury, Sandeep Deb Chowdhury, Binita Dev, Jayanwita Sarkar)

WB Civil Service (Jt BDO): 1 (Dr. Bijoy Moktan)

WB Forest Service (Ranger): 1 (Mr. Rajib Dey)

BSI Scientist (Scientist): 1 (Mr. Ravi Prasad)

35. Student progression

Student progression	**Percentage against enrolled**
UG to PG	Not Applicable
PG to M. Phil	NIL
PG to Ph. D	20%

Ph.D. to Post - Doctoral	10%
Employed	
Campus selection	NA
Other than campus recruitment	80% (**WBSSC, WBCSC, WBPSC** etc)
Entrepreneurs	20%

36. Diversity of staff

Percentage of faculty who are graduates	
Of the same university	44%
From other universities within the state	56%
From universities from other States from	0%
Universities outside the country	0%

37. Number of faculty who were awarded M. Phil, Ph. D, D. Sc, and D. Litt. during the assessment

Period: **Ph. D - Three (3)**

38. Present details of departmental infrastructural facilities with regard to

a) Library: **No**

b) Internet facilities for staff and students: **YES**

c) Total number of class rooms: **2**

d) Class rooms with ICT facility: Audio-visual facility available in one room & one computer laboratory with bioinformatics facility

e) Student's laboratories: 9 (One General Laboratory and 8 special laboratory)

f) Research laboratories: 11

39. List of doctoral, post-doctoral students and Research Associates

a) From the host institution/university:

Post-Doctoral-

1. Dr. Sauris Dasgupta (Dr. A. Saha)

2. Dr. Pannalal Dey (Prof. U. Chakraborty)

3. Dr. Arka Pratim Chakraborty (Prof. B. N. Chakraborty)

Doctoral Degree Awarded:

Year	*Number*	*Name*
2006	3	P. De M. Sharma R. Das-Biswas
2007	7	M. Basnet C. Tongden B. Lahon U. Rai S. Sen C. Ghosh I. Bhagat
2008	4	P. RoyChowdhury Rita Som Md. M. Isha H. Das
2009	4	G. Saha A. Roy M. Chowdhury Manprit Gill
2010	8	B. Moktan P. Mandal L. P. Bhutia C. Choudhuri G. Shukla S. C. Roy P. Roy Chowdhury P. Subbalaksmi
2011	11	S. Ghosh Md. Golam Rasul P. Dey D. Pradhan A. Sarkar, J. Saha K. Rai S.R. Lepcha L. P. Bhutia P. L. Dey K. Rai

2012	4	H.K. Burman R. Tamang M. Chakraborty S. Sur
2013	3	L. Das B. Basistha D. Bose
2014	11	A.P. Chakraborty A. Ghosh K. Sunar R. Subba B. Saha R. Lama B. Pradhan P. Mandal U. K. De S. Thakur A.K.Goyal
2015	4	R. Kumar G. D. Purkayastha M. Bhattacharya Sanjita Allay
Doctoral Degree Submitted:		
2014	4	Mousumi Rakshit Animesh Sarkar Ms. Mitali Ghosal Tanmayee Mishra
2015	2	Suman Nirola Sabina Pradhan
Registered for Doctoral Degree:		
38 (in total)		Narpati Sarma Pushpanjali Roy Somnath Roy Protik Chowdhury Sweta Khati Anand Sharma Sarita Kumari Sima Mandal Tanushree Sarkar Bilok Sharma

	Hrisikesh Mandal Shibu Das Arnab Saha Prosenjit Chakraborty Shibu Barman Piyali Sarkar Tarun Mishra Amalesh Bijali. Rajib Biswas SauravMoktan Satyam Tamang Kishore Biswas DibakarChoudhury Anurag Chowdhury Goutam Saha Sachina Yongone Bidya Debi Sharma Tanmoy Choudhury Koushik Moitra Suchisree Jha Saran Kumar Gupta Sumira Mukhia Arunika Subba Ritu Rai Ayan Roy Manas Ranjan saha Sanghati Bhattacharya Pallab Kar

b) From other institution/universities: **Post-Doctoral**

1. Dr. H. Babe (Prof. P. K. Sarkar)

40. Number of post graduate students getting financial assistance from the university:

Name of the Programme	Year	No. of students getting financial assistance	Nature of assistance
PG	2014-15	0	Free studentship
PG	2013-14	0	Free studentship
PG	2012-13	6	Free studentship
PG	2011-12	5	Free studentship

PG	2010-11	0	Free studentship
PG	2009-10	0	Free studentship
PG	2008-09	0	Free studentship
PG	2007-08	0	Free studentship
PG	2006-07	11	Free studentship

41. Was any need assessment exercise undertaken before the development of new programme(s)?

If so, highlight the methodology: **NIL**

42. Does the department obtain feedback from

a) Faculty on curriculum as well as teaching learning evaluation? If yes how does the department utilize the feedback?

Feedback is regulartly sort from faculty members during Board of Studies and Departmental Committee meeting. Finally the recommendations are placed before appropriate committee for final approval and implementation

b) Students on staff, curriculum and teaching learning evaluation and how does the department utilize the feedback? NIL

c) Alumni and employers on the programmes offered and how does the department utilized the feedback? NIL

43. List the distinguished alumni of the department (maximum 10):

Sl. No.	Name	Designation	University/Institution/Country
1.	Dr. Bumba Dam	Assistant Professor	Viswa-Bharati
2.	Mr. Sukanta Majumder	Assistant Professor	Gour Banga University
3.	Mr. Debanshu Bhaumik	Enterprener	Canada
4.	Dr. Bijon Saha	Research Manager	Multiplex Agro
5.	Dr. Bharat Bashishta	Director	Sikkim State council of Science and Technology
6.	Dr. Santosh Rai	Scientist	Birbal Sahani Institute of Paleobotany, Lucknow

7.	Dr. Balwindar Singh Bajwa	CEO	Edward Food and Research Centre
8.	Dr. Sonam Rinchen Lepcha	Scientist	Sikkim State council of Science and Technology

44. Give the details of student enrichment programmes (special lecture/ workshop/ seminar/) involving experts

- UGC SAP Seminar lecture "Shifting Paradigm of Flowering Plants Systematics" on 20.03.2015

Speaker – Prof. A.K.Pandey

- Workshop on "Cultivation of Medicinal and Aromatic plants" on 10.03.2015
- Workshop on Bioinformatics and its applications (March 12-14,2015)
- UGC SAP Seminar lecture "Mycorrhiza- from techniques to technology" on 30.03.2014

Speaker – Dr.A.Adholeya, TERI

- Workshop on "Cultivation and post harvest processing of edible mushrooms" on 29.12.2014 Speaker - Dr. Arun S Ninawe (Advisor, DBT)
- Seminar on " Antifungal agents for treatment of mycoses" on 09.09.2014

Speaker – Prof. N.C. Mandal

- Seminar on "Bioprospecting of endophytes and their natural products" on 21.08.2014

Speaker - Prof. D.K. Jha

- Special Lecture "Rhizosphere Biology and its influence on Plant Growth: An essential interface between roots and soil microorganisms" on 27.02.2012

Speaker – Prof. Michael Aragno (University of Neuchatel, Switzerland)

- Third KB Dutta Memorial Lecture entitled "Rationale of using Nucleotide Sequences in resolution of taxonomic dispute: A case study" on 17.02.2012

Speaker – Prof. Arvind Kumar Mishra (NEHU, Shillong)

- First R.P. Purkayastha Memorial Lecture entitled "Emergence of Begomoviruses: A threat to Indian Agriculture" on 23.09.2011

Speaker – Prof. Anupam Verma (Adjunct Professor, IARI, New Delhi)

- Certificate training course on "Demonstration anf Promotion of edible mushroom cultivation" (September 26 – October 12, 2010)
- Workshop on Bioinformatics (November 20-22, 2009; January 15-17, 2010)

45. List the teaching methods adopted by the faculty for different programmes:

a. Conventional methods through board work

b. Practical demonstration

c. Demonstration with power point and multimedia aids

d. Field visits

e. Student seminers

f. Providing lecture notes (both hard and soft copy) to students

46. How does the department ensure that the programme objectives are constantly met and learing outcomes are monitored:

Group discussion & class tests.

47. Highlight the participation of students and faculty in extension activities. :

Post graduate students participate in extension activities organised by the Department in three components viz. Cultvation practices of edible mushrooms, soild waste management and cultivation of medicinal plants. Besides they participate in workshops on Bioinformatics during their study periods.

48. Give the details of 'beyond syllabus scholarly activities' of the department.

a. Organization of Academic lectures

b. Study tours

c. Acting as resource persion in different refresher cources

d. participation in workshops, Seminers etc

49. State whether the programme/ department is accredited / graded by agencies? If yes, give details: YES

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

a. Development of Data bank of Bio resources in our locality with potential applications

b. Development of Techniques for conservation of Biodiversity

51. Details five major strengths, weaknesses, Opportunities and Challenges (SWOC) of the department.

a. **Strength:**

i. Competent faculty as recognized globally

ii. Financially supported by UGC DRS-SAP (Level I, II and III) and DST-FIST programes

iii. Running a large number of major research projects funded by UGC, DBT, DST, CSIR, ICAR, NMPB and Royel Society of Chemistry, UK.

iv. Build up a large number of imfrastructure facilies with fundings received from external agencies

v. Strong research programme with ad-hoc fundings

b. **Weakness:**

i. Inadequate faculty strength and support stuffs

ii. Located in the remote place in West Bengal

iii. Maintainance of laboratory equipements is extremely time taking as it is located far from Kolkata

iv. Lack of modern equipments like SEM, TEM, DNA sequencer etc.

Opportunities:

i. Optimum utilization of bioresource available in this region

ii. Potential for development of skilled rural human resource

iii. Conservation of Biodiversity

iv. Prospect of plant and microbial computational biology

Challenges:

i. To attract good and high quality students, as majority of the students are first generation learners of rural and backward region

ii. Establishment of Collaboration with other good research institutes due to remote location of the University

52. Future plans of the department.

i. Semester system to be upgraded into Credit Based Grade System with Cafetoria mode

ii. Development of industrial linkage

iii. Undertaking more lab to land programs for the benefit of rural community

1. Name of the Department : **Chemistry**
2. Year of establishment : **1963**
3. Is the Department part of a School/Faculty of the University? : **Faculty of the University**
4. Name of programmes offered (UG, PG, M.Phil, Ph.D, Integrated Masters, Integrated Ph.D, D.Sc., D.Litt., etc.) : **P.G & Ph.D**
5. Interdisciplinary programmes and departments involved : **Yes**,
6. Courses in collaboration with other universities, industries, foreign institutions, etc. : **N/A**
7. Details of programmes discontinued, if any, with reasons : **Not raised**
8. Examination System: **Annual/Semester/Trimester/Choice Based Credit System : Semester**
9. Participation of the department in the courses offered by other departments: **Yes**,
10. Number of teaching posts sanctioned, filled and actual (Professor/Associate Professor/Asstt. Professor/others) :

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	03	Nil	04
Associate Professor	06	04	05
Asst. Professor	09	07	02
Others	One Scientific Officer converted to Assoc. Professor	01	01

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance :

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D/M.Phil students guided for the last 4 years
Prof. P.S.Roy	M.Sc Ph.D	Professor	Inorganic	17 years	02
Prof. S.K. Saha	M.Sc Ph.D	Professor	Physical	15 years	04
Prof. B. Basu	M.Sc Ph.D	Professor	Organic	12 years	06
Prof. M.N.Roy	M.Sc Ph.D	Professor	Physical	08 years	08
Dr. P. Bandyopadhyay	M.Sc Ph.D	Assoc. Prof.	Inorganic	18 years	05
Dr. A. Majumder	M.Sc Ph.D	Assoc.	Organic	05 years	Nil

		Prof.			
Dr. A.K. Nanda	M.Sc Ph.D	Assoc. Prof.	Organic	12 years	02
Dr. P. Ghosh	M.Sc Ph.D	Assoc. Prof.	Organic	10 years	08
Dr. A. K. Panda	M.Sc Ph.D	Assoc. Prof.	Physical	10 years	05
Dr. A. Misra	M.Sc Ph.D	Assoc. Prof.	Physical	07 years	04
Dr. B. Sinha	M.Sc Ph.D	Asstt. Prof.	Inorganic	08 years	05
Dr. S. Das	M.Sc Ph.D	Asstt. Prof.	Organic	07 years	04

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors: Prof. D.C. Ghosh (Retired), Prof. D. Mukherjee (Retired), Prof. S. Bagchi (Retired)

13. Percentage of classes taken by temporary faculty-programme-wise information : 0%

14. Programme-wise Student Teacher Ratio : P.G (M.Sc.)- 4:1 & Ph.D – 4:1

15. Number of academic support staff(technical) and administrative staff : 2+11+8=21

Sanctioned, filled and actual: Officer-02, technical- 11 & administrative staff-08

Category of staff	Sanctioned	Filled	Actual
Officer	02	Nil	Nil
Technical	11	08	08
Administrative staff	08	02	03 (including one contractual staff)

16. Research thrust areas as recognised by major funding agencies : UGC, DST, CSIR, DBT

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) total grants received. Give the names of the funding agencies, project title and grants received project-wise. :

Name of the Investigator	***Title of the project and duration***	***Amount sanctioned in lakhs (INR)***	***Funding Agency***
Prof. S. K. Saha	Physicochemical Studies on Viscoelastic worm-like micelles (Ongoing)	45	SERB, DST

Prof. B. Basu	Preparation, Characterization and Catalytic Applications of Bimetallic Nanoparticles soaked on Poly-ionic Resins November 2011 to October 2014	52.9	SERB, DST
Prof. B. Basu	Ionic Resins as Metal Scavenger and Catalytic Applications to C–C and C–N coupling Reactions under Focused Microwaves May 2007 to July 2010	23.25	SERB, DST
Prof. B. Basu	Preparation, Characterization of Bimetallic Nanoparticles soaked on Poly-ionic Resins and Studies on Catalytic Applications April 2011 to April 2016	12.5	CSIR
Prof. B. Basu	Solid-phase Synthesis of Libraries of Heterocyclic Molecules and further Functionalization by Cross-coupling Reactions October 2011 to September 2016	12.86	UGC
Prof. B. Basu	Development of Organic Reaction Methodology: Applications of Polymer-Supported Reagents, Ionic Liquids and Focused Microwaves" August 2014 to August 2016	9.5	UGC
Prof. M. N. Roy	Solution Properties of Bio-active Solutes and Lithium Salts in Some Industrial Solvents	7.5	
Dr. P. Bandyopadhyay	Ongoing	57.97	SERB, DST & UGC
Dr. P. Ghosh	Ongoing	25	
Dr. A. K. Panda	Physico-chemical Studies on Surfactant Aggregates and Synthesis of Nanoparticles (Completed)	10.14	CSIR
	Physico-chemical Studies on Organized Assemblies (Completed 01.01.2005 to 31.12.2007)	4.03	*UGC*
	Physico-chemical Studies on Ionic Liquid Microemulsions (Completed 15.02. 2009 to 14 .02. 2012)	36.66	*SERC, DST*

	Physico-chemical Studies on Dye-Nanoparticle Aggregates (Completed 01.02.2009 to 31.01.2012) 4.14		
	Interfacial, Kinetic and Mechanistic Studies on Dendrimer Liposome Interaction (Completed on January 31, 2015)	20	CSIR
	Physicochemical Studies on Nanostructure Lipid Carriers (To be completed on August 14, 2015)	46	SERB, DST
	Physicochemical Studies on Bacterial/Other Membraneous Interfaces in an Attempt to Develop Improvised Antimicrobial Drug Carrier Systems (To be completed on June 23, 2017)	40	DBT
	Controlled Synthesis and Characterization of Nanoparticles of Zn-salts using Microemulsion Incorporated with Anion Species	3.22	DST, Govt. of India and MOST, Govt. of Thailand
	Characterization and applications of biomimetic vesicular structures assembled from mixed cationic/anionic surfactant systems		Global Innovation and Technology Alliance/Confederation of Indian Industries, New Delhi, India And National Science Council, Taiwan
Dr. A. Misra:	One (CSIR project) in the halfway and another (DST Project) is about to begin	51.62	CSIR & DST SERB
Dr. B. Sinha	Ionic liquid Based Schiff Bases and their Transition metal complexes: Synthesis and physic-chemical characterization	1.5	University of North Bengal

SAP (DRS –III) Coordinator Prof. M. N. Roy	Synthetic Organic & Coord-ination Chemistry and Phy-scochemical Studies on ions	75	UGC

18. Inter-institutional collaborative projects and associated grants received :

a) National collaboration b) International collaboration

19. Departmental projects funded by DST-FIST, UGC-SAP/CAS, DPE, DBT, ICSSR, AICTE, etc.; total grants received : SAP-DRS(III): Rs. 75 lac (2013-2017),

20. Research facility/centre with

- State recognition
- National recognition
- International recognition

21. Special research laboratories sponsored by/ created by industry or corporate bodies : Nil

22. Publications : **Please see volume IV of SSR.**

- Number of papers published in peer reviewed journals (national/international)
- Monographs
- Chapters in Books
- Edited Books
- Books with ISBN with details of publishers
- Number listed in International database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database – International Social Sciences Directory, EBSCO host, etc.)
- Citation Index – range /average
- SNIP
- SJR
- Impact Factor – range/ average
- h-index

23. Details of patents and income generated :

24. Areas of consultancy and income generated : Nil

25. Faculty selected nationally/ internationally to visit other laboratories/institutions/ industries in India and abroad:

26. Faculty serving in a)National Committees b)International committees c) Editorial Boards d) any other (please specify)

27. Faculty recharging strategies (UGC, ASC, Refresher/orientation programmes, workshops, training programmes and similar programmes):

The Department has organized two Refreshers Courses in Chemistry in the ASC, NBU during 2012-13 & 2013-14.

28. Student projects

- Percentage of students who have done in-house projects including inter-departmental projects
- Percentage of students doing projects in collaboration with other universities/industry/institute

29. Awards/recognitions received at the national and international level by

- Faculty (Pl. See annexure)

i. Prof. Basudeb Basu :

- Visiting Professor, September 2015: Umeå University, Umeå, Sweden
- Visiting Professor, October 2014: Fudan University, Shanghai, China
- Visiting Professor, March, 2014: Fudan University, Shanghai, China
- Visiting Professor, Nov. 2012: National Cheng Kung University, Tainan, Taiwan
- Visiting Professor, Sept. 2010: Umeå University, Umeå, Sweden
- Bronze Medal Award 2010 by Chemical Research Society of India

ii. Prof. Mahendra Nath Roy :

- Most Cited paper in the "Journal of Chemical and Engineering Data", ACS, USA.
- Professor Suresh C. Ameta Award by Indian Chemical Society, Kolkata.
- One-Time Grant from UGC New Delhi (2012) under UGC-Basic Scientific Research

iii. Prof. S. K. Saha:

- Recognized as one of the "TOP TEN REVIEWERS" in Elsevier Sciences 2014-2015

iv. Dr. Pinaki Bandyopadhyay:

- Bronze Medal Award 2003 by Chemical Research Society of India

v. Dr. Amiya Kumar Panda :

- Bronze Medal 2015, Chemical Research Society of India
- DST JSPS Visiting Fellowship to visit Tokyo University of Science, Japan, 2014
- Best Teacher Award-2012 Chemical Research Society of India

vi. Dr. Anirban Misra: Graded "Excellent" in DST project No. SR/S1/PC-06/2009

vii. Dr. Sajal Das

- Awarded Raman Fellowship 2014 by UGC.
- Awarded DST FIST First Track Project.
- Doctoral/post doctoral fellows
- students

30. Seminars/Conferences/Workshops organised and the source of funding (national/international) with details of outstanding participants, if any.

Name of the Seminar/ Conference	Date of the Seminar/Conference
UGC-SAP	
Academic Workshop on Recent Trends in Chemistry.	November 22-24,2011 NBU
Chemical Research Society of India East Zone Meeting (CRSI-IYC-2011) –	July 22–24, 2011, Venue: North Bengal University, Siliguri.
Special Lectures delivered by: Professor Bikash Sinha, Professor S. Raha, Professor H. Saxena, Professor H. Junjappa and Professor H. Ila.	North Bengal University,

Name of the Seminar/ Conference	Date of the Seminar/Conference
Special seminar lecture followed by practical demonstration and quiz contest for the school students is jointly organized by the Department of Chemistry, University of North Bengal and CRSI – Local Chapter to celebrate the 152nd birthday of Acharya Prafulla Chandra Roy.	Department of Chemistry, NBU, 22.08.2012 (Wednesday)
Prof. Chien-Hsiang Chang, Department of Chemical Engineering, National Cheng Kung University **Title:** "**Effects of cholesterol on the physical stability of catanionic vesicles composed of ion pair amphiphile with dialkyl-chained cationic surfactant**"	Thursday October 18, 2012 at 12:30 p.m. Venue: Chemistry Gallery
Prof. Carl Trindle, Department of Chemistry, University of Virginia, USA. **Title: "Three Short Stories about Three Small Ring"**	Department of Chemistry, NBU, 26.11.2012.
Prof. Pratim Kumar Chattaraj Department of Chemistry & Centre for Theoretical Studies, IIT Kharagpur. **Title: Kharagpur Local Chapter of INSA**	December 6, 2012, Department of Chemistry, NBU.

Prof. Biman Bagchi, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore, Title: **"MOLECULAR VIEW OF PROTEIN FOLDING AND UNFOLDING IN LIQUIDS"**	Monday, December 17, 2012.
One day National Seminar on **"Frontiers in Chemistry - 2013"**	Department of Chemistry, NBU, 28th February 2013
Seminar lecture by Prof. Kaushik Nag, Department of Biochemistry, Memorial University of Newfoundland, St. John's, Newfoundland, Canada **Title: Studies on the Interaction of Albumin with Model Membrane Systems**	Department of Chemistry, NBU, Wednesday, March 06, 2013
seminar lecture by Prof. Dulal Chandra Ghosh, University of Kalyani **Title: "Quantum Chemical and Density functional study of the Process of Protonation of Molecules"**	Department of Chemistry, NBU, Thursday, March 07, 2013
Name of the Seminar/Conference	Date of the Seminar/Conference
Invited talk by Prof. B. C. Ranu, Department of Organic Chemistry, IACS, Culcutta on his recent research activity	June 18, 2013 Department of Chemistry, NBU
An informal interaction with Prof. A. B. Sannigraha, Retd. Professor, Department of Chemistry, IIT Kharagpur, on "A life with Quantum Chemistry: An Informal Interaction"	May 14, 2013 Department of Chemistry, NBU
5th Asian Conference on Colloid & Interface Science (ACCIS) – 2013	November, 20–23, 2013, University of North Bengal.
Special lecture by Dr. D. S. Bag, Senior Scientist, DRDO, Kanpur on "Polymer Science"	November 19, 2013, Department of Chemistry, NBU
National Seminar on "Frontiers in Chemistry-2014"	March 11-12, 2014, Department of Chemistry, NBU
Special lecture by Professor B. B. Prasad, BHU, on "Forensic Science"	March 20, 2014, Department of Chemistry, NBU
Special lecture by Dr. S. Sengupta, Editor JSIR, NISCAIR, New Delhi on "Activates of NISCAIR including JSIR, New Delhi"	May 28, 2014, Department of Chemistry, NBU.
One day Seminar in commemoration of the 153rd Birth Anniversary of A. P. C. Roy, organized by the CRSI-NBU-Local Chapter,	September 12, 2014, Department of Chemistry, NBU.
Special lecture by Dr. Ayan Dutta, IACS, Kolkata.	November 03, 2014, Department of Chemistry, NBU.
Science Academies Lecture Workshop on "Spectroscopy of Emerging Materials"	November 26-27, 2014, Department of Chemistry, NBU.
Seminar lecture by Prof. Samar K. Das, University of Hyderabad, on "Inorganic Supramolecular Chemistry"	January 02, 2014, Department of Chemistry, NBU.

"Frontiers in Chemistry - 2015" funded by UGC & SAP DRS-III	February 17-18, 2015, Department of Chemistry, NBU
An invited talk by Prof. Souvik Maiti, CSIR-Institute of Genomics and Integrative Biology (IGIB), Delhi on "Carrier Orientation"	March 02, 2015 Department of Chemistry, NBU
Seminar lecture by Prof. Brindaban C. Ranu FACs, FNA, INSA Senior Scientist & J C Bose National Fellow, Department of Organic Chemistry, Indian Association for the Cultivation of Science, Jadavpur, Kolkata – 700032, India, on "Sustainable and Economic Concept for Metal Catalysis"	March 18, 2015 Department of Chemistry, NBU
Seminar lecture by Dr. Bipul B. Saha, Senior Scientist, Nagarjuna Agrochem, Hyderabad, on "R&D Activities at Nagarjuna Group: Crop Protection Chemicals and Plant Nutrients"	April 09, 2015 Department of Chemistry, NBU

31. Code of ethics for research followed by the departments :

32. Student profile programme-wise :

Name of the programme (refer to question no. 4)	Application received	Selected		Pass percentage	
		Male	Female	Male	Female
PG					
Ph.D – 2012	32	24	6	80	20
2013	20	12	3	80	20
2014	10	6	3	67	33

33. Diversity of students :

Name of the programme (refer question no. 4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
2010-11	100	Nil	Nil	Nil
2011-12	100	Nil	Nil	Nil
2012-13	60	40	Nil	Nil
2013-14	60	40	Nil	Nil
2014-15	60	40	Nil	Nil

34. How many students have cleared Civil Services and Defence Services examinations, NET,SET,GATE and other competitive examinations? Give details category-wise.(details in exhibit-1)

Year	NET	SET	GATE	Civil Service/Defence/other competitive Examinations.
2006	07	01	06	02
2007	12	03	05	03
2008	14	nil	05	07
2009	07	01	01	01
2010	14	01	05	05
2011	19	02	02	02
2012	05	01	06	08
2013	05	--	07	10
2014	07	--	09	06

35. Student progression :

Student progression	Percentage against enrolled
UG to PG	
PG to M.Phil.	
PG to Ph.D.	
Ph.D to post –Doctoral	
Employed • Campus Selection • Other than campus recruitment	
entrepreneur	

36. Diversity of staff :

Percentage of faculty who are graduates		
Of the same university	08 nos. (42%)	
From the other universities within the State	03 nos. (15%)	
From universities from other State from	01 no. (.05%)	
Universities outside the Country	nil	

37. Number of faculty who were awarded M.Phil., Ph.D, D.Sc and D.Litt during the assessment period : Ph.D - 02 Nos. (year 2006-2014)

38. Present details of departmental infrastructural facilities with regard to :

a) Library
b) Internet facilities for staff and students : yes
c) Total number of class rooms : 05
d) Class rooms with ICT facility : 01
e) Students' laboratories : 06
f) Research laboratories : 22

39. List of doctoral, post-doctoral students and Research Associates
a) From the host institution/university: NIL
b) From other institutions/universities: NIL

40. Number of post graduate students getting financial assistance from the university:

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology : NO

42. Does the department obtain feedback from: N/A

a. Faculty of curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?
b. Students of staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?
c. Alumni and employers on the programmes offered and how does the department utilize the feedback?

43. List the distinguished alumni of the department (maximum 10) :
1. Bipul. B. Saha, Sr. Vice President, Nagarjuna Agrichem Ltd. Hyderabad, A.P.
2. Prof. Sujit Roy, Director, IIT, Bhubeneswar
3. Prof. Himanghu Bose, University of Florida, USA
4. Mr. Malay De, IAS, Principal Secretary, Govt. of West Bengal.
5. Dr. Kallal Mukherjee, Director, Library and Information Directorate, Govt. of West Bengal.
6. Dr. G. C. Subba, Director, Cincona Research Authority, Govt. of West Bengal.
7. Prof. Manabendra Roy, Deptt. of Chemistry, IIT Guwahati
8. Prof. H. Pal, Scientist H, Director, Radiation & Photochemistry, BARC, Mumbai
9. Dr. Tandra Roy, Director, Polymer Science Division, DRDO, Kanpur, Govt. of India

10. Prof. Shanta Dhar, Chemistry Deptt., University of Georgia, Athens, GA, USA

44. Give details of student enrichment programmes (special lectures/workshops/seminar) involving external experts.

45. List of teaching methods adopted by the faculty for different programmes.

- LCD Projector
- Audio-Visual Techniques
- Usual Chalk – Black Board and Models
- Continuing Evaluation / Seminar Presentation.
- Laboratory based Project.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

47. Highlight the participation of students and faculty in extension activities.

48. Give details of "beyond syllabus scholarly activities" of the department :

i) Participation of faculty members of the Department at North Bengal Science Centre, Siliguri (details are to be given)

ii) A number of workshop were organised by the Department (details are to be given)

iii) 'Analytical Service' (details are to be given)

49. State whether the programme/department is accredited /graded by other agencies? If yes, give details. : No.

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied :

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:

Strength :-

i) The female students' participation in high percentage (? ~50%) at post graduate level (M.Sc. in Chemistry)

ii) Enrolment of female students' is high in pursuing research work leading to Ph.D degree.

iii) Participation of large number of students from under privileged section of the Society from the remote areas of North Bengal including hill sub-divisions.

iv) The good quality of research in different fields of chemistry is evident from the list of publications

v) The Alumni of this department are well placed as faculty member or scientist in nationally important institutions like IIT, IISER, NISER, BARC, NIT as well as internationally well known Missouri S & T and Georgia University, USA.

Weakness :-

i) A number of faculty positions are lying vacant for a long period.
ii) Lack of liquid nitrogen plant facility
iii) Inadequate sophisticated instrumental facilities
iv) Absence of any integrated approach towards the standard safety measures.

Opportunity :-

i) To develop expertise for successful implementation of projects beneficial to the phytochemical industry.
ii) To provide known-how for the commercial exploitation of the medicinal herbs of the region.
iii) To collaborate with the Tea Industry in order to develop environment friendly pest control.

Challenges :-

i) This department situated in predominantly backward area and faraway from the metropolitan cities is to be developed as a centre of excellence in Chemical Science.
ii) To develop sophisticated instrumental facilities to carter the need of industries and other academic institutions of this region.
iii) Implementation of safety measures at par with the advanced centres of chemical research in India.

52. Future plans of the department.

i. Syllabus modification,
ii. Application for Grants,
iii. International Collaboration

1. Name of the Department:

Department of Computer Science and Application

2. Year of establishment: **1983**

3. Is the Department part of a School/Faculty of the university? **Yes**

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.): **M.C.A., M.Sc.(Comp.Sc.), P.hD**

5. Interdisciplinary programmes and departments involved: **No**

6. Courses in collaboration with other universities, industries, foreign institutions, etc.: **No**

7. Details of programmes discontinued, if any, with reasons: PGDCA **Reason: The course is up-grated into M.C.A.**

8. Examination System: Annual/ Semester/ Trimester/ Choice Based Credit System: **Semester**

9. Participation of the department in the courses offered by other departments: **No**

10. Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others):

Actual (including CAS & MPS)	**Sanctioned**	**Filled**	

Professor

Associate Professor

Asst. Professor

Others

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./ M.Phil. students guided for the last 4 years
Dr. R. K. Samanta	B.SC.(HONS), M.SC.	Professor	AI & Expert System	32	5
	MCA(TTP), P.hD				
Dr. N. R. Manna	B.SC.(HONS), M.Tech, P.hD	Professor	AI & Expert System	1	1
Dr. S.C. Pal	B.SC.(HONS), M.SC. MCA(TTP), P.hD	Professor	Fracture Mechanics	2	2
Dr. S. Das	B.SC.(HONS), MCA, P.hD	Asst. Professor	GIS	0	0
Dr. S. Sinha	B.SC.(HONS), MCA, P.hD	Asst. Professor	GIS, NLP,, Image Processing and Steganography	5	0
Mr. A. Mandal	BSIT, BCA, MCA	Asst. Professor	SE, HPC, Image Processing and Steganography	8	0
Mr. R. K. Mandal	B.SC.(HONS), MCA	Asst. Professor	AI, ANN	8	0

Dr. D. Roychowdhury	B.Com.(Pass), MCA, P.hD	Asst. Professor (Contractual)	AI & Expert Systems	7	0
Mr. A. Roy	B.C.A., M.C.A.	Asst. Professor (Contractual)	AI, ANN	5	0

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors: NIL

13. Percentage of classes taken by temporary faculty – programme-wise information MCA: 10%

M.Sc.(CS): 10%

14. Programme-wise Student Teacher Ratio: MCA: 10:3

M.Sc.(CS): 10:9

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual:

16. Research thrust areas as recognized by major fuinding agencies:

Medical Image Processing, Medical Informatics, AI & Expert Systems, NLP

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

Project Title	**Name of the Principal Investigator**	**ongoing projects from a) national b) international funding agencies**	**names of the funding agencies**	**c) Total grants received (Rs.)**

Design and Development of a Secure Stego syatem	Ardhendu Mandal	National Funding Agencies	NBU	75,000
Design and Development of an Artificial Neural Network (ANN) based expert system to diagnose human brain Tumor from CT scan and MRI images	Principal Investigator: Ardhendu Mandal Co-Investigator: Rakesh Kumar Mandal	National Funding Agencies	UGC	10.10 Lacks
Development of Major North-Eastern Languages – Nepali	Chief Investigator: Prof. Ghanashyam Nepal, Dept. of Nepali, NBU Co- Chief Investigator: Dr. Sharad Sinha, Dept. of Computer Sc. & Application, NBU Co- Chief Investigator: Dr. Pushkar Parajuli,	National Funding Agencies	DeitY, Ministry of IT, Govt. of India	Rs. 76.12 lacs

	Dept. of Nepali, NBU			
Indian Languages Corpora Initiative (ILCI) – Nepali, Phase I and Phase II	Chief Investigator: Prof. Ghanashyam Nepal, Dept. of Nepali, NBU Co- Chief Investigator: Dr. Sharad Sinha, Dept. of Computer Sc. & Application, NBU Co- Chief Investigator: Dr. Pushkar Parajuli, Dept. of Nepali, NBU	National Funding Agencies	DeitY, Ministry of IT, Govt. of India	

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration: NIL

b) International collaboration: NIL

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received:

20. Research facility / center with

- State recognition: NIL
- National recognition: NIL
- International recognition: NIL

21. Special research laboratories sponsored by / created by industry or corporate bodies: NIL

22. Publications: **Please see volume IV of SSR.**

Details of patents and income generated: NIL

22. Areas of consultancy and income generated: NIL

23. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:

NIL

24. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

25. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).:

UGC, ASC, IIT-STCs, OP, RC

26. Student projects:

- Percentage of students who have done in-house projects including inter-departmental projects: 10%
- Percentage of students doing projects in collaboration with other universities/ industry / institute: 90%

27. Awards / recognitions received at the national and international level by

- Faculty: 3
- Doctoral / post doctoral fellows: NIL
- Students: NIL

28. Seminars / Conferences / Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.

a. Workshop on Cyber Security:

b. National Conference on Computational Technologies (NCCT'15):

29. Code of ethics for research followed by the departments: - Research Scholars are admitted as per University rules. - Week-End Discussion

- Periodical Counseling

- Interaction with eminent Researchers

- Mandatory Coursework as per UGC norms.

30. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	**Applications received**	**Selected**		**Pass percentage**	
		Male	**Female**	**Male**	**Female**
MCA	Through WBJECA (Centralized Joint Entrance of WB)	23	7	98%	100%
M.Sc.	20	3	7	100%	100%

33. Diversity of students

Name ofthe Programme (refer to question no. 4)	**% ofstudents from thesame university**	**% of students from other universities within the State**	**% of students from universities outside the State**	**% of students from other countries**
M.C.A.	10%	90%	NIL	NIL

M.Sc (CS)	60%	20%	NIL	20%
P.hD	80%	20%	NIL	NIL

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

35. Student progression

Student progression	Percentage against enrolled
UG to PG	NA
PG to M.Phil.	NIL
PG to Ph.D.	1%
Ph.D. to Post-Doctoral	NIL
Employed Campus selection Other than campus recruitment	NIL
Entrepreneurs	NIL

36. Diversity of staff

Percentage of faculty who are graduates	
Of the same university	50%
From other universities within the State	10%
From universities from other States from	30%
Universities outside the country	NIL

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the

assessment period Ph.D.: 3

38. Present details of department infrastructural facilities with regard to

a) Library: NIL

b) Internet facilities for staff and students: 100%

c) Total number of class rooms: :4

d) Class rooms with ICT facility: 4

e) Students' laboratories: 5

f) Research laboratories: 2

39. List of doctoral, post-doctoral students and Research Associated

a) from the host institution/ university:

b) from other institutions/ universities

40. Number of post graduate students getting financial assistance from the university: 10

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

42. Does the department obtain feedback from

a) Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

The feedback was reconsidered to update the curriculum.

b) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

To update the teaching and learning methodology and ICT.

c) Alumni and employers on the programmes offered and how does the department utilize the feedback?

The course curriculum was made as per the industry and research demand.

43. List the distinguished alumni of the department (maximum 10):

44. Give details of student enrichment programmes (special lectures / workshops / seminars) involving external experts.

Industrial Lecture for each batch of the students, Participation in the Seminar, workshop and Conferences.

45. List the teaching methods adopted by the faculty for different programmes. Class Lecture, ICT, Based, Open Courseware etc.

46. How does thre department ensure that programme objectives are constantly met and learning outcomes are monitored?

Through the feedback from the industry employers, Alumni, Faculties etc.

47. Highlight the participation of students and faculty in extension activities: Swacha Bharat Mission, NSS etc.

48. Give details of "beyond syllabus scholarly activities" of the department:

Guiding and counseling of junior students, Participation in seminar, conferences and workshop.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details. NA

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied. Organizing seminar, workshop and conferences.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

a. Major Strengths
b. Weaknesses,
c. Opportunities
d. Challenges:

52. Future plans of the department.: To introduce M.Tech course in the relevant subjects.

1. Name of the Department: **Geography & Applied Geography**
2. Year of establishment: **1962**
3. Is the Department part of a School/Faculty of the university: **Faculty of Science of the University**
4. Names of the programmes offered: **PG & Ph. D**
5. Interdisciplinary programmes and departments involved: **Nil**
6. Courses in collaboration with other universities, industries, foreign institutions, etc: **INSA**
7. Details of programmes discontinued, if any, with reasons: **N.A**
8. Examination System: T**ill 2008 Annual system and since 2009 onwards Semester system**
9. Participation of the department in the courses offered by other departments: **Yes**
10. Number of teaching posts sanctioned, filled and actual (Professors /Associate Professors /Asst. Professors /others)

	Sanctioned	**Filled**			
	2006-2015	**2006-2007**	**2007-2008**	**2009-2015**	**Actual (including CAS & MPS)**
Professors	**1**	**1 (CAS)**	**1 (CAS)**	**1 (CAS)**	**1 (CAS)**
Associate Professors	**2**	**3**	**3**	**4**	**4**
Assistant Professors	**7**+3* • For Jalpaiguri (sanctioned by State Govt. 2015)	**2**	**3**	**4**	**4**
Others	-	-	-	-	-
Total	**13**	**06**	**07**	**09**	**09**

11. Faculty profile with name, qualification, designation, area of specialization, experience and Research under guidance

Name	**Qualification**	**Designation**	**Specialization**	**No. of years of experience**	**No. of Ph.D/ M.Phil. Students guided for the last 4 years**
Prof. S Sarkar	M.A., Ph. D	Professor	Geomorphology, Environment, Natural Disaster Management	35 years	4 awarded and 4 ongoing

			Applied Pedology & GIS		
Dr. S. Rohatgi	M.A , Ph. D	Associate Professor	Cartography, Remote Sensing & GIS, Population Geography	32 years	6
Dr. S. Sao	M.A , Ph. D	Associate Professor	Urban & Regional Planning Remote Sensing & GIS	31 years	5 (Registered) 3 (Non-registered)
Dr. D. K. Mandal	M.A., Ph. D	Associate Professor	Fluvial Geomorphology, Pedology, Remote Sensing & GIS	20 years	5 awarded and 8 continuing
Dr. I. Lepcha	M.A., Ph. D	Associate Professor	Urban & Population Geography	7 years	6
Dr. R. Roy	M.A , Ph. D	Assistant Professor	Urban Geography, Climatology, GIS & GPS Disaster Management	14 years	8
Dr. S. K. Bhattacharya	M.A , Ph. D	Assistant Professor	Geomorphology, Physical Resource & Basin Resource Management	8 years	6
Dr. S. Saha	M.A., Ph. D	Assistant Professor	Fluvial Geomorphology, Agriculture Geography	7 years	-
Mr. A. Basak	M.A., M. Phil	Assistant Professor	Regional Development	7 years	-

12. List of Senior Visiting Fellows, Adjunct Faculty, Emeritus Professors:

Year	Visiting Professors
2006-2007	-
2007-2008	-
2008-2009	1.Dr. Roman Soja, Polish Academy of Science 2. Dr.Parthasarathi Chakraborty, Chief Scientist, DST 3. Prof. L. Starkel Polish Academy of Science,
2009-2010	1. Prof. S. R. Jog, Puna University 2. Prof. S. R. Basu, Calcutta University 3. Prof. A. Ghosh, Jadavpur University
2010-2011	1. Prof. S. Jog, Puna University 2. Prof. A. Ghosh, Jadavpur University 3. Prof. S. Tripathi, Utkal University 4. Prof. S. C. Mukhopadhyay, Calcutta University.
2011-2012	1.Prof. A. Ghosh, Jadavpur University

	2.Prof. S.N. Tripathi, Utkal University 3. Prof. B.S. Mupin, NEHU 4. Prof. R. N. Chattopadhyay, IIT Kharagpur. 5. Dr. Pawel Prokop, Polish Academy of Science, 6. Dr. Lukasz Wiezaczka, Polish Academy of Science
2012-2013	1.Prof. A. Ghosh, Jadavpur University 2.Prof. B.S. Mupin, NEHU 3.Prof. S.N. Tripathi, Utkal University 4. Prof. R. N. Chattopadhyay, IIT Kharagpur
2013-2014	1. Prof. P. Nandi, Viswabharati 2. Prof. R. N. Chattopadhyay, IIT Kharagpur 3. Prof. A. Ghosh, Jadavpur University 4. Prof. G.P. Chattopadhyay, Viswabharati 5.Prof. B.S. Mupin, NEHU 6. Prof. A. K. Bora, Gwahati |University 7. Prof. A. K. Bhagawati, Gwahati University
2014-2015	1. Prof. P. Nandi, Viswabharati

13. Percentage of classes taken by temporary faculty – programme-wise information: **N. A.**

14. Programme-wise Student Teacher Ratio: **As stated below**

Year	**Part I**		**Part II**			
	Number of teachers	Number of students	Student Teacher Ratio	Number of teachers	Number of students	Student Teacher Ratio
2006-2007	7	45	1:6.2	10	45	1:4.5
2007-2008	09	45	1:5	09	45	1:5

Year	**Semester I-IV**	**Teachers**	**Teacher Student Ratio**	**Ph. D. Coursework**	**Teachers**	**Teacher Student ratio**
2008-2009	45	9	1:5	x	x	x
2009-2010	45	9	1:5	x	x	x
2010-2011	45	9	1:5	x	x	x
2011-2012	45	9	1:5	37	7	1:5.3
2012-2013	45	9	1:5	11	7	1:5.7
2013-2014	67	9	1:7.4	12	8	1:1.5
2014-2015	72	9	1:8	04	8	1:2

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and Actual

Sl No.	Technical		Administrative staff	
	sanctioned	filled	sanctioned	filled
2006-2009	06	05	03	03
2010-2015	06	03	03	03

16. Research thrust areas as recognized by major funding agencies:

1. Sustainable Rural Livelihood, Empowerment for Disadvantaged districts of North Bengal, Funded by NAIP

2. Geo-hazards in Sub Himalayan North Bengal, Funded by SAP, UGC (DRS-I)

3. Child Labour Survey in Jalpaiguri district, NCLP, Jalpaiguri

17. Number of faculty with ongoing projects from

a) National: 5

b) International funding agencies: **Nil**

c) Total grants received. Give the name of the funding agencies, project title and grants received Project-wise.

Sl No.	Name of the Funding Agencies	Project Title	Grants received (Project-wise)
1	NCLP, Jalpaiguri	Child Labour Survey in Jalpaiguri district	
2	DST, Govt. Of India, New Delhi	Demonstration of block level GIS and capacity building for development planning in Jalpaiguri district	2358280/-
3	ICAR Govt. Of India, Delhi	Substainable Rural Livelihood Empowerment project for Northern Disadvantged districts of West Bengal	2900000/-
4	UGC SAP DRS-I	Geo-hazards in Sub-Himalayan West Bengal, sponsored by UGC under SAP DRS-I	2700000/-
5	Malda Municipality, Malda, Govt. of West Bngal	Preparation of contour map for drainage management in Englishbazar municipality. Malda, sponsored by Malda municipality, Malda, Govt of West Bengal, Memo No. 2375/IV-2/11-12 dt. 07.02.2012.	700000/-

18. Inter-institutional collaborative projects associated grants received: Nil

a) National collaboration: Nil

b) International collaboration: **Institute of Geography, Polish Academy of Sciences under INSA-PAS**.

19. Departmental projects funded by DST-FIST; UGC-SAP/ CAS, DPE; DBT, ICSSR, AICTE, etc; total Grants received: **UGC-SAP DRS-I: Rs 54 lakhs.**

20. Research facility /centre with

State Recognition: Nil

National Recognition: Nil

International Recognition: Nil

21. Special research laboratories sponsored by/ created by industry or corporate bodies: Nil

22. Publications: **Please see volume IV of SSR.**

23. Details of patents and income generated: Nil

24. Areas of consultancy and income generated: Centre for Study in Climate Change (formerly NBU Weather Service station)

25. Faculty selected nationally / internationally to visit other laboratories / institutions/industries

In India and abroad: 02

26. Faculty serving in

a) National committees	-
b) International committees	01
c) Editorial Boards	09
d) Any other (please specify)	-

27. Faculty recharging strategies (UGC, ASC, Refresher /Orientation programs, workshops, Training programs and similar programs)

- Four teachers attended the UGC Orientation program
- Four teachers have done the Refresher Course in Geography
- All teachers have attended the Workshops conducted in the Department

28. Student projects

Percentage of students who have done in – house projects including interdepartmental

Projects: 12 (UGC- SAP)

Percentage of students doing projects in collaboration with other universities /industry / Institute: Nil

29. Awards /recognitions received at the national and international level by

Faculty

Doctoral /post doctoral fellows: Nil

Students: Nil

30. Seminars /Conferences /Workshops organized and the source of funding (national/International) with details of outstanding

Participants, if any:

- Annually a Seminar or workshop has been conducted in the Department (UGC sponsored: Unassigned grants, 12th plan merged scheme, etc.)
- In 2010-2011, 2011-2012 and 2012- 2013 SAP seminar has been conducted

31. Code of ethics for research followed by the departments: Yes, in accordance to University norms.

32. Student profile programme–wise

Name of the Programme (refer to question no.4)	Year	Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
M.A./M.Sc.	2006-2007	159	18	27	100	100
	2007-2008	206	20	25	100	100
	2008-2009	223	14	31	100	100
	2009-2010	248	26	19	100	100
	2010-2011	313	18	27	100	100
	2011-2012	225	17	28	100	100
	2012-2013	362	17	28	100	100
	2013-2014	507	37	30	100	100
	2014-2015	470	41	31	100	100

Name of the Programme (refer to question no.4)	Year	Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
Ph.D. Coursework	2006-2007					
	2007-2008					
	2008-2009					
	2009-2010					
	2010-2011					
	2011-2012	154	30	12	100	100
	2012-2013	63	6	5	100	100
	2013-	49	8	2	100	100

	2014					
	2014-2015	39	2	2	-	-

33. Diversity of students

Name of the Programme (refer to question no. 4)	Year	% of students from same university	% of students from other universities within the state	% of students from universities outside the state	% of students from other countries
	2006-07	100	0	0	0
	2007-08	100	0	0	0
	2008-09	100	0	0	0
	2009-10	90	5	5	0
	2010-11	98	2	0	0
	2011-12	90	0	10	0
	2012-13	100	0	0	0
	2013-14	95	5	0	0
	2014-15	90	8	2	0

34. How many students have cleared civil services and Defence Services examinations?

NET,SET,GATE and other competitive examinations? Give details category–wise.:

Total 103 nos. cleared NET, SET & GATE

35. Student progression

Student progression	Percentage against enrolled
UG to PG	12.59
PG to M.Phil	-
PG to Ph.D	4
Ph.D. to Post - Doctoral	-
Employed Campus selection Other than campus recruitment	 - 1
Entrepreneurs	1

36. Diversity of staff

Percentage of faculty who are graduates	
Of the same university	44.44

From other universities within the state	44.44
From universities from other states	11.12
Universities outside the country	x

37. Number of faculty who were awarded M. Phil, Ph.D, D. Sc, and D.Litt. during the assessment period:

- Dr. R. Roy: 2009-10

Dr. S. Saha: 2013-14

38. Present details of departmental infrastructural facilities with regard to

a. Library: Yes
b. Internet facilities for staff and students: Yes
c. Total number of class rooms: 02
d. Class rooms with ICT facility: 01
e. Student's laboratories: 02
f. Research laboratories: Nil

39. List of doctoral, post-doctoral students and Research Associates

a. From the host institution/university

1. Dr. Indira Lepcha
2. Dr. Suprakash Roy
3. Dr. Pradip Chouhan
4. Dr. Piyali Ghosh
5. Dr. Nurjamman Kassami
6. Dr. Srabani Rana
7. Dr. Sanhita Mondal
8. Dr. Madhdusudan Karmakar
9. Dr. Tara Sharma
10. Dr. A. Subbiah
11. Dr.Manas Mukherjee
12. Dr. Ranjan Roy
13. Dr. Sanjit Kr. Shil Sharma
14. Dr. Prabir Kr. Kundu
15. Dr. Snehasish Saha
16. Dr. Sanjay Saha
17. Dr. Lakpa Tamang

b. From other institution/universities

40. Number of post graduate students getting financial assistance from the university:

Year	Number of students
2006-07	22
2007-08	19
2008-09	14
2009-10	22
2010-11	19
2011-12	12
2012-13	5
2013-14	20
2014-15	56

41. Was any need assessment exercise undertaken before the development of new programme(s)?: Yes

If so, highlight the methodology.

- Project proposal was sent to UGC and the department was accorded the SAP DRS –I status in 2008 (DRS-I completed and final presentation also done and applied for DRS-II (presented).

42. Does the department obtain feedback from: No

a) Faculty on curriculum as well as teaching learning evaluation? If yes how does the department utilize the feedback? Nil

b) Students on staff, curriculum and teaching learning evaluation and how does the department utilize the feedback? Nil

c) Alumni and employers on the programmes offered and how does the department utilized the feedback? Nil

43. List the distinguished alumni of the department (maximum 10)

1. Prof. Balaram Dey (Retd.) ,Washington State University, Washington
2. Dr. Suman Sao, North Bengal University, Siliguri

3. Dr. Arabinda Mukherjee (Retd.), Siliguri College, Siliguri
4. Dr. Indira (Lama) Lepcha, North Bengal University, Siliguri
5. Dr. Ranjan Roy
6. Dr. Debolina Kundu, Institute of Urban Affairs, New Delhi
7. Dr. Jiten Barman, Delhi Development Authority, Delhi
8. Dr. Harekrishna Dutta, Krishnagar Govt. College
9. Dr. Nima Doma Lama, Siliguri College, Siliguri
10. Dr. Snehasish Saha, North Bengal University, Siliguri

44. Give the details of student enrichment programmes (special lecture/ workshop/ seminar/) involving experts:

- Special Lectures are delivered by Visiting Professors (Names for each year enclosed in No. 12
-

45. List the teaching methods adopted by the faculty for different programmes.

- Lecture Method through audio visual techniques
- Hands on practical classes
- Field trips

46. How does the department ensure that the programme objectives are constantly met and learning outcomes are monitored.

- Through continuous evaluation of the students
- Examination at the end of each semester

47. Highlight the participation of students and faculty in extension activities.

- Faculty attend the seminar in area of specialization
- Teachers deliver lecture for Orientation and Refresher courses
- Meritorious students are taken for SAP Projects

48. Give the details of beyond syllabus scholarly activities' of the department.

- Alumni Reunion is held and students publish their articles in the journal "Focus"

49. State whether the programme/department is accredited /graded by agencies? If yes, give details.: No

50. Briefly highlight the contributions of the department in generating new knowledge, Basic or Applied.

- Students attend the Seminar(s) held in the department annually
- Special lectures are held for the students by inviting eminent scholars from outside Universities
- UGC sponsored Visiting Fellows
- Field visits
- Participation in exhibition organised centrally

51. Details five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strength

- Teacher student ratio
- Performance of the students
- Well equipped Laboratory
- Comprehensive syllabus and NET coaching for SC/ST students
- Healthy working environment.

Weakness

- Building and infrastructure needs to be upgraded
- Modern equipped classrooms

Opportunities

- Because of its strategic location and as it is the oldest department in this region, a lot of research work can be done on relevant issues
- Unique geographical location of the department in the Himalayan foothills gives an unique opportunity for geo-environmental research
- Situated in backward area with diverse socio-economic set-up of the catchment area.

Challenges

- To equipped the students mostly come from backward environment with state-of-art knowhow of the subject.
- Economically challenged students.

52. Future plans of the department.

- Upgrading the syllabus
- A centre for Study in Climate Change.
- Construction of building (second floor: Class Room for special courses, Laboratory for special courses, Seminar Hall, Research Scholar Room, 2 nos. Common rooms separately for boys and girls, Canteen for Faculty members, Students, Scholars and Employees).

1. Name of the Department **Mathematics**

2. Year of establishment **1962**

3. Is the Department part of a School/Faculty of the university? **Faculty of the University**

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) **PG, Ph.D**

5. Interdisciplinary programmes and departments involved **Undertaking a project funded by UGC jointly with Department of Computer Science (See Annexure)**

6. Courses in collaboration with other universities, industries, foreign institutions, etc. **Nil**

7. Details of programmes discontinued, if any, with reasons

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System: **Semester System**

9. Participation of the department in the courses offered by other departments

Some teachers participated in RC and OP organized by some other Departments of the University

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned	**Filled**	**Actual (including CAS & MPS)**
Professor	**03**	**00**	**04(CAS)**
Associate Professors	**03**	**02**	**Nil**
Asst. Professors	**08**	**04**	**Nil**
Others			

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	*Qualification*	*Designation*	*Specialization*	*No. of years of Experience*	*No. of Ph. D/M. Phil. students guided for*

					the last 4 years.
Prof. K. K. Nandi	**M.Sc., Ph.D.**	**Professor**	**Astrophysics, General Relativity & Cosmology**	**36**	
Prof. M. K. Bose	**M.Sc., Ph.D.**	**Professor**	**Real Analysis and Topology**	**40**	**2**
Prof. S. De Sarkar	**M.Sc., Ph.D.**	**Professor**		**31**	**1**
Prof. D. P. Datta	**M.Sc., Ph.D.**	**Assistant Professor**		**30**	**2**
Dr. M. Singha	**M.Sc., Ph.D.**	**Assistant Professor**	**Point Set Topology and Topological Algebra**	**9 years**	**Nil**
Dr. D. C. Pramanik	**M.Sc., Ph.D.**	**Assistant Professor**	**Complex Analysis**	**3 years**	**Nil**
Dr. P. Majhi	**M.Sc.,Ph. D.**	**Assistant Professor**	**Differential Geometry**	**3 years**	**Nil**
Miss N. Tamang	**M.Sc.**	**Assistant Professor**	**Topology and Complex Analysis**	**4years**	**Nil**

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors

13. Percentage of classes taken by temporary faculty – programme-wise information **Nil**

14. Programme-wise Student Teacher Ratio **Teachers : Students=1:13 for M.Sc**

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual **Administrative Staff: Sanctioned-02; Filled-01**

16. Research thrust areas as recognized by major funding agencies: **Pure Mathematics, Astrophysics and dynamical system**

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

Project: UGC XII Plan Innovative Research Activities Scheme

Title of the research project: Design and Development of an Artificial Neural Network (ANN) Based Expert System to diagnose Human Brain Tumor from CT scan and MRI Images.

Tenure of the Project: 01.04.2015 to 31.03.2017

Total Amount Allocated: Rs. 10, 10,000/- (Ten lakhs and ten thousand only)

Principal Investigator:

Ardhendu Mandal, Dept. Computer Science and Application, NBU

Co- Investigators:

- Rakesh Kumar Mandal, Department Dept. Computer Science and Application, NBU
- Manoranjan Singha, Department of Math, NBU
- Pradip Majhi, Department of Math, NBU
- Dr. Rajesh Kumar Mandal: Department of Radio Diagnosis, North Bengal Medical College
- Dr. Sandipan Paul, Department of Radio Diagnosis, North Bengal Medical College,

18. Inter-institutional collaborative projects and associated grants received **Nil**

a) National collaboration b) International collaboration

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received. **An Interdisciplinary project funded by UGC**

20. Research facility / centre with

- state recognition
- national recognition
- international recognition

21. Special research laboratories sponsored by / created by industry or corporate bodies **Nil**

22. Publications: **Please see volume IV of SSR.**

* Number of papers published in peer reviewed journals (national / international)

* Monographs

* Chapters in Books * Edited Books

* Books with ISBN with details of publishers

* Number listed in International Database (For *e.g.* Web of Science, Scopus,

Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)

* Citation Index – range / average * SNIP

* SJR

* Impact Factor – range / average * h-index

23. Details of patents and income generated Nil

24. Areas of consultancy and income generated Nil

25. Faculty selected nationally / internationally to visit other laboratories / institutions

/ industries in India and abroad : **Prof. K.K. Nandi, International and Prof. D. P. Datta, National**

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify) **Editorial Boards Prof. K. K. Nandi and Prof. S. De Sarkar**

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs): **ASC- RC and OP**

28. Student projects

 percentage of students who have done in-house projects including inter-departmental projects **25%**

 percentage of students doing projects in collaboration with other universities / industry / institute **Nil**

29. Awards / recognitions received at the national and international level by

1. GNFN Consiglio Nazionale delle Richcrche (CNR), Rome Italy(2013)

2. Erasmus Fellowships, European Union from, 2012 to date

3. Best Scientist award received by Professor K. K. Nandi from BSPU Ufa, Russia, 2014

4. Best paper presentation entitled "Urysohn's Lemma in weak structure " award for ANITA BOSE MEMORIAL AWARD received by Dr. M. Singha from National seminar on CMS, 2012

 Faculty

 Doctoral / post doctoral fellows

 Students

30. Seminars/ Conferences/Workshops organized and the source of funding (national / International) with details of outstanding participants, if any.

31. Code of ethics for research followed by the departments

32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	**Applications received**	**Selected**		**Pass percentage**	
		Male	Female	Male	Female

33. Diversity of students

Name of the Programme (refer to question no. 4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

NET-04, SET-02, GATE-02 and other competitive exam including SSC-20

35. Student progression

Student progression	**Percentage against enrolled**
UG to PG	
PG to M.Phil.	
PG to Ph.D.	
Ph.D. to Post-Doctoral	
Employed Campus selection Other than campus recruitment	
Entrepreneurs	

36. Diversity of staff

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period (2006 - September, 2015) : **19**

38. Present details of departmental infrastructural facilities with regard to

a) Library: **The Dept. Has a Library containing approximate 6000 books and journals.**

b) Internet facilities for staff and students **Yes**

c) Total number of class rooms: **Classroom-04 and Laboratory-01**

d) Class rooms with ICT facility

e) Students' laboratories **A computer Lab for students with capacity of 25 students at a time partially supported by DST**

f) Research laboratories **Nil**

39. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university

b) from other institutions/universities

40. Number of post graduate students getting financial assistance from the university **(2014 – 2015) : 47**

(Semester II: Male - 21, Female - 05) , (Semester IV: Male -17, Female -04).

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

42. Does the department obtain feedback from **Nil**

a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

c. alumni and employers on the programmes offered and how does the department utilize the feedback?

43. List the distinguished alumni of the department (maximum 10)

a) Prof. S. Karanjoy, Rted Professor, Department of Math, NBU.
b) Prof. K.K. Nandi, Professor, Department of Math, NBU.
c) Prof. D. P Datta, Professor, Department of Math, NBU.
d) Prof. S. De Sarkar, Professor, Department of Math, NBU.
e) Prof. P. Kundu, Professor, Department of Math, JU.

f) Prof. S. Roy, Professor, Department of Math, JU.

g) Dr. A. Das, Associate Professor, Department of Pure Math, CU.

h) Prof. S. Pal, Professor, Dept. of Computer Science and Application, NBU.

i) Dr. D. C. Pramanick, Assistant Professor, Department of Math, NBU.

j) Ms. N. Tamang, Assistant Professor, Department of Math, NBU.

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts. **Special Lecture: Prof M. Datta, ISI Kolkata**

45. List the teaching methods adopted by the faculty for different programmes.

Direct Interactive Method

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored? **Strictly following the objects as laid down in the syllabus/curriculums**

47. **Highlight the participation of students and faculty in extension activities.**
The students and faculties of the Department jointly organized a Blood Donation Camp from 2007 to till date; the average contribution being 150-170 every year.

48. Give details of "beyond syllabus scholarly activities" of the department.

The Department organizes competition Exam like Regional Mathematics Olympiad (RMO) and Madhava Mathematics Competition (MMC), RC in Mathematics every year.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details. **No**

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

Since its inception in 1962, the Department with the major objective of developing a centre for excellence and knowledge in the Mathematics in the region of North Bengal in Mathematics to provided facilities for training, study and research. Pioneering contributions have come from the faculty members in different fields like real analysis, complex analysis, geometry , topology, relativity and astrophysics

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

SWOC

Strengths:

1. An ideal combination of senior and junior teachers.
2. UG- students with best academic records pursue study in the Department.
3. An useful Departmental Library.
4. Availability of some reputed journals from Mathscinet, science directory etc contributed by the University.
5. Extensive research particularly in the area of pure Mathematics.

Weakness:

1. **Shortage in the number of faculties.**
2. **Shortage of equipments and maintenance in the computer Laboratory.**
3. **Long standing need of permanent personnel to run Departmental Library properly.**
4. **Lack of sufficient training program for students to get prepared in competitive examination.**

Opportunities:

As the University is located in adjacent to Siliguri town as well as Bagdogra Air-port the following program can be taken up in future:

1. Collaborations with some national and international Institutions.
2. Research activities may be extended to the other modern fields of pure Mathematics like Number Theory, Cryptography, Representation Theory, Surgery Theory etc.

Challenges:

1. To introduce modern teaching methods.
2. To motivate students to go for research in appropriate fields and institutions of national repute.
3. To create environment of 24-hours study centre like many institute in the country.

52. Future plans of the department:

a) To develop the infrastructure of the Department; particularly the NBHM Library and DST Computer Lab.

b) To apply for special assistance programme (SAP)

c) To conduct short term training courses like MTTS etc.

d) To pursue the planning as mention in "Opportunities" in Serial No. 51.

Annexure-

Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of years of Experience	No. of Ph. D/ M. Phil. students guided for the last 4 years.
Prof. K. K. Nandi	M.Sc., Ph.D.	Professor	Astrophysics, General Relativity & Cosmology	36	
Prof. M. K. Bose	M.Sc., Ph.D.	Professor	Real Analysis and Topology	40	2
Prof. S. De Sarkar	M.Sc., Ph.D.	Professor		31	1
Prof. D. P. Datta	M.Sc., Ph.D.	Assistant Professor		30	2
Dr. M. Singha	M.Sc., Ph.D.	Assistant Professor	Point Set Topology and Topological Algebra	9 years	Nil
Dr. D. C. Pramanik	M.Sc., Ph.D.	Assistant Professor	Complex Analysis	3 years	Nil
Dr. P. Majhi	M.Sc., Ph. D.	Assistant Professor	Differential Geometry	3 years	Nil
Miss N. Tamang	M.Sc.	Assistant Professor	Topology and Complex Analysis	4years	Nil

1. Name of the Department: **MICROBIOLOGY**

2. Year of establishment: **2005**

3. Is the Department part of a School/Faculty of the University? **Faculty**

4. Names of programmes offered (UG, PG, M.Phil, Ph.D., Integrated Masters; Integrated Ph.D, D.Sc., D.Litt., etc.): **PG, PhD**

5. Interdisciplinary programmes and departments involved: **DBT-BOOST in collaboration with Department of Biotechnology, NBU, funded by DBT,WB.**

6. Courses in collaboration with other universities, industries, foreign, institutions, etc. **NA**

7. Details of programmes discontinued, if any, with reasons: **NA**

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System: **Semester**

9. Participation of the department in the courses offered by other departments: **Yes (As Examiner in Department of Biotechnology**)

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/other):

Position	**Sanctioned**	**Vacant**	**Recruited**
Assistant Professor	04	03	01
Associate Professor	01	01	00
Professor	00	00	00
Technical Assistant	01	01	00

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance.

Sl. No.	**Name of Faculty**	**Qualification**	**Designation**	**Specialization**	**Experience (Year)**
1.	Dr. Arindam Bhattacharjee	M.Sc, PhD	Assistant Professor	Environmental Microbiology, Proteomics	Teaching-5 Research-4
2.	Ms. Sarita Kumari	M.Sc, M. Phil	Assistant Professor (Contractual)	Food Microbiology	Teaching-8 Research-7
3.	Ms. Payel Sarkar	M.Sc, (PhD)Thesis submitted	Assistant Professor (Contractual)	Environmental Wastemanagement, Industrial Bioprocess technology	Teaching-7 Research-7
4.	Mr. Shyama P. Saha	M.Sc	Assistant Professor (Contractual)	Industrial Bioprocess technology	Teaching-4 Research-4

12. List senior Visiting Fellows, adjunct faculty, emeritus professors: **NA**

13. Percentage of classes taken by the faculty – programme –wise information.

Program	Name of Faculty	Percentage Classes (%)	Courses taught
M.Sc	Dr. Arindam Bhattacharjee	25	Molecular biology. Industrial microbiology Genetic engineering, Cell biology
	Ms. Sarita Kumari	25	Virology, Immunology, Agricultural microbiology, Microbial metabolism and growth, Bioinformatics
	Ms. Payel Sarkar	25	Cell Biology, Waste water management, Antibiotics and Chemotherapeutics, Diversity of prokaryotic and eukaryotic microbes Recombinant DNA technology
	Mr. Shyama P. Saha	25	Enzymology, Genetics, Food microbiology, Environmental microbiology, Biostatistics, Medical microbiology
PhD*	Dr. Arindam Bhattacharjee	50	Research design and methodology, Advanced Microbiology and omics

*Rest 50% taught by Guest Faculty from other departments

14. Programme-wise Student Teacher Ratio.

Program	Year	Student :Teacher Ratio
MSc	2014-2015	10:1
PhD	2013-2014	1:1
	2014-2015	5:1

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual.

Position	Sanctioned	Vacant	Recruited
Technical*	01	01	0
Office Assistant	02	0	02

* **one contractual technical assistant since 2009**

16. Research thrust areas as recognized by major funding agencies.

- Environmental and Industrial Microbiology
- Proteomics
- Food Microbiology
- Bioprocess Technology

17. Number of faculty with ongoing projects from a) National b) International funding agencies and c) Total grants received Give the names of the funding agencies, project title and grants received project-wise.

- **Title**: Determining the pattern of protein tyrosine nitration in microbes

Funding Agency: University Research Grant

Amount: 0.75 lakh

- **Title:** Characterizing the dynamics of protein nitration and denitration in microbes.

Funding Agency: DST (Applied for)

18. Inter-institutional collaborative projects and associated grants received.

a) National collaboration: NIL

b) International collaboration: NIL

19. Departmental Projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT,ICSSR, AICTE, etc.; total grants received : NIL

20. Research facility/centre with

- State recognition- **DBT-BOOST in collaboration with department of Biotechnology, NBU, funded by DBT,WB**

- National recognition- NIL
- International recognition- NIL

21. Special research laboratories sponsored by/created by industry or corporate bodies: **NA**

22. Publications: **Please see volume IV of SSR.**

24. Areas of consultancy and income generated: **NIL**

25. Faculty selected nationally/internationally to visit other laboratories/institutions/ industries in India and abroad. **NIL**

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify) **NIL**

27. Faculty recharging strategies (UGC, ASC, Refresher/ orientation programs, workshops, training programs and similar programs). **NIL**

28. Students projects

- Percentage of students who have done in-house projects including inter departmental projects: **95%**
- Percentage of students doing projects in collaboration with other universities/industry/institutes: **5%**

29. Awards/recognitions received at the national and international level by

- Faculty
- Doctoral/post doctoral fellows

Name	Fellowship	Year
Ms Aditi Rai	INSPIRE Fellowship, DST	2015

- Students

Ms Khusboo Lepcha	INSPIRE Fellowship, DST	2013
Mr Amit Mondal	Rajiv Ghandhi Fellowship, UGC	2012
Ms. Smriti Pradhan	INSPIRE Fellowship, DST	2015

30. Seminars/Conferences /Workshops organized and the source of funding (national/international) with details of outstanding participants, if any.

Sl. No.	Seminar/Workshop	Duration	Funding agency
1.	National Conference on Diversity and Prospects of Microbial Resources	26th-28th Feb, 2010	UGC
2.	Workshop on methods of teaching microbiology at undergraduate level	26th Feb, 2011	UGC
3.	Microtrends 2012	16th March, 2012	UGC
4.	Micro and Macro Resources in Biomolecular Technology	25-26th Feb, 2013	UGC
5.	Applied Microbiology: Microbial World 2014	14th March, 2014	UGC
6.	22nd West Bengal State Science and Technology Congress (**SECTION**: **Agriculture and Veterinary Sciences)**	28th Feb – 1st March	DST (WB)

31. Code of ethics for research followed by the departments: YES

32. Student profile programme-wise:

Name of the Programme (refer to question no.4)	**Year**	**Selected**		**Pass Percentage**	
		Male	**Female**	**Male**	**Female**
MSc	2007-2008	15	21	15	21
	2008-2009	16	23	16	23
	2009-2010	11	28	11	28
	2010-2011	10	24	10	24
	2011-2012	08	23	08	23
	2012-2013	08	26	08	26
	2013-2014	10	23	10	23
	2014-2015	08	27	07	27
	2015-2016	09	29		
PhD	2013- 2014	01	-	Contd.	
	2014-2015	01	03	Contd.	

Applications Received= Data not available

33. Diversity of students

Name of the Programme (refer to question no.4)	% of Students From the Same University	% of students from other Universities Within the State	% of students from other Universities Outside the State	% of students From other Universities
MSc	88	06	06	---
PhD	60	-	40	---

34. How many students have cleared Civil Services and Defense Services examinations NET, SET, GATE and other competitive examinations? Give details categories-wise.

Name of Examination	**No. of students**
NET	15
SET	01
GATE	30
SSC	05
Other competitive examinations	15

35. Student progression

Student progression	**Percentage against enrolled**
UG to PG	30%
PG to M.Phil	NIL
PG to Ph.D.	40%
Ph.D to Post-Doctoral	NIL
Employed ▪ Campus selection ▪ Other than campus recruitment	 25% 75%
Entrepreneurs	

36. Diversity of Staff

Percentage of faculty who are graduates	
of the same university	One
from other universities within the State	One
from universities from other States from	Two
Universities outside the country	NIL

37. Number of faculty who were awared M.Phil, Ph.D., D.Sc., and D.Litt. during the assessment period: **One M.Phil (Awarded), One PhD (Awarded), One PhD thesis (Submitted)**

38. Present details of departmental infrastructural facilities with regard to

a) Library: **539 books with updated edition**

b) Internet facilities for staff and students: **Yes**

c) Total number of class rooms: **One**

d) Class rooms with ICT facility: **One**

e) Students' laboratories: **Two**

f) Research laboratories. **Two**

39. List of doctoral, post-doctoral students and Research Associates.

DOCTORAL STUDENTS

a) From the host institution/university.

Name	Year of Joining
Ms. Upasana Chetri	2014-15
Ms. Nitya Rai	2014-15
Mr. Swarnab Sengupta	2014-15

b) From other institutions / universities:

Name	Year of Joining
Ms. Aditi Rai	2014-15
Mr. Hemanta Sharma	2013-14

40. Number of post graduate students getting financial assistance from the university.

15 (2006-2015)

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

42. Does the department obtain feedback from

a. Faculty on curriculum as well as teaching-learning-evaluation ? If yes, how does the department utilize the feedback ?

b. Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback ?

c. Alumni and employers on the programmes offered and how does the department utilize the feedback ?

43. List the distinguished alumni of the department (maximum 10)

44. Give details of student enrichment programmes (special lectures/workshops/seminar) involving external experts.

Activities	Title	Duration
○ WORKSHOP	Workshop on methods of teaching microbiology at undergraduate level	26th Feb 2011
○ SEMINAR		
	MIDICON	26-28th Feb 2010
	MICROTRENDS	16th Mar 2012
	MIBISEM	25-26th Feb 2013
	MICROBIAL WORLD	16th Mar 2014
	WBSSTC (Agri & Veterinary Sec)	28th Feb-1st Mar 2015
○ SPECIAL LECTURES		
Prof. M.K. Chattopadhyay Senior Scientist, CCMB, Hyderabad	Oral rehydration and Diarrhea	3rd Dec 2012
Prof. Alok Shil Dept. of Microbiology, University of Calcutta	Yeast genetics	18-20th Mar 2015
Prof. M.J.Robert Nout, Department of Agrotechnology and Food Sciences, Wageningen University, The Netherlands	Rich nutrition for the poorest-food processing in Africa and Asia	3rd May 2010
Dr. Payel Sarkar University of North Carolina, Chapel Hill	Breaking The Barrier: Understanding Viral Cell Entry Using A Model Virus System	24th Sep2014
Prof. M.J.Robert Nout, Department of Agrotechnology and Food Sciences, Wageningen University, The Netherlands	Reducing sodium content in vegetable fermentation	Dec 2014

45. List the teaching methods adopted by the faculty for different programmes.

- ICT
- Group Discussion
- Industrial visit
- Seminar by students on frontier areas of microbiology
- Preparation of project proposal
- Use of online software and its application in modern microbiology
- Continuous evaluation
- Research projects

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

- Continuous evaluation of students
- Seminar on frontier areas of microbiology
- Research projects

47. Highlight the participation of students and faculty in extension activities.

- Awareness for Japanese Enchephalities- A programme initiated by the Department
- Food and medical support to the workers of Red Bank Tea Estate, Jalpaiguri, WB by students of the department.

48. Give details of "beyond syllabus scholarly activities" of the department.

- Tutorial classes for competitive exams like CSIR-UGC NET, GATE for the students
- Career counseling
- Journal clubs

49. State whether the programme/department is accredited / graded by other agencies? If yes, give details.

NO

50. Briefly highlight the contributions of the department in generating new knowledge basic or applied.

Activities	Title	Duration
1. WORKSHOP	Workshop on methods of teaching microbiology at undergraduate level	26th Feb 2011
2. SEMINAR		
	MIDICON	26-28th Feb 2010
	MICROTRENDS	16th Mar 2012
	MIBISEM	25-26th Feb 2013
	MICROBIAL WORLD	16th Mar 2014
	WBSSTC (Agri & Veterinary Sec)	28th Feb-1st Mar 2015
3. SPECIAL LECTURES		
Prof. M.K. Chattopadhyay Senior Scientist, CCMB, Hyderabad	Oral rehydration and Diarrhea	3rd Dec 2012
Prof. Alok Shil Dept. of Microbiology, University of Calcutta	Yeast genetics	18-20th Mar 2015
Prof. M.J.Robert Nout, Department of Agrotechnology and Food Sciences, Wageningen University, The Netherlands	Rich nutrition for the poorest-food processing in Africa and Asia	3rd May 2010
Dr. Payel Sarkar University of North Carolina, Chapel Hill	Breaking The Barrier: Understanding Viral Cell Entry Using A Model Virus System	24th Sep2014
Prof. M.J.Robert Nout, Department of Agrotechnology and Food Sciences, Wageningen University, The Netherlands	Reducing sodium content in vegetable fermentation	Dec 2014

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strength of the department: Teaching, Research, Dissertation for PG students, Industrial visit, Secretarial Assistance, Seminar library for students.

Weakness of the department: Faculty number to student ratio, Lack of a librarian, Lack of AC

Opportunities: Placement of students, Development of new technology and patent filling, Funding of research projects, Invitation to nationally and internationally recognized professor or academician or entrepreneur for delivering special lectures .

Challenges: Placement of students, Industry and department link ups, Departmental Programme and funding, Funding of research projects, Research collaboration at national and international levels.

52. Future plans of the department.

Microbes are playing important role in the bioprocess of all living things and maintain homeostasis of the universe. Without microbes, one cannot imagine such a biologically balanced and diverse universe. As the microbial activities are so diverse, the microbiology programme is a multidisciplinary subject, which has the roots of life science, environmental science, and engineering. The recent developments from human microbiome project, metagenomics and microbial genome projects has expanded its scope and potential in the next generation drug design, molecular pathogenesis, phylogeography, production of smart biomolecules, etc. Considering recent innovations and rapid growth of microbiological approaches and applications in human and environmental sustainability, the department has the following future plans:

- To enhance collaborations and links with other organizations of higher learning and the industry.
- To invite nationally and internationally recognized professor or academician or entrepreneur for delivering special lectures.
- To generate sophisticated equipment facility for advanced research in Microbiology through programs such as DST-FIST, UGC-SAP etc.
- To introduce PG diploma courses in Advanced techniques in Microbiology
- To generate a centre for Microbial application especially to agriculture and food processing
- To uplift the departmental profile as a centre of excellence for research and development.

1. Name of the Department : ***Physics***

2. Year of establishment : ***1962***

3. Is the Department part of a School/Faculty of the university? ***Faculty***

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) : ***PG, Ph.D.***

5. Interdisciplinary programmes and departments involved :

(i) Refresher Courses , (ii) Collaborative project work, (iii) Collaborative research work, (iv) Project work by the students, (v) Jointly organized Seminar/ conferences,(vi) Inter-Departmental Research work

6. Courses in collaboration with other universities, industries, foreign institutions, etc. : ***Nil***

7. Details of programmes discontinued, if any, with reasons :

Annual system of M. Sc course is discontinued due to the introduction of Semester system

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System : ***Semester***

9. Participation of the department in the courses offered by other departments:

Participation with Academic Staff College for organizing Orientation and Refresher courses.

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned	**Filled**	**Actual (including CAS & MPS)**
Professor	***02***	***0***	***02***
Associate Professors	***06***	***03***	***02***
Asst. Professors	***07***	***05***	***04***
Others	***Nil***	***Nil***	***Nil***

12. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./M.Phil. students guided for the last 4 years
Pradip Kumar Mandal	*M.Sc, Ph.D*	*Professor*	*Condensed Matter Physics*	*29*	*05*
Amitabha Mukhopadhyay	*M.Sc, Ph.D*	*Professor*	*Nuclear and Particle Physics*	*25*	*01*
Malay Kumar Das	*M.Sc, Ph.D*	*Associate Professor*	*Electronics and Radio Physics*	*20*	*02*
Bikash Chandra Paul	*M.Sc, Ph.D*	*Associate Professor*	*Electronics and Radio Physics*	*16*	*05*
Sripada Haldar	*M.Sc, Ph.D*	*Assistant Professor*	*Electronics and Radio Physics*	*15*	*Nil*
Provash Mali	*M.Sc*	*Assistant Professor*	*Nuclear and Particle Physics*	*07*	*Nil*
Rajat Kumar Dey	*M.Sc, Ph.D*	*Assistant Professor*	*Nuclear and Particle Physics*	*11*	*Nil*
Suman Chattopadhyay	*M.Sc, Ph.D*	*Assistant Professor*	*Solid State Physics*	*10*	*Nil*

19. List of senior Visiting Fellows, adjunct faculty, emeritus professors:

(i) Dr. Pranab Chowdhury, Central Glass and Ceramic Research Institute, Jadavpur, Kol-32

(ii) Prof. Dwiptiman Roy Chowdhury, Department of Electronic Sciences, Calcutta University, 92 A.P.C. Road, Kolkata – 700009)

(iii) Prof. Dhruba Dasgupta, Retired Professor, Department, of Physics, North Bengal University.

(iv) Prof. Swapan Kumar Ghosal, Retired Professor, Department of Physics, North Bengal University.

***(v) Prof. Debnarayan Jana, Department of Physics,* University of Calcutta.**

(vi) Prof. S. V. Dhurandhar, IUCAA, Pune.

(vii) Dr. (Mrs.) Sucheta Koshti, IUCAA, Pune.

(viii) Prof. Ranabir Dutta, Visva Bharati, Santiniketan

20. Percentage of classes taken by temporary faculty – programme-wise information: ***10%***

21. Programme-wise Student Teacher Ratio:

PG: ***11:1***

Ph.D.: ***3:1***

22. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual :

i. Mr. Sudip Saha – Sr. Office Assistant

ii. Mr. Sankha Suvra Ray – Technical Assistant (Gr. I)

iii. Mr. Subrata Hazra – Technical Assistant (Gr. II)

iv. Mr. Rajesh Pradhan – Technical Assistant (Gr. II)

v. Mr. Ayub Ahmed – Technical Assistant (Gr. II)

vi. Mr. Amitava Roy – Technical Assistant (Gr. II)

vii. Mr. Tapas Sen – Jr. Laboratory Attendant (Gr. II)

viii. Mr. Lubai Hansda – Sr. Peon

ix. Mrs. Sarita Chhetri – Sr. Peon

x. Mrs. Ramkumari Yadav – Sr. Peon

23. Research thrust areas as recognized by major funding agencies:

(a) Liquid Crystal, (b) Cosmology, Astrophysics and Relativity, (c) High-energy Physics, and (d) Cosmic-ray Physics.

24. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

Name of the Faculty Member	Title of the Scheme/ Project	Sanctioning Authority and total grants received

1. Dr. M. K. Das	*Experimental studies on the relationship between molecular structure and physical properties of bent-core mesogens having nematic and smectic phases*	*DST (Oct, 2013 - Oct, 2017) Rs. 53 lakhs*
2.Dr. M. K. Das	*Development of high-resolution optical detector for growth monitoring of bacteria in liquid culture*	*UGC (XII Plan Innovative Research Activities Scheme) (2015-2016) Rs. 16 lakhs*
3.Dr. M. K. Das (Co-PI)	*Development of liquid crystalline materials with optimum properties for application in vertically aligned mode liquid crystal displays*	*DST (2014 - 2017) Rs. 35 lakhs*
4.Dr. M. K. Das	*Determination of rotational viscosity of several nematogens by relaxation method*	*NBU Research Project Rs. 0.5 Lakh (2013-14)*
5.Dr. B C Paul	*Cosmologies with Dark Matter, Dark Energy and the Modified Gravity*	*UGC Major Research Project (2013-2016) Rs. 9.09 Lakh*
6.Dr. R. K. Dey	*Studies of the cosmic ray chemical composition and measurements …..*	*UGC (Minor research project) Rs. 1.9 lakhs*
7.Dr. R. K. Dey	*Galactic Cosmic Rays:Origin and their measurements with EAS Studies*	*NBU Rs. 0.5 lakh*
8. Dr. B. C. Paul	*A study of Compact Stars : Theory and Observations*	*NBU Research Project Rs. 0.5 Lakh (2013-14)*
9. Dr. S. Chatterjee	*Solid State Gas Sensors for Pollusion Monitoring*	*UGC (2012-2015) Rs. 13,91,800/-*
10. Dr. S. Chatterjee	*Correlating Processing conditions and Biochemical Parameters with Quality of Withered Tea through Automatically Monitored Withering Trough*	*Tea Research Board Rs.1,16,75,200/-*
11. *Dr. S. Haldar*	*Investigation of physical properties of Liquid Crystal compounds and their mixtures*	*UGC Rs. 1.9 lakhs 1st July 2012-30th June 2014*
12. *Dr. S. Haldar*	*Study of some physical properties of liquid crystal compounds*	*NBU Sponsored project 0.75 lakhs*

13. ***P. Mali***	***"In-medium effects on low mass vector mesons produced in heavy-ion collisions from SIS to FAIR energies***	***NBU Sponsored project 0.75 lakhs***
14. ***P. Mali***	***Investigating Collective phenomena in Heavy Ion Collision with a special Reference to the CBM Experiment***	***UGC Minor Research Project 1.5 Lac (2011-13)***
15. ***P. K. Mandal***	***Fabrication and characterization of organic field effect transistors with high mobility and stability***	***BRNS(ACT)/DAE Rs. 24.96 2014-2017***
16. ***P. K. Mandal***	***Dielectric, electro-optic and X-ray studies on Ferroelectric liquid crystals and their Mixtures***	***BRNS (DAE) (2010-13) Grant: Rs. 31,05,250/-***
17. ***P. K. Mandal***	***To study temperature evolution of orientational and translational ordering of a chiral frustrated chiral smectic phases***	***DST (2012-13) Fund: Travel and stay cost to do experiment using the synchrotron facility at DESY, Germany***
18. ***A. Mukhopadhyay***	***Students training programme at NBU for the CBM experiment***	***VECC, Kolkata (2011-12) Rs. 2 lakhs***

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration-INSA Bilateral Exchange Program with Nepal

(Mr. Indra Bahadur Karki) (2010-12)

b) International collaboration-Nil

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

AGENCY	PURPOSE	AMOUNT
UGC XIIth 5-Year Plan	**Equipment and Books**	**10 lacs**
DST FIST	**Equipment, Infrastructure, Networking**	**32.67 lacs**
UGC Special Grant (NON-SAP)	**Infrastructure**	**20 Lacs**

20. Research facility / centre with

- state recognition
- national recognition: **IUCAA Resource Centre (UGC)**
- international recognition: **TWAS-UNESCO ASSOCIATESHIP**

Institute of Theoretical Physics, Chinese academy of Sciences, Beijing

(Dr. B. C. Paul 2007-2011, 2013-2016)

21. Special research laboratories sponsored by / created by industry or corporate bodies: Nil

22. Publications: **Please see volume IV of SSR.**

23. Details of patents and income generated : ***Nil***

24. Areas of consultancy and income generated: ***Nil***

25. Faculty selected nationally / internationally to visit other laboratories / institutions

a. industries in India and abroad:

P.K. Mandal:

(i) Visited Technical University, Darmstadt, Germany during June-August, 2006

(ii) Delivered an invited talk in the XVIII Conference on Liquid Crystals at Augustow, Poland during 14-18 September, 2009.

(iii) Visited Technische Universitat, Darmstadt, Germany for 3 weeks in October 2009 under International Collaboration Scheme funded by Federal Ministry for Education & Research, Germany

B. C. Paul:

i. ***Visited Chinese Academy of Sciences,Beijing (June 5-17, 2006,) to participate in Asian-Pacific Introductory School on Superstring and Related topics.***

ii. Visited Institut d'Astrophysique de Paris, France (June 26- July 13, 2006)

iii. ICTP, Trieste, Italy (2007, 2009)

i. Kavli Instiute of Theoretical Physics, Beijing, China (2014)

ii. Institute of Theoretical Physics, Chinese academy of sciences, Beijing (2014)

iii. Institute of Mathematical Sciences, Chennai (2014, 2015)

iv. Indian Institute of Sciences, Bangaluru (2014)

v. Raman Research Insttute, Bangaluru (2015)

vi. Jamia Milia Islamia, New Delhi (2014, 2015)

vii. Delhi University (2014, 2015)

viii. S. N. Bose National Centre of Basic Sciences, Kolkata (2014, 2015)

ix. Jadavpur University, Jadavpur (2014,2015)

x. Indian Institute of Technology, Kharagpur (2008)

xi. IRC, Department of Statistics, Calcutta University, Kolkata (2013)

xii. Inter-University Centre for Astronomy and Astrophysics, Pune (from 2000 to 2015 regular visitor)

xiii. Tata Institute of Fundamental Research, Mumbai (2013)

xiv. Bangalore University, Bangaluru (2015)

M. K. Das:

i. Visited Department of Organic Chemistry, Martin Luther University, Halle, Germany during 28.06.2010-03.07.2010 to deliver lecture on 02.07.2010 and for discussion on common research works.

ii. Visited Jagiellonian University, Krakow, Poland (11^{th} -16^{th} July, 2010) to participate 23^{rd} International Liquid Crystal Conference.

iii. Visited Department of New Technology and Chemistry, Military University of Technology from 10-17, July, 2010 for common research works.

iv. Visited Lucknow University, Lucknow, to participate (October 26-28, 2009) to participate 16^{th} National Conference on Liquid Crystals.

v. Visited at K.S. Rangasamy College of Technology, K.S.R Kalvi Nagar, Tiruchengode - 637 215, to deliver Lectured at the Programme Advisory Committee of "Condensed Matter Physics and Materials Science" on July 08, 2009

vi. Visited Department of Physics, NIT Silchar, Assam to deliver lectures for three day workshop on X-ray Diffraction and its applications 4-6 December, 2008.

vii. Visited IISc, Bangalore to deliver lectures at the 15^{th} National Conference on Liquid Crystals, 13^{th} -15^{th} Oct, 2008.

viii. Visited Institute of Applied Physics & Institute of Chemistry, Faculty of Advanced Technologies Military University of Technology, Warsaw, Poland, to deliver lecture at the XVII Conference on Liquid Crystals (Chemistry, Physics, & applications), 17th -22^{nd} Sept., 2007.

26. Faculty serving in:

b) National committees

Dr. B. C. Paul (Council Member of IAGRG for 4 years (2010-2014))

c) International committees

c) Editorial Boards: **Dr. B. C. Paul** ***(Scientific Journal)***

d) Any other (please specify)

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

28. Student projects

α. percentage of students who have done in-house projects including inter-departmental projects : ***100%***

β. percentage of students doing projects in collaboration with other universities

1. industry / institute: Nil

29. Awards / recognitions received at the national and international level by

α. Faculty

(i) **Post doc offer from INFN, Italy-2014: Dr. Rajat Kumar Dey**

(ii) **Awarded TWAS-UNESCO Associateship from Italy- B. C. Paul (2007-2011, 2013-2016)**

(iii) **Visiting Associateship of S N Bose National Centre for Basic Sciences, Kolkata-B. C. Paul**

(iv) **Visiting Associateship of IUCAA, Pune – Dr. B. C. Paul (2000-2003, 2003-2006, 2006-2009,2009-2012, 2012-2015)**

(v) **Dr. M. K. Das was nominated the National Organizing Committee Member, 15th National conference on Liquid Crystals, IISc, Bangalore, October 13-16, 2008.**

(vi) **Dr. M. K. Das was nominated the National Organizing Committee Member, 16th National conference on Liquid Crystals, Lucknow University, Lucknow from October 26-28, 2009.**

(vii) **Dr. M. K. Das was nominated the National Organizing Committee Member, 17th National conference on Liquid Crystals, Department of Chemistry, Veer Narmad South Gujarat University, Surat, from November 15-17, 2010.**

β. Doctoral /post doctoral fellows:

(i) **The presentation entitled "X-ray diffraction, refractive index and static dielectric permittivity studies of a mesogenic mixture showing induced smectic phase", Prithwi Dev Roy and Malay Kumar Das, has been adjudged the best paper in Physics (oral) and Prithwi Dev Roy has been awarded the Dewan Jawaharlal Nayar award on behalf of the Indian Liquid Crystal Society at the 13th National Conference on Liquid Crystals (8th Sept.- 11th Sept., 2006) held at the Department of Physics, Mysore University, Mysore, Karnataka.**

(ii) ***The presentation entitled "Phase Transition Studies of A Polar-Polar Binary Liquid Crystalline System Showing Nematic-Smectic A_d - Re-Entrant Nematic Phase Sequence" by Akhileshwar Prasad and Malay Kumar Das has been adjudged the best paper in Physics (poster) and Mr. Akhileshwar Prasad has been awarded the Dewan Jawaharlal Nayar award on behalf of the Indian Liquid Crystal Society at the 16th National Conference on Liquid Crystals (October 26-28, 2009), Lucknow University, Lucknow.***

(iii) ***The presentation entitled "Physical Properties Of Two Fluoro Substituted Alkyl Terphenyls", Malay Kumar Das, Anamika Pramanik, Banani Das, Ł. Szczuciński, R. Dąbrowski, has been adjudged the best paper in Physics (poster) and Ms. Anamika Pramanik has been awarded the Dewan Jawaharlal Nayar award on behalf of the Indian Liquid Crystal Society at the 17th National Conference on Liquid Crystals, (November 15-17, 2010).***

(iv) ***The presentation entitled "Critical Behavior at the Nematic to Isotropic and Smectic-A to Nematic Phase Transitions in Binary Liquid Crystal Mixtures having Rod-Like and Hockey Stick-Shaped Mesogens", Anish Chakraborty and Malay Kumar Das, held at the Department of Physics, VSSD College, Kanpur-208002, UP during November 10-12, 2014. Adjudged best poster in Physics.***

(v) ***The presentation entitled "Fascinating observation of both bent-core and calamitic like behavior in the nematic phase of a few laterally methyl substituted hockey-stick shaped liquid crystals", Anish Chakraborty, Malay Kumar Das, Banani Das, Ute Baumeister and Wolfgang Weissflog, 5th Asian Conference on Colloid and Interface Science, November 20-23, 2013, Organized by The Asian Society for Colloid and Surface Science and Department of Chemistry, North Bengal University. Adjudged best poster in Physics.***

χ. Students

30. Seminars/ Conferences/Workshops organized and the source of funding (national

i. International) with details of outstanding participants, if any.

Name of the Seminar/ Conference	Date of the Seminar / Conference	source of funding
1. Conference on Modern Trends in Materials Science (MTMS 2015)	***5th – 6th February, 2015***	***UGC and NBU***
2. 22nd West Bengal Science Congress- Physical Science Chapter	***Feb. 28- March 01, 2015***	***DST (West Bengal)***
3. Organized Group Monitoring Workshop DST FAST track-NBU Local Coordinator (B. C. Paul)	***Aug. 22-24, 2013***	***DST***
4. ***Workshop on Astronomy DATA Analysis Coordinator (B. C. Paul)***	***Dec. 16-17, 2013***	***IUCAA***
5. ***Workshop on x-ray astronomy***	***March 23-25, 2013***	***IUCAA, Pune***
6. ***Outreach programme: Popular lecture by Prof. A. K. Kembhavi***	***May 23, 2013***	***IUCAA, Pune***
7. ***UGC Refresher Course in Physics and Chemistry of advanced materials***	***Nov. 15 to Dec. 5, 2011 at ASC, NBU.***	***UGC and NBU***
8. ***. Refresher Course in Mathematics (interdisciplinary)***	***Jan. 4 – 25, 2012 at ASC, NBU***	***UGC and NBU***
9. ***Preparatory School on Theoretical High-energy Physics***	***Sept. – Oct. 2012***	***DST, Govt. of India***
10. ***Workshop on X-Ray Data Analysis***	***Dec. 1 – 3, 2011***	***NBU & IUCAA***
11. ***Data analysis workshop***	***April 5—9, 2010***	***IUCAA, Pune***
12. ***UGC seminar on recent advances in relativity, cosmology and astro-physics***	***February 28-March 1, 2011***	***IUCAA, Pune, NBU***
13. ***Seminar on non-linear dynamics and astro-physics***	***October 9, 2010***	***IRC and Mathematics department, NBU***
14. ***Outreach programme: Workshop on advances in physics and astro-physics at Siliguri B Ed college, Siliguri***	***October 13, 2010***	***IUCAA, Pune***
15. ***Outreach programme : Workshop on making small***	***May 29-30, 2009***	***IUCAA, Pune & North Bengal***

telescope for school students as IYA-2009 activities		*Science centre, Siliguri*
16. Advances in Physics and Astrophysics	*March 16-17, 2009*	*IUCAA, Pune*
17. Himalayan Relativity dialogue	*April 18-20, 2007*	*IUCAA, Pune*
18. Outreach programme: Recent advances in Physics at Raiganj University College	*2007*	*IUCAA, Pune*
19. 14th National Conference on Liquid Crystal under the auspices of the Indian Liquid Crystal Society which is proposed to be held from	*17th -19th of December, 2007.*	*DST, NBU, UGC, CSIR, DIT*
20. A 4-days workshop on "Stars and Galaxies: Observational Techniques and Data analysis"	*12-15th Sept., 2006*	*NBU & IUCAA*

31. Code of ethics for research followed by the departments: ***At par with the rest of the university.***

32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	**Applications received**	**Selected**		**Pass percentage**	
		Male	Female	Male	Female
PG(2014-2015)	***123***	***27***	***18***	***89***	***100***
Ph. D	***25***	***18***	***7***	***---***	***---***

33. Diversity of students

Name of the Programme (refer to question no. 4)	**% of students from the same university**	**% of students from other universities within the State**	**% of students from universities outside the State**	**% of students from other countries**
PG	***70***	***30***	***0***	***0***
Ph. D	***87***	***9***	***4***	***0***

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

AGENCY	**Year**	**Number**
NET	**2006: 06** **2007: 08** **2008: 11** **2009: 05** **2010: 07** **2011: 05** **2012: 04** **2013: 02**	48

35. Student progression

Student progression	**Percentage against enrolled**
UG to PG	***80%***
PG to M.Phil.	***Nil***
PG to Ph.D.	***15%***
Ph.D. to Post-Doctoral	***10%***
Employed Campus selection **Other than campus recruitment**	***5% (College /University faculty)*** ***75% (other)***
Entrepreneurs	

36. **Diversity of staff**

Percentage of faculty who are graduates of	
the same university:	***87.5***
from other universities within the State from universities from other States from universities outside the country	***12.5*** ***0*** ***0***

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: **Two**

38. Present details of departmental infrastructural facilities with regard to

a. Library – (i) Departmental Library

(ii) IUCAA Reference Centre (IRC) Library

(iii) Alumni Maintained Book Bank

(iv) Online Journals (E-Library)

(v) Campus-wide LAN

b. Internet facilities for staff and students:

Excellent Internet facilities for staff and students are available

c) ***Total number of class rooms: 04***

d) ***Class rooms with ICT facility:***

Excellent Computer Laboratory (round the clock service with 20 PCs + Server + Server Printers + Internet)

e) ***Students' laboratories: 05***

f) ***Research laboratories: 05***

39. List of doctoral, post-doctoral students and Research Associates

a. from the host institution/university :

Doctoral

1. Gautam Sarkar
2. Pragati Pradhan
3. Prjnamita Dasgupta
4. Debasish Sinha
5. Anamika Pramanik
6. Sudipta Sarkar
7. Sanchita Barman
8. Kartick Chandra Dey
9. Somdatta Basak
10. Soumya Sarkar
11. Souvik Ganguly
12. Debarghya Goswami
13. Rakesh Kar

14. Asim Debnath
15. Somenath Ghosh
16. Soumya Sarkar
17. Rajat Biswas
18. Manabendra Roy

Name of the project scholars (as of today):

1. Anish Chakrabarty
2. Aparna Ghosh

b. from other institutions/universities

1. Rumi Deb
2. Sanjib Kumar Manna
3. Sushanta Chakrabarty

40. Number of post graduate students getting financial assistance from the university. ***12***

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. ***Nil***

42. Does the department obtain feedback from

i. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? ***Feedback through D.C. meeting and syllabus is modified recently.***

ii. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? ***No***

iii. alumni and employers on the programmes offered and how does the department utilize the feedback? ***No***

43. List the distinguished alumni of the department (maximum 10):

(i) Dr. Nitya Karmakar, University of Western Sydney

(ii) Dr. G. Majumder, TIFR, Mumbai

(iii) Dr. S.K. Roy, IACS, Kolkata

(iv) Dr. Amitabha Ghosh Roy, SINP, Kolkata

(v) Dr. Subham Majumder, IACS, Kolkata

(vi) Dr. Subir Sarkar, SINP, Kolkata

(vii) Dr. Suchandra Dutta, SINP, Kolkata

(viii) Dr. Uttam Sarkar, BARC, Mumbai

(ix) Dr. Anil Debnath, BARC, Mumbai

(x) Dr. Ashis Bhattacharya, Visva Bharati

(xi) Dr. Madhusudhan Roy, SINP, Kolkata

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

(i) Outreach programme: Popular lecture by Prof. A. K. Kembhavi- May 23, 2013

(ii) Outreach programme: Prof. J.V. Narlikar, IUCAA, Pune-Public Talk- 2006

(iii) Students training programme at NBU for the CBM experiment (2011-12)

(iv) Outreach programme: Workshop on advances in physics and astro-physics at Siliguri B Ed college, Siliguri,October 13, 2010

(v) Outreach programme : Workshop on making small telescope for school students as IYA-2009 activities, May 29-30, 2009

(vi) Outreach programme : Prof. Dipankar Bhattacharya, IUCAA-Popular talk on May, 2009.

45. List the teaching methods adopted by the faculty for different programmes.

i. Class Room Teaching: Theory + Practice (Interactive)

ii. Tutorial (Problem Solving)

iii. Project assignments

iv. Laboratory Work

v. Group Discussion

vi. ***Through seminar talks by visiting speakers***

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

a. Internal assessment through classroom assignments (tutorials) and home assignments

b. Compulsory Project Work + Student Seminar

c. Lab performance of a student is continuously assessed

d. Performance is monitored and assessed in computer lab

47. Highlight the participation of students and faculty in extension activities.

i. Workshops seminars and symposia are regularly organised

ii. ***Inter-University Centre for Astronomy and Astrophysics (IUCAA), an autonomous institute of the UGC decided to start a Reference Centre (IRC) in our department. It started functioning from July 31, 1999. Objective of this program is to provide facilities for Research, Teaching, Public Outreach programmes in the field of Astronomy and Astrophysics and related*** fields.

48. Give details of "beyond syllabus scholarly activities" of the department.

The Department along with IUCAA Reference Centre, NBU has organized a number of introductory workshops on various aspects of Physics for undergraduate students and teachers.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details. ***No***

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

The faculty members of the department are involved in research – both applied and basic. Their research results are communicated through publications in national and international journals. Their contributions are in areas like soft matters, *Cosmology, Astrophysics and Relativity, High-energy Physics, Cosmic-ray Physics* etc.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths:

(i) ***Siliguri is the Gateway of the North Eastern states of India and Physics Department, North Bengal University has already crossed Golden Jubilee Year. A handful of faculties have been produced by this department who are serving in different capacities in various Institutes and universities in India.***

(ii) The campus is connected by wide LAN having fibre optic backbone, internet connectivity with VSAT. The E-library and the Inflibnet facilities are available in the department for each faculty member and staffs including students.

(iii) The department has close ties with IUCAA (Pune) by MOU. It runs an IUCAA

Resource Centre (IRC) which acts as the nucleating centre for collaborative research in Asronmoy, Astrophysics and Cosmology.

(iv) Inter-departmental Research facilities are available leading to Ph. D. degree.

(v) A number of strong collaboration with academics of different research institutions and universities in India and abroad.

(vi) Regular visits by the academics of the department to different universities and Institutes of National importance.

Weaknesses***: (i) No new teaching post has been added to the existing strength after the 6th Five year plan.***

(ii) The department cannot start new areas of specialization because of staff strength.

(iii) The department cannot initiate new teaching programme(s).

(iv) Teaching-learning-evaluation of the faculty on curriculum was not introduced.

(v) Feedback of Students on staff, curriculum and teaching-learning-evaluation were not yet introduced.

Opportunities and Challenges:

(i) To accommodate a sizable portion of student of North Bengal and the neighbouring states for M.Sc. course in physics enhanced infrastructure is essential.

(ii) From last year the intake has increased by 40%. To accommodate the increased intake of students, the department needs at least two big size class rooms and adequate laboratory space.

52. Future plans of the department.

TEACHING

(i) Plans to acquire Mosbaur set-up and Gamma ray experiments with multichannel analiser for nuclear physics teaching laboratory

(ii) Plans to acquire spectrum analyzer, Microwave set-up and digital communication set-up for Electronics teaching laboratory.

(iii) Looks for funds to setup education technology laboratory to facilitate writing and designing courseware in physics and developing CAI packages for students in order to supplementing conventional chalk and talk method of instruction.

(iv) To introduce Astrophysics and Cosmology Centre, Centre for Condensed matter physics.

53. Future plans of the department.

TEACHING

(v) Plans to acquire Mosbaur set-up and Gamma ray experiments with multichannel analiser for nuclear physics teaching laboratory

(vi) Plans to acquire spectrum analyzer, Network Analyzer, Microwave set-up and digital communication set-up for Electronics teaching laboratory.

(vii) Looks for funds to setup education technology laboratory to facilitate writing and designing courseware in physics and developing CAI packages for students in order to supplementing conventional chalk and talk method of instruction.

(viii) To introduce Astrophysics and Cosmology Centre, Centre for Condensed matter physics.

RESEARCH

Astrophysics data Bank:

- ***In collaboration with IUCAA, the IRC setup a data bank on astrophysics and astronomy for use of teachers and research workers working in eastern India.***

Relativity, Cosmology and Astrophysics:

- ***Research in the emerging fields like quantum creation of the universe, Brane world and cosmology in higher dimension and studies in various aspects of compact stars will be intensified***

Soft matter Physics (LC):

- ***Explore new mixture systems having potential utilization in active matrix display devices.***
- ***This group will study LC compounds using X-ray scattering technique and wide spectrum dielectric spectroscopy.***
- ***Plans to synthesise new materials with novel electro-optic characteristic (in collaboration with Chemistry Dept, NBU).***
- ***Plans to synthesise new materials with novel electro-optic characteristic (in collaboration with MS university Baroda and Chemistry Dept, NBU)***

- ***Plans to collaborate with Chemistry and Bio-Technology Departments to extend research activity in applied field. One such activity is the ongoing project "Development of high-resolution optical detector for growth monitoring of bacteria" under "UGC XII Plan Innovative Research Activities Scheme".***

Nuclear and Particle Physics:

- ***Plans to establish a visual detection laboratory for SSNTDs and Nuclear Emulsion.***
- ***Plans to Participate in Collaborative experiments using SSNTDs with the Bose Institute , Kolkata***

1. Name of the Department:

Department of Tea Science

2. Year of establishment:

2012

3. Is the Department part of a school / Faculty of the university?

Part of the University

4. Name of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph. D., D. Sc., D. Litt., etc)

a) M.Sc. in Tea Science b) Postgraduate Diploma in Tea Management

5. Interdisciplinary programmes and departments involved:

Yes

6. Course in collaboration with other universities, industries, foreign institutions, etc.

a) Tea Board b) Tea Research Institutions c) Tea gardens

7. Details of programmes discontinued, if any, with reasons

None

8. Examination system: Annual / Semester / Trimester / Choice Based Credit System

Semester

9. Participation of the department in the course offered by other departments

None

10. Number of teaching posts sanctioned, filled and actual (Professor / Associate Professors / Asst. Professors/ others)

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	**0**	**0**	**0**
Associate Professors	**0**	**0**	**0**
Asst. Professors	**3**	**1**	**1**
Others	**0**	**0**	**0**

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./ M. Phil. Students guided for

					the last years
Dr. S. E. Kabir	**M. Sc., Ph. D.**	**Assistant Professor**	**Tea Science**	**39 Years**	**1**

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors

Faculty from University	Dr. Arnab Sen, Department of Botany Specialization: Biotechnology of tea
University	Prof. A.P.Das, Department of Botany Specialization: Systematic position of tea, Tea Weeds
	Prof. Ananda Mukhopadhyay, Department of Zoology Specialization: Tea Pests, Integrated Pest Management
	Dr. Subhash Chandra Roy, Department of Botany Specialization: Anatomy of tea. Botany of tea
	Dr. Palash Manadal, Department of Botany Specialization: Tea Crop Physiology, Tea Biochemistry
	Dr. Om Prakash Sharma, Department of Law Specialization: Intellectual Property rights
	Dr. Biswajit Sinha, Department of Chemistry Specialization: Spectrophometry
Guest Faculty	Mr. Chandrasekhar Mitra, Deputy Director of Tea Development, Tea Board India Specialization: Role of Tea Board in improving the status of Indian Tea; Tea Board Schemes
	Dr. M.P. Sinha, Former Agronomist, Tocklai Experimental Station, Jorhat Specializations: Agronomy of tea, Drainage, Irrigation, Soil Science
	Dr. S. Debnath, Former Mycologist, Tocklai Experimental Station, Jorhat Specializations: Mycology of tea, Integrated disease management, Waste Management
	Mr. N.K. Basu, Former Principal Adviser, Indian Tea Planters' Asociation Specializations: Labour Acts and Laws, Human Resource Management
	Mr. V.S. Parmar, Adviser, P.C.Mittal Tea Group Specializations: Manufacturing of CTC, Orthodox and Green tea
	Mr. S.S. Selvam, Tea Taster, J.Thomas & Company Pvt. Ltd. Specializations: Tea tasting, Tea Auction

Dr. Akhtar Hussain, Former Scientist, Himul, Matigara
Specializations: Sensory evaluation, Quality up-gradation

Dr. Soumitra Sarkar, Professor, Alipuduar College
Specialization: Tea Economics

Mr. Somnath Roy Chowdhury, Computer Teacher of Good Shepherd School
Specialization: Computer applications

Mr. Kamal Kallani, Distributor of American Springs & Pressing Works
Specialization: Spray Technique

Mr. Jibesh Bhattacharya, Former Deputy Director of Tea Board
Specialization: Tea Board Schemes, Role of Tea Board in uplifting Indian tea

13. Percentage of classes taken by temporary faculty – programme – wise information

40%

14. Programme-wise Student Teacher Ratio: 20:1

15. Number of academic support staff (technical) and administrative staff sanctioned, filled and actual

Post – 3 , Filled – 2, Vacant - 1

16. Research thrust areas as recognized by major funding agencies

Tea Research

17. Number of faculty with ongoing project from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise

None

18. Inter-institutional collaborative projects and associated grants received- **None**

a) National collaboration b) International collaboration

19. Departmental projects funded by DST-FIST; UGC-SAP/ CAS, DPE; DBT, ICSSR, AICTE, etc.; total grant received.- **None**

20. Research faculty / centre with- **None**

□ State recognition

□ National recognition

□ International recognition

21. Special research laboratories sponsored by / created by industry or corporate bodies- **None**

22. Publications: **Please see volume IV of SSR.**

23. Details of patents and income generated-

24. Areas of consultancy and income generated- **Tea gardens. So far no fee has been charged**

25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad- **1(one)**

26. Faculty serving in

a) National committees b) International committees c) Editorials Boards d) any other (Please specify) **- 1(one)**-

27. Faculty recharging strategies (UGC,ASC, Refresher / orientation programs, workshops, training programs and similar programs**).-None**

28. Students projects

□ Percentage of students who have done in – house projects including inter-departmental projects- **100%**

□ Percentage of students doing project in collaboration with other universities / industry / institute- **All the students of M.Sc. and PGDTM course do projects in the tea gardens- 100%**

29. Awards / recognitions received at the national and international level by- **None**

□ Faculty
□ Doctoral / post doctoral fellows
□ Students

30. Seminars/ Conference / Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.- **A report on a recent Seminar is enclosed , herewith.**

31. Code of ethics for research followed by the departments

32. Students profile programme-wise:

Name of the Programme (refer to question no. 4)	**Applications received**	**Selected**		**Pass percentage**	
		Male	**Female**	**Male**	**Female**
M. Sc. in Tea Science	26	8	2	50%	100%
PGDTM	327	132	5	60.6%	60%
Foreign	23	10	13	100%	100%

33. Diversity of students

Name of the Programme (refer to question no. 4)	**% of students from the same university**	**% of students from other universities within the State**	**% of students from universities outside the State**	**% of students from other countries**
M. Sc. in Tea Science	40	50	10	0
PGDTM	74.45	16.79	8.76	0
Foreign	0	0	0	100%

34. How many students have cleared Civil Service and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category – wise.

35. Student progression

Student progression	Percentage against enrolled
UG to PG	
PG to M. Phil	
PG to Ph. D.	
Ph. D. to Post – Doctorial	
Employed □ Campus selection □ Other than campus recruitment	
Entrepreneurs	

36. Diversity of staff- **There is only one Faculty**

Percentage of faculty who are graduates	
Of the same university	**None**
From other universities within the State	**One**
From universities from other States from	**None**
Universities outside the country	**None**

37. Number of faculty who were awarded M.Phil., D.Sc., and D. Lit. during the assessment period - **None**

38. Present details of departmental infrastructural facilities with regard to

a) Library **– Books are available in the Central Library as well as Departmental Library**

b) Internet facilities for staff and students - **Yes**

c) Total number of class rooms – **2 (New building has been constructed where 4 class rooms are available)**

d) Class rooms with ICT facility

e) Students' Laboratories **- 2**

f) Research Laboratories **- 2**

39. List of doctoral, post-doctoral students and Research Associates **- None**

a) from the host institution / university

b) from other institutions / universities

40. Number of post graduate students getting financial assistance from the university **- None**

41. Was any need assessment exercise undertaken before the development of new programme(s)? if so, highlight the methodology. **- No**

42.Does the department obtain feedback from

a. faculty on curriculum as well as teaching-learning-evaluation ? if yes, how does the department utilize the feedback? **- No**

b. students on staff, curriculum and teaching – learning – evaluation and how does the department utilize the feedback? **- No**

c. alumni and employers on the programmes offered and how does the department utilize the feedback**? - No**

43. List the distinguished alumni of the department (maximum 10) **- A list attached**

44. Give details of student enrichment programmes (special lecture / workshops/ seminar) involving external experts.

Special lectures are organized for developing Communication Skills and Personality Development. Practical Training is imparted for hands on knowledge in Tea Cultivation and Processing. From time to time Seminar is organized for enriching the knowledge of the students.

45. List the teaching methods adopted by the faculty for different programmes **–Audio Visual Device**

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored**?- Feedback is obtained from the tea gardens where the wards are employed.**

47. Highlight the participation of students and faculty in extension activities.

48. Give details of "beyond syllabus scholarly activities" of the department.

From time to time quiz contest , musical programmes, mock interviews, group discussions are held.

49.State whether the programme / department is accredited / graded by other agencies? If yes, give details**.- No**

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

The students are taken to various Tea Research Institutes for updating their knowledge on recent development in the field of tea research.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

SEVEN MAJOR STRENGTHS

1) In the faculty of this Department (both Regular and Guest Faculty) , there are many world class tea scientists.
2) Our University has its own tea garden.
3) This Department has good interaction with Tea Board, Tea Research Centres and Tea Gardens.
4) This Department get cooperation from many other Departments of the University as far as Laboratory facilities and Faculties are concerned.
5) Placement percentage of the wards after passing out is 100%.
6) M.Sc. in Tea Science Course is the first of its kind in the entire world. Nowhere in the world M.Sc. in Tea Science persists.
7) Foreign students' Training programme is a special feature in this Department.

FIVE MAJOR WEAKNESSES

1) This Department is a Self-Financed Department.
2) There is only one Regular faculty and many posts are lying vacant.
3) Fund position of the Department is not sound.
4) The faculties of this Department can not attend International and National Seminar/Symposium because no such facility is available.
5) The salary of the Teachers and supporting staff is low.

FIVE OPPORTUNITIES

1) Being situated in the heart of the tea belt, this Department can do lot more to conduct tea research for the benefit of the tea industry.
2) If the Department is recognized by UGC and becomes a Regular Department, very useful works on flavour technology, pesticide residues , pharmacology of tea can be undertaken.
3) If Tea Board and Tea Research Associations can be involved in the process, generation of fund can be easier.
4) This Department can organize faculty and student exchange programmes with foreign Universities.

5) There can be collaborative research programmes with other Universities of India and abroad.

THREE CHALLENGES

1) There are many tea institutes in India where Diploma Courses in Tea Management is taught. Hence, in future placement of the wards can be a problem.

2) If this Department is not regularized as an UGC approved Department, sustainability of this Department can be in question.

3) The Course fee of this Department is high because the courses are completely self-financed. The students may not be interested in future to join these courses paying high course fee.

52. Future plans of the department.

a) To establish a Miniature Tea Manufacturing unit.

b) To establish a Quality Control laboratory, where work on Flavour Technology can be undertaken

c) To establish a Pesticide Residue Laboratory for determining the residue level of pesticides in the made tea of various tea gardens.

d) To conduct research on volatile flavour constituents, drought management, pest management, climate change and modern methods of tea processing.

e) To start Advisory services for the big and small tea growers.

f) Launch a web site on University Industry linkage.
g) Start a Phone in Assistance Programme.
h) Start a Tea help line for the industry.
i) Start reach out model by the Scientists of the University to help the industry.
j) Start Short Term Refresher Courses for the tea executives.
k) Establish an Advisory Cell in the University for the tea planters.

1. Name of the Department: **Zoology**

2. Year of Establishment: **1984**

3. Is the Department part of a School/ Faculty of the University? **: Faculty of the University**

4. Names of programmes offered (UG, P.G, M. Phil., Ph.D., Integrated Masters, Integrated Ph. D., D.Sc., D. Litt., etc.) : **P.G. and Ph.D.**

5. Interdisciplinary programmes and departments involved**: Not applicable**

6. Courses in collaboration with other universities, industries, foreign institutions, etc.: **None**

7. Details of programmes discontinued, if any, with reasons: **Not applicable**

8. Examination system: Annual/Semester/Trimester/Choice Based Credit System: **Semester**

9. Participation of the department in the courses offered by other departments: **Ph.D. students participate in the courses offered by other Departments. Example Bioinformatics**

10. Number of teaching posts sanctioned, filled and actual (Professor/Associate Professor/ Asst. Professor/ Others):

Posts	**Sanctioned**	**Filled**	**Actual (including CAS & MPS)**
Professor	ONE	ONE	THREE (CAS)
Associate Professors	TWO	ONE	ONE
Asst. Professors	SEVEN	FIVE	THREE
Others	-----	---	---

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance (**for the last 4 years, 2011-2014**):

Name	**Qualification**	**Designation**	**Specialization**	**Experience (Yrs)**	**No. of Ph.D. / M. Phil.**
Prof. A. Mukhopadhyay	M.Sc. Ph.D.	Professor(CAS)	Entomology & Pest Management	31	2
Prof. J. Pal	M.Sc. Ph.D.	Professor(CAS)	Ecology	Retired (07.02.2015)	3
Prof. S. Barat	M.Sc. Ph.D.	Professor(CAS)	Limnology, Aquaculture & Aquatic Microbiology	28	2
Prof. T. K. Chaudhuri	M.Sc. Ph.D.	Professor	Immunology	29	3
Dr. M. Bahadur	M.Sc. Ph.D.	Associate Prof.	Molecular Cytogenetics	14	2
Dr. S. Bhattacharjee	M.Sc.	Asst.	Molecular Biology,	08	Nil

	Ph.D.	Professor	Virology		
Dr. D. Saha	M.Sc. Ph.D.	Asst. Professor	Entomology	07	Nil
Mr. T. Saha	M.Sc.	Asst. Professor	Immunology	02	Nil

12. List of senior Visiting Fellows, adjunct faculty, emeritus professor: **Prof. Ashim Chakravarty,**
Emeritus Professor

13. Percentage of classes taken by temporary faculty- programme-wise information: **No temporary faculty had been appointed**

14. Programme-wise student teacher Ratio= **6:1**

15. Number of academic support staff (technical) and administrative staff:

Post	Sanctioned	Filled	Vacant	Actual
Tech Asst	1	0	1	0
Lab Asst	1	0	1	0
Lab Attendant	3	3	0	3
Administrative	2	1	1	1
Animal Care Taker	1	0	1	0

16. Research thrust areas as recognized by major funding agencies: **Research Thrust areas are covered by UGC- SAP Programme (2013-18)**
Thrust Area (SAP-II):

"Impact of pesticide used in tea plantations on arthropod pests and on non-target organisms in the plains of Darjeeling district".

Sub- Area I: Advanced studies on the effect of pesticide on the target organism (Tea pests) at the defense enzyme and molecular level.

Sub- Area II: Studies on Cytochrome P450 forms in fishes from rivers of Terai and Dooars of North Bengal, their molecular characterization and phylogeny.

Sub- Area III: Study of Genotoxicity in non-target worker population occupationally exposed to pesticides in tea gardens and agricultural fields of North Bengal.

Other Research Areas:

- Pesticide resistance and bio-pesticide development
- HLA typing in Human diseases and pharmaceuticals
- Limnology, aquaculture(ornamental and edible fish culture) and aquatic microbiology
- Environment and genotoxicity
- Biodiversity and virology
- Evolution and population genetics

17. Number of faculty with ongoing projects. Give the names of the funding agencies, project title and grants received project-wise.

Name	**Funding Agencies**		**Project title**	**Grants received (In Lakh)**
	National	**International**		
Prof. S. Barat (PI)	DBT, Govt. of West Bengal	---	Formulation of probiotic for major and minor carps	Rs. 18.83
Dr. M. Bahadur (PI) **Dr. S. Bhattacharjee (Co-PI)**	DBT, Govt. of West Bengal	---	Pesticide residue analyses of river water flowing through the tea gardens of Terai region of North Bengal and in the tissues of the riverine fishes with a special emphasis on molecular characterization and phylogenetic analyses of cytochrome p450 involved in pesticide metabolism.	Rs. 29.89

18. Inter-institutional collaborative projects and associated grants received.

Name	**National**	**International**	**Fund (lakhs)**
Prof. S. Barat	With UBKV , Coochbehar	---	Rs. 15.54 (DBT, New Delhi)
Dr. S. Bhattacharjee	With IICB (Kolkata)	---	Rs. 15.18 (CSIR)

19. Departmental projects funded by DST-FIST, UGC-SAP/CAS, DPE, DBT, ICSSR, AICTE, etc., total grants received **(2006-2014):**

Funding Agency	**Fund received (in lakhs)**	**Period**
DST-FIST	Rs.55.00	2012- 17
UGC-SAP	Rs.65.00	2013-18
UGC	Rs.22.94	2010-2013 & 2011-14
UGC infrastructure fund	Rs.60.00	2007-2012
DBT (Govt. of India)	Rs.20.52	2004-07 & 2009-13
DBT (Govt. of West Bengal)	Rs.48.72	2014-18 & 2015-19
CSIR	Rs.15.18	2010-13
NTRF	Rs. 9.11	2011-14
Total	**Rs.296.47**	

20. Research facility/Centre with:

State recognition: **State aided**

National recognition: **DST-FIST & UGC-SAP**

International recognition: **Nil**

21. Special research laboratories sponsored by / created by industry or corporate bodies**: Nil**

22. Publications**: Please see volume IV of SSR.**

23. Details of patents and income generated: **Nil**

24. Areas of consultancy and income generated: **Various Lab to Land /Extension Programmes have been conducted**

I. Socioeconomic upliftment and empowerment of women of backward rural community through backyard ornamental fish breeding and rearing management. (BT/PR/4686/SPD/11/567/2004 dated 24.09.2004)

Funded by: Department of Biotechnology, Ministry of Science and Technology, New Delhi, Government of India

Undertaken by: Department of Zoology, University of North Bengal

Total Grant Sanctioned: Rs. 10, 04, 000/- (2004-2007)

Total number of trainings provided: 05

Sl. No.	Name of the Training Programme	Date	Venue
1	Training and Demonstration on Ornamental Fish Culture	28. 01. 2005	Bairatisal jote (Bharati Busty), P.O. New Rangia, Dist- Darjeeling, West Bengal
2	Training and Demonstration on Induced breeding of Ornamental Fish Culture	08. 11. 2005	Balason colony, P.O. New Rangia, Dist- Darjeeling, West Bengal
3	Training and Demonstration on the Culture of Food organisms for Hatchling of Ornamental Fish Culture	05. 05. 2006	Ranidanga, (Near SSB Campus), Dist- Darjeeling, West Bengal
4	Theoretical knowledge of fish culture and Demonstration on the Culture of Food organisms for Hatchling of Ornamental Fish Culture	23. 09. 2006	Dodalia para, Patkata Block, Dist- Jalpaiguri, West Bengal
5	Training and Demonstration on Induced breeding of Ornamental Fish Culture	25. 05. 2007	Madhovita Basti,Ghoshpukur, Phansidewa Block, Dist- Darjeeling, West Bengal

II. Integrated Management of Coldwater Fish Culture and Livestock with an Emphasis on Aquaculture for Economic Upliftment of SC/ST Population in Darjeeling Hills of West Bengal. (BT/PR/9757/SPD/09/826/2007dated 06.10.2009)

Funded by: Department of Biotechnology, Ministry of Science and Technology, New Delhi, Government of India

Undertaken by: Department of Zoology, University of North Bengal

Total Grant Sanctioned: Rs. 10,48,000/- (2009-2013)

Total no. of trainings provided: 10

Sl. No.	Name of the Training Programme	Date	Venue
1	Theoretical knowledge of fish culture through integration and then the art of management practices of Jhora ponds	26. 11. 2009	Pemling Village, Kalimpong, Dist- Darjeeling, West Bengal
2	Training on Integrated Culture of Indigenous culture of Katli (*Neolissocheilus hexagonolepis*) with livestock-cum-horticulture	10. 03. 2010	-Do-
3	Training-cum-field demonstration on induced breeding of the Katli (*Neolissocheilus hexagonolepis*) brooders using synthetic hormone WOVA-FH	17. 11. 2010	-Do-
4	Theoretical knowledge of fish culture through integration and then the art of management practices of Jhora ponds	3.03.2011	Phuguri Mirik Dist- Darjeeling,West Bengal
5	Training on Integrated Culture of Grass Carp (*Ctenopharyngodon idella*), Common Carp (*Cyprinus carpio*), with livestock-cum-horticulture	16.04.2011	-Do-
6	Training-cum-field demonstration on induced breeding of the brooders being raised in their Jhora Ponds using synthetic hormone WOVA-FH for the sustenance of culture in future	14.08.2011	-Do-
7	Theoretical knowledge of fish culture through integration and then the art of management practices of Jhora ponds	04.03.2012	Manju LepchaVilla Mirik, Dist- Darjeeling West Bengal
8	Theoretical knowledge of fish culture through integration and then the art of management practices of Jhora ponds	09.05.2012	Bungkulung Village Mirik, Dist- Darjeeling West Bengal
9	Training on Integrated Culture both edible and ornamental fishes namely, Grass Carp (*Ctenopharyngodon idella*), Common Carp (*Cyprinus carpio*), Gold Fish (*Carassius carassius*) and Milky Carp (*Cyprinus carpio*).with livestock-cum-horticulture	09.09.2012	-Do-
10	Training-cum-field demonstration on induced breeding of the brooders of Grass Carp (*Ctenopharyngodon idella*),Common Carp (*Cyprinus carpio*), Gold Fish (*Carassius carassius*) and Milky Carp (*Cyprinus carpio*) using synthetic hormone Ovatide	05.08.2013	-Do-

III. Establishment of Rural Bio-resource Complex in North Bengal

(No. BT/PR11252/SPD/24/333/2008)

Funded by: Department of Biotechnology, Ministry of Science and Technology, Government of India

Under taken by: Department of Botany and **Department of Zoology,Aquaculture Component,** University of North Bengal**,**

In collaboration with: Uttar Banga Krishi Viswavidyalaya (Pundibari, Cooch Behar)

Total Grant Sanctioned (Aquaculture Component): Rs. 15,54,133/-

Total no. of Trainings Provided: 08

Sl. No.	Name of the Training Programme	Date	Venue
1	Training and Demonstration on Ornamental Fish Culture	28.12.2012	Fisheries Research & Training Centre, Department of Zoology, NBU
2	Training and Demonstration on Induced breeding of Koi Fish and Their Rearing and Ornamental Fish Culture	10.03.2013	Department of Zoology, NBU
3	Training and Demonstration on the Culture of Food Microorganisms for Hatchling of Koi Fish and Their Rearing	27.07.2013	Department of Zoology, NBU
4	Training and Demonstration on Ornamental Fish Culture	11.01.2014	Department of Zoology, NBU
5	Training and Demonstration on Induced Breeding of Koi Fish (*Anabas testudineus*) and Rearing of Hatchlings	06.07.2014	Department of Zoology, NBU
6	Training and Demonstration on Induced Breeding of Koi Fish (*Anabas testudineus*) and Rearing of Hatchlings	14.08.2014	Lakshiyar Vita Prathamik Vidyalaya, Moulani , Jalpaiguri
7	Training and Demonstration on Ornamental Fish Culture	14.08.2014	Kalimpong College, Kalimpong
8	Training and Demonstration on Ornamental Fish Culture	28.03.2015	Department of Zoology, P.D. Women's College, Jalpaiguri

25. Faculty selected nationally/ internationally to visit other laboratories/ Institutions / industries in India and abroad: **Prof. A. Mukhopadhyay INSA visiting fellow to China (2010).**

26. Faculty service in:

(a) National Committees: Prof. S. Barat, Task Force Member, DBT, Govt. of India

(b) Editorial Boards: Prof. S. Barat, Editorial Board of J. Environmental biology

(c) International Committees: Nil

(d) Any other (please specify): National & International Societies & Association

27. Faculty recharging strategies (UGC, ASC, Refresher / Orientation programs, workshops, training programs and similar programs:

- **Department participates and co-ordinates in the refresher course organized by Academic Staff College, University of North Bengal**
- **Department organizes workshops and training programs in the fields of aquaculture and fishery.**

28. Students projects:

○ Percentage of students who have done in-house projects including inter-departmental projects: **30-50%**

○ Percentage of students doing projects in collaboration with other universities/ industry / Institute: **Nil**

29. Awards / recognitions received at the national and international level by

- **Faculty:**

(i) **Prof. Ananda Mukhopadhyay :**

(a) INSA Senior scientist fellowship to P.R. China, 2010

(b) AZRA Honorary Fellowship Award-2014 by Applied Zoologist Research Association, India

(ii) **Dr. Min Bahadur** (Fellow of Zoological Society, Kolkata), **2011**

- **Post Doctoral Fellows:** **(a) Dr. Bikash Mitra**

(b) Dr. Monojit Debnath

(c) Dr. Sanjeev Srivastava

- **Students**:

(i) **UGC- BSR Meritorious Fellowships for Research- 18 nos. (2009- 2015)**

Ref Nos.: F 7-134/2007(BSR), F. No. 4-1/2006(BSR/7-134/2007(BSR Dt. 2013, F.25-1/2013-14(BSR/7-134/2007(BSR) Dt. 2014 and F.No.25-1/2014-15 (BSR)/7-134/2007/ (BSR) Dt.2015)

(ii) **National Merit Scholarships**

30. Seminars /Conferences /Workshops organized and the source of funding (National /International) with details of outstanding participants, if any:

Departmental Symposium/Conference/Workshop (**2009-2015)**

i. Silver Jubilee Symposium on **Dimensions of Research applications in Animal Sciences. (December 2-3, 2009) Funded by UGC Merged Scheme**

ii. Symposium on **Pesticide stress on Target, Non-Target Organisation and Human Health (February 11-12, 2010) Funded by UGC Merged Scheme and DST, New Delhi**

iii. Conference on **Evaluation of Biodiversity of Eastern Himalaya and Adjoining Plains** in Collaboration with Centre for Environment & Development, Kolkata sponsored by DST/CSIR/UGC **(December 1-4, 2010)**

iv. National Symposium on **Research in Animal Science: Development and Evaluation** sponsored by CSIR, UGC (Merged Scheme) & UGC-SAP. **(March 19-20, 2012)**

v. National Symposium on **Man, Animal and Enivironment interaction in the perspective of Modern Research** sponsored by UGC, New Delhi. **(08-09, March, 2013)**

vi. Seminar on **Biological Research in Human Welfare** sponsored by UGC New Delhi. **(7th Feb, 2014)**

vii. National Conference on **Applied Zoology in Sustainable Development: An Update**. Funded by **DBT, CSIR & UGC Merge Scheme, UGC-SAP (January 30-February 2, 2015).**

viii. Two Technical sessions namely **Animal Science & Medical Science, Public Health and Human Physiology** in **22nd West Bengal State Science and Technology Congress, 2015** held at the University of North Bengal. **(February 28 - March 01, 2015) Funded by DST, Govt. of West Bengal**

ix. Collaboritive Workshop with Department of Fish Processing Technology, Faculty of Fishery Science, WB University of Animal and Fishery Sciences on **Skill Upgradation on Processing of Fish and Fishery Products** sponsored by UGC to "Fisheries Research and Training Centre", Department of Zoology, University of North Bengal. (**14th & 15th August, 2015)**

Special lectures:

1. **Bio Control of Insect-Pest Current Scenario and Future Strategies** delivered by **Dr. (Prof.) Hem Saxena,** Principal Scientist, Crop Protection Division, IIPR, Kanpur

Funded by UGC merged Scheme

2. Current understanding on mitochondrial genome predisposition to human disease,

Prof. M. Palanichamy, Yunnan University, 2# Cuihu Rd, Kunming 650091, Yunnan, PR, China

3. Special Lectures under UGC-SAP-II (2013-14)

Topics:

(i) The World of Tea and the pests of the plant **(Delivered by Dr. N. Muraleedharan)**

(ii) Pest control, pesticides and Residue **(Delivered by Dr. N. Muraleedharan)**

(iii) Ecotoxicological Risk of Insecticides to Non – Target Organisms of Soil and Water Utilization of Wastes in Aquaculture: Public Health and Environmental Safety Issues (**Delivered by Prof. Anilava Kaviraj)**

iv) Analysis of Biomolecules – Recent Approach with Instrumentation **(Delivered by Dr. Mousumi Poddar- Sarkar)**

4. Special Lectures under UGC- SAP-II (2014-15)

Topics:

i) Biological control of Insect Pests (**Delivered by Prof. Omkar Upadhyay)**.

ii) Ladybirds in Pest Management: A Reproductive Perspective (**Delivered by Prof. Omkar Upadhyay)**

iii) Biomonitoring through biodiversity indices. (**Delivered by Prof. Tanmoy Bhattacherjee)**

iv) Physiological and Biochemical influences of insecticides on insects **(Delivered by Prof. G. Singh)**

31. Code of ethics for research followed by the Departments: **As per the University Ordinance**

32. Student profile programme-wise**:**

Name of the Programme (refer to question no.4)	Applications Received	Selected		Pass percentage	
		Male	Female	Male	Female
PG Semester I (2008-09 to 2014-15)	Record not available	114	33	100	100
Current Year (2015-16)		18	19	N/A	N/A
Ph.D. Course Work 2011-12	**45**	28	13	100	100
Ph.D. Course Work 2012-13	**20**	10	5	100	100
Ph.D. Course Work 2013-14	**12**	3	3	100	100
Ph.D. Course Work 2014-15	**08**	2	4	50	100

33. Diversity of students: **Not available (Secretary, P.G. Studies in Science can provide the information)**

Name of the Programme (refer to question no.4)	% of students from the same University	% of students from other universities within the state	% of students from universities Outside the State	% of students from other counters
PG Semester	**92-95%**	**3-5%**	**2-4%**	Nil
Ph.D. Course Work	**91-97%**	**5-6%**	**2-4%**	Nil

34. How many students have cleared Civil Services and Defense Service examination, NET, SET, GATE and other competitive examinations? Give details category-wise (**Last 10 years):**

Job	Competitive Examination
• WBCS: 1 • WBPSC College: 5 • WBCSC College: 10 • Research Institution: 2 • Universities: 6 • WBSSC: 20-25	• NET: 24 • SET: 20 • GATE: 12

35. Student progression

	Percentage against enrolled
U.G to P.G:	**Information may be collected from the Examination Branch, University of North Bengal**
P.G. to M. Phil:	**2 %**
P.G. to Ph. D:	**20-30%**
Ph. D to Post-Doctoral	**2%**
Employed	
○Campus selection	**Nil**
○Other than campus recruitment	**80%**
Entrepreneurs	**Nil**

36. Diversity of staff

Percentage of faculty who are graduates:

- of the same university **20%**
- from other universities within the state **40%**
- from universities from other States **10%**

from

- Universities outside the country **Nil**

37. Number of faculty who were awarded M. Phil., Ph.D. D.Sc. and D. Litt. during the assessment period: **ONE (Ph.D.)**

38. Present details of departmental infrastructural facilities with regard to

a) Library: As **Seminar Library**

b) Internet facilities for staff and student: **Available with 20 nos. of Computers**

c) Total number of class rooms: **Two (Theory); Two (Practical)**

d) Class rooms with ICT facility: **Two (includes Conference Hall)**

e) Students laboratories: **Two**

f) Research laboratories: **Seven including one Fishery Research & Training Centre, and Two Central Instrument Room Facility**

39. List of doctoral, post-doctoral students and Research Associates

a) From the host institution/ university**:**

Doctoral:

S.No	Name
1.	Benoy Kishore Rai
2.	Dawa Bhutia
3.	Rujas Yonle
4.	Ritesh Biswa
5.	Sangita Khewa Subba
6.	Pokhraj Guha
7.	Gautam Debnath
8.	Ruksa Nur
9.	Chandan Chakraborty
10.	Rakesh Bhagat
11.	Ganesh Thapa
12	Anjali Kumari Prasad
13	Priyankar Dey
14	Subhrojyoti Roy
15	Arpita Dey
16	Sutanuka Chattaraj
17	Tanmoy Mukhopadhyay
18	Kumar Basnet
19	Sanjeeb Sarkar
20	Avisek Das
21	Bappaditya Ghosh
22	Sumit Dutta
23	Susmita Datta
24	Trishita majumdar
25	Swati Singh
26	Jayshree Saren
27	Mrinal Roy
29	Tanmay Dutta
30	Shubhasis Paul
31	Uttara Dey Bhowmik

Post Doctoral: Nil

b) From other institutions / university: Nil

40. Number of post graduate students getting financial assistance from the university:

Year	Half Free	Full Free
2007-08	2	4
2011-12	0	7
2012-13	0	4
2014-15	1	7

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology: **Not applicable.**

42. Does the department obtain feedback from?

a) Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? **The Faculty Members of the Department revise the curriculum to enhance the teaching learning process from time to time and the improvement is made thereof .**

b) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? **Feedback from students at the end of the Semester is taken and improvement on the facilities like internet, Library, practical teaching accessories are made**.

c) Alumni and employers on the programmes offered and how does the department utilize the feedback? **University has an Alumni Association where programmes are organized from time to time. Department also organizes biannual programmes inviting the Alumni for feedback and suggestions are noted and worked on.**

43. List the distinguished alumni of the department (maximum 10):

i) Sri Sujit Das, Jt. Commissioner of Excise

ii) Sri Bidyut Sarkar, DFO

iii) Dr. ManiKLal Acharjee, Asstt. Professor & HOD, Dept. of Zoology Kalimpong College,

iv) Dr. Monojit Debnath, Scientist C, NIMHANS, Bangalore

v) Sri Bhaskar Mahanayak, Asstt. Professor, K.N. College, Berhampur, West Bengal

vi) Sri Sujay Sarkar (ADM), WBCS

vii) Sri Ranjan Jha, SDO, WBCS

viii) Sri Apurba Sen (DFO), WBFS

ix) Smt Kaninika Chakraborty, Commercial Tax Officer, WBCS

x) Sri Sarat Mishra , Adl. Excise Commissioner, WBCS

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

i) **Yearly one National Level Seminar is conducted,**

ii) Special lectures under UGC-SAP are also conducted, where External Resource Persons are invited

iii) Workshops and Extension Programmes in Aquaculture and Fishery are conducted taking Eminent Expert from different fields of Zoology

45. List the teaching methods adopted by the faculty for different programmes:

(1) Over-head projector
(2) Power-point
(3) Circulation of teaching materials, hand notes.
(4) Chart demonstrations
(5) Lab to land programmes
(6) Hands on-Training

4**6.** How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

- Periodic Class Tests, Seminars and are conducted
- Remedial classes are conducted

47. Highlight the participation of students and faculty in extension activities: **The students and faculties participate in extension activities (workshop, one day seminar, University sports and games, awareness programmes etc) conducted by the Department and the University from time to time**.

48. Give details of "beyond syllabus scholarly activities" of the department. : **Various programme are being conducted by the Department like Workshop, Seminars, Extension Programme, Cultural activities etc.**

49. State whether the programme/ department is accredited / graded by other agencies? If yes, give details. : **No.**

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied : The Department is engaged in basic and a[applied researches in the fields like

- Pesticide resistance and bio- pesticide development
- HLA typing in Human diseases and pharmaceuticals
- Limnology, Aquaculture (ornamental and edible fish culture) And aquatic Microbiology
- Fish pathology
- Environment and genotoxicity
- Biodiversity and virology
- Evolution and population genetics

The contributions to generate the knowledge may be seen in the publication list.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:

Strength: The Department has built **two common Instrument Facility** with sophisticated Equipment purchased under DST-FIST and UGC-SAP. The Department has actively taken part in various extension programmes, workshop with the other university; Collaborative Societies inviting distinguished speakers etc.

Weaknesses: Staff strength is poor, inadequate space for classes and research, insufficient power supply, inadequate books in the Seminar library, students are unable to conduct collaborative research projects/ internship course, Internet Facility poor.

Opportunities: If adequate funds are available, more intensive collaborative programmes may be under taken and students may be provided to avail internshipe programmes in other universities and institutions.

52. Future plans of the department:

- **Development of infrastructure of staff pattern.**
- **Teaching methods to be developed.**
- **Course curriculum to be strengthened.**
- **Collaborative programmes for betterment of society.**
- **Library and internet facilities to be extended to all students, faculty and scholars.**

1. Name of the Department : ***High Energy & Cosmic Ray Research Centre***

2. Year of establishment : ***1991***

3. Is the Department part of a School/Faculty of the university? ***Yes***

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) : ***Ph.D.***

5. Interdisciplinary programmes and departments involved: *Nil*

6. Courses in collaboration with other universities, industries, foreign institutions, etc.*Nil*

7. Details of programmes discontinued, if any, with reasons *None*

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System: *Semester*

9. Participation of the department in the courses offered by other departments:

i) M.Sc. in Mathematics;

ii) M.Sc. in Physics

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

Position	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	0	0	0
Associate Professor	1	0	0
Assitant Professor	1	0	0
Others i)Sr. Scientific Research Officer ii)Scientific Research Officer iii)Sr. Research Physicist iv)Research Officer	4	3	3

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialisation	No. of Years of (Research) Experience	No. of Ph.D./ M.Phil. students guided for

					the last 4
Samir K Sarkar	M.Sc., Ph.D.	Jt Sr. Scientific Research Officer	Cosmic Rays, x-ray astronomy	32 years	3 (continuing)
ArunavaBhadra	M.Sc., Ph.D.	Sr. Research Physicist	Astroparticle physics, Astrophysics	22 years	9 (3 awarded, 6 continuing)
Arindam Mukherjee	M.Sc.	Sr. Research Officer	Cosmic Rays	18 years	0

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors: *None*

13. Percentage of classes taken by temporary faculty – programme-wise information: *Nil*

14. Programme-wise Student Teacher Ratio: *2.67 in Ph.D. program*

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual: *Research support staff – sanctioned: one, actual: zero,Technical staff – sanctioned3, actual 1 (class IV), Administrative staff, sanctioned – Nil, actual - Nil*

16. Research thrust areas as recognized by major funding agencies: *AstroparticlePhysics (Cosmic Rays) andAstrophysics, Space Science,*

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

2 (two).

i) DST (India), Origin of the knee in the cosmic ray energy spectrum, Rs. 10,95,840/-

ii) NBU, Rs. 75000/-

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration: *two (i. GRAPES, an International project on Cosmic Ray Physics run by the researchers from TIFR, Mumbai, Osaka University (Japan)), Fund received – Nil and ii.* national research program on "astroparticle physics and space science at high altitude" initiated by the astroparticle physics group of the Bose Institute

b) International collaboration: *One (with Professor J. N. Capdevielle, Univ. Paris-Diderot, Bt. Condorcet, 10 rue Alice Domon 75205 Paris Cedex 13 France), Fund received: Nil*

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received. *N/A*

20. Research facility / centre with

- tate recognition
- national recognition
- international recognition

The Centre is a regional research facility in cosmic ray physics.

21. Special research laboratories sponsored by / created by industry or corporate bodies : *Nil*

22. Publications : **Please see Volume IV of SSR.**

23. Details of patents and income generated : *Nil*

24. Areas of consultancy and income generated : *Nil*

25. Faculty selected nationally / internationally to visit other laboratories / institutions

a. industries in India and abroad:

A.Bhadra visited several premier Institutes of the Coutry and abroad on invitation which include Imperial College, London, Institute of Theoretical Physics, Chinese Academy of Science, Beijing, China,TIFR (Mumbai) and GRAPES experiment at Ooty (an International project on Cosmic Ray Physics run by the researchers from TIFR, Mumbai, Osaka University (Japan)), IUCAA. Bose Institute, Saha Institute of Nuclear Physics, Gauhati University, Jadavpur University, SNBNCBS (Kolkata).

A.Bhadra attended several International and National Conferences which include

Int. Cosmic Ray Conference, Beijing (2011), Phys. Interpretation of Relativity Theory, London (2010), International Winter Workshop of Astroparticle Physics (WAPP 2007, 2009, 2010, 2011, 2012, 2013) and several National Conferences as listed in Annexure 2.

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

i) A.Bhadra served as a member of the National Organizing Committee for Winter International Workshops on Astroparticle Physics, organized every year jointly by Tata Institute of Fundamental Research and Bose Institute

ii) A.Bhadra is serving as a member of the advisory board of the Salesian Journal of Science

iii) A. Bhadra acted as referee in several journals.

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs). Regular participation in workshop/Seminar/Conferences and other relevant training program.

28. Student projects

- percentage of students who have done in-house projects including inter-departmental projects: 100%
- percentage of students doing projects in collaboration with other universities industry / institute : Nil

29. Awards / recognitions received at the national and international level by

- Faculty : Nil
- Doctoral / post doctoral fellows : one (1)
- Students : N/A

30. Seminars/ Conferences/Workshops organized and the source of funding (national

i. international) with details of outstanding participants, if any.

The Centre organized five (5) conferences ,two (2) Workshops, and several Special Lectures/Seminars during the period 2006-2014 with the support of UGC, NBU and IUCAA. Outstanding participants include Professor J. Knapp, Chairman, Cosmic Ray Commision of IUPAP (2011-2013), Dr. E. Christian of NASA, USA, Professor Andreas Haungs, Karlsruhe InstitutefürTechnologie, Karlsruhe, Germany, Professor J. N. Capdevielle of University of Paris 7, France, Dr. Paolo Camarri, INFN, Italy, Dr. Srinivasan, Former Chairman, DAE, Dr.Bikash Sinha, HomiBhabha Professor of DAE, (VECC), Professor S. Raha, Director of Bose Institute, Professor N. K. Dadhich, Former Director, IUCAA, Professor B. S. Acharya, Chiarman, High Energy Physics Division, TIFR, Professor B. Paul of RRI, Bangalore, Professor S. K. Gupta, High Energy Physics Division, TIFR, Professor A. N. Ramprakash, IUCAA, Professor D. Majumdar, SINP, Professor A. S. Majumdar of SNBNCBS, Professor G.

Majumdar of TIFR, Prof. P. Joardar of Bose Institute, Professor K. Boruah of Gauhati University, Professor S. Ghosh of Bose Institute and several others.

31. Code of ethics for research followed by the departments: No such exists at present.

32. Student profile programme-wise: (Last 4 years)

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
Ph.D. (2011)	5	3	1	N/A	N/A
Ph.D. (2012)	4	2	0	N/A	N/A
Ph.D. (2013)	4	1	0	N/A	N/A
Ph.D. (2014)	1	1	0	N/A	N/A

33. Diversity of students

Name of the Programme (refer to question no. 4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
Ph.D.	62.5%	37.5%	0	Nil

36. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise. N/A

37. Student progression

Student progression	Percentage against enrolled
UG to PG	N/A
PG to M.Phil.	N/A
PG to Ph.D.	N/A
Ph.D. to Post-Doctoral	33% (selected)
Employed • Campus selection • Other than campus recruitment	67%
Entrepreneurs	Nil

36. Diversity of staff

Percentage of faculty who are graduates

of the same university100%

from other universities within the State

from universities from other States

from universities outside the country

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period : None

38. Present details of departmental infrastructural facilities with regard to

a. Library : Yes
b. Internet facilities for staff and students : Yes
c. Total number of class rooms : One
d. Class rooms with ICT facility : One
e. Students' laboratories : One

f. Research laboratories**: One**

39. List of doctoral, post-doctoral students and Research Associates

a. from the host institution/university

Doctoral students: Kabita Sarkar, Rajat K Dey, BiplabBijay, Tamal Sarkar, ArundhatiRoychaudhuri,PrabirBanik, Mohan Subba

b. from other institutions/universities

Doctoral students: Jyotirmay Paul, Samrat Ghosh

Post doctoral: S. Ghosh

40. Number of post graduate students getting financial assistance from the university.*N/A*

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. Yes. Usually the following major points are considered: i) need of the Society/Country for such a programme, the available resources/expertise and viability. For instance, one of the Scientists while attending workshops came to know that the country is going to launch shortly ASTROSAT, a multi-wave length astronomy mission but the number of possible users in the country is lower than expected level. The scientists of the Centre discussed the issue among themselves and considering the available expertise and other resources, a PG Diploma Program on Space Science was proposed to UGC under Innovative program.

42. Does the department obtain feedback from

a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? Yes. The Research-Staff Committee of the Centre discuss the feedbacks in their meeting and act accordingly.

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? No

c. alumni and employers on the programmes offered and how does the department utilize the feedback? No

43. List the distinguished alumni of the department (maximum 10)

Rabin Chhetri, Director, SCERT, Gangtok, Bhakta KunwarSr. Faculty, Sikkim (to be join as Principal Siliguri College shortly), Kabita Sarkar, HOD, Salesian College, Dipeshchanda, Sr. Faculty, Siliguri College, R. K. Dey, Faculty, Physics Deparment, North Bengal University

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

The Centre organized special lectures and workshops regularly involving external experts. Some notable speakers delivered special lectures include *Dr. E. Christian of NASA, USA, Dr.Bikash Sinha, HomiBhabha Professor of DAE, (VECC), Professor S. Raha, Director of Bose Institute, Professor B. Paul of RRI, Bangalore, Professor S. K. Gupta, High Energy Physics Division, TIFR, Professor G. Majumdar of TIFR, Prof. P. Joardar of Bose Institute, Professor K. Boruah of Gauhati University and several others.*

45. List the teaching methods adopted by the faculty for different programmes.

i) Chalk & Board, ii) Computer aided presentations (Audio-visual aids) iii) Group discussions, iv) Tutorial, v) Students presentation, vii) Hand-on experiments, viii) Normal lectures.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored? Through keeping constant touch with students and by discussions.

47. Highlight the participation of students and faculty in extension activities.

i) Sky watch program, ii) Publishing Scientific articles in local languages, iii) Delivering lectures in Science Centre and other similar places, iv) Acted as experts in science fair etc.

48. Give details of "beyond syllabus scholarly activities" of the department.

i) One of the scientist acted as referee for several reputed International journals,

ii)One of the scientist acted as an external experts for Ph.D. candidates of different universities

iv) Taking initiative of Science popularization by publishing important scientific events in local regional (Bengali) language.

v) One of the scientist delivered popular talk at city Science Centre.

vi) Guiding INSPIRE fellowship holders (during their B.Sc.) for their summer projects at the Centre

vii) Hosting sky watch (through telescope) activities.

viii) Regular participation in national and International level conferences/ Workshops.

ix) One of the Scientists taught a part of astroparticle physics in the winter school on astroparticle physics organized by Bose Institute and TIFR.

x) Holding internal seminars regular basis.

xi) One of the scientists acting as Joint Convener of IUCAA Resource Centre, NBU

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details. One of the program (to be started) is offered by the UGC under UGC innovative program.

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

The scientists of the Centre published a few important and new works/discoveries in reputed journals which include

i) The contribution of nearby pulsars to cosmic rays observed at Earth was estimated theoretically for the first time (Astropart Phys. 2006).

ii) Discovery of the phenomenon Gravitational time advancement (GRG 2010).

iii) From Monte Carlo simulation studies it is shown for the first time that the lateral density distribution of electrons in cosmic ray EAS displays *universality when expressed in terms* of local age parameters (J. Phys. G 12).

iv) The testable upper limit on the size of the galaxies has been predicted under conformal gravity theory (PRL, 2012).

v) The confrontation of Higgs scalar with General relativity was demonstrated for the first time (CQG 2008).

vi) Cosmological influence on gravitational bending of light (PRD 2010).

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths:

i) The scientists are engaged in frontier area of (basic) research which is reflected in publications at the top level research journals of the subject (may be verified from

the NATURE Index).

ii) On the basis of the performance of the scientists, the Centre received a post M.Sc. PG diploma course under UC Innovative program and got two teaching posts as well as about Rs. 60 lacks towards instruments and other expenditure.

iii) The Centre has expertise (developed over the years) oncosmic rays and Monte Carlo simulation study of cosmic ray air shower which is recognized by the experts of the field. Research scholars from Universities and even primer Research Institutes of the Country visited the Centre to get training on the mentioned subjects.

iv) Outstanding scholars visit the Centre often and the research students thereby get opportunity to interact with them frequently.

v) The Scientists of the Centre are also participated in the courses offered by other departments of this University.

Weakness:

i) The officer tag of the scientists of the Centre causes great disadvantages in attracting funds and research supports. For the same reason the scientists find it difficult to serve in different academic bodies and to perform academic duties (such as external experts for PhD etc.).

ii) There is no administrative staff, all the technical staff positions except one Gr. IV staff are lying vacant for many years. So the scientists, particularly the Director, have to perform the clerical/administrative jobs most of the time thereby academic activities are suffered badly. The sanctioned senior most position of the centre has not been filled up ever since the inception of the Centre.

iii) The Centre does not have any Ph.D. and Post Doctoral fellowship positions.

iv) Lack of required infrastructure to set up class rooms, seminar hall, reading room etc.

v) Since the Centre does not have any regular Master degree course, it is not considered for SAP or DST-FIST.

Opportunities:

i) *India is heading towards a developed nation. Indian researchers are setting new big world class experiments/missions like extended-GRAPES, ASTROSAT or INO which are relevant*

to the area of research of the Centre. Taking this opportunity the Scientists of the Centre would like to involve with one or two such experiments.

ii) *The new faculty positions sanctioned for the space science program of the Centre would provide opportunity to expand the research activities of the Centre.*

iii) The modern development is mainlybased on*Knowledge. The importance of research for creation of knowledge is now better recognized. More supports are coming for research. The scientists of the Centre will try to utilize the present mind-set of the society and the Governments on research to develop the infrastructure of the Centre.*

Challenges:

i) Enhance the quality of the research to the highest level.

ii) To establish the Centre as internationally acclaimed one.

52. Future plans of the department.

i) To participate actively in the International level experiments/Science missions which are operating/to be operated in near future from the Country.Efforts have already been initiated towards this direction.

ii) To initiate a research program for studying space weather. In this regard effort will be made to install a neutron/muon monitor.

A Report on the Activities of IUCAA for the period 2009-2015

Background :

The Inter-University Centre for Astronomy & Astrophysics (IUCAA) is an autonomous Institution of the University Grants Commission (UGC).. Since its inception in 1988, it has become the nodal agency for research, teaching and science popularization activities in the country in the field of Astronomy & Astrophysics and allied fields. In the year 1998, IUCAA set up 3 Reference Centres (IRC) in India which would provide some basic facilities to university or college teachers and students in different regions for working in projects related to Astronomy & Astrophysics. IRC at North Bengal University is one of such Centres started functioning from July 31, 1999 under the leadership of Prof. S. Mukherjee (Ex-Professor, NBU). Thereafter IRC DATA Centre was inaugurated by Prof. A. Basumajumdar, Vice-Chancellor, NBU on February 21, 2011. The computers, storage devices and Ups are supplied by IUCAA, Pune for the DATA centre. An MOU is signed by IUCAA, Pune and Notrth Bengal University to carry forward the program.

Research Area :

1. **Relativistic Cosmology**
2. **Relativistic Astrophysics**
3. **Compact Objects**
4. **Data Analysis of X-Ray Sources and Pulsars**
5. **Non-linear Dynamics.**

Use of DATA Centre : Data Centre is located in the second floor of the Physics Department with Computer Lab. There are Eight Computers of high performance with a storage facility and 5 KVA UPS system. The IUCAA installed softwares for computing X-ray and other DATA Analysis and thereafter those are sent to IRC, Physics Department NBU from IUCAA, Pune. Students are using the computers for their project work. Ms. PragatiPradhan is working in X-ray Data Analysis in the IRC, Physics Department, NBU for her Ph. D. work. A number of other users are also making use of the computers of the Centre. Recently storage device is not functioning. This has been reported to IUCAA for repair.

Activities of IRC, NBU

1. Visitors Program

The IRC has a vibrant visiting program. A number of College, university and institutes faculties visit IRC, NBU for collaborative research work. A table is shown below :

YEAR	No. of Visitors at IRC, NBU
2009-10	**17**
2010-11	**27**
2011-12	**32**
2012-13	**29**
2013-14	**24**
2014-15	**12**

2. DATA Centre Facilities

A Data Centre being set up by IUCAA in the year 2011. It caters the need for researchers in North Eastern part of India. A number of DATA Analysis Workshop at Introductory level and Advanced level have been organized. Anumber of hands on training on

I. IRAF Software

II. X-RAY Astronomy Software

Organized at IRC, NBU for the benefit of Faculties and Researchers of the North Bengal University, its affiliated colleges and the other North Eastern Universities including Jadavpur, Kolkata and IISET (formerly BESU).

The facilities of the centre have been used up by the following users :

(i) M. Sc. Students for their Project Work during 2012-15.

(ii) Mr. TamalSarkar, USIC

(iii) Ms.PragatiPradhan, St. Joseph College, Darjeeling

(iv) Ms. ArundhutiRaychoudhury, SMIT, Sikkim

3. No. of Publications

Both Physics and Mathematics Department of NBU are involved with teaching and research in Astrophysics and Cosmology. The number of publications mentioned here are the publications credited by the researchers and faculties of bothMathematics and Physics Department in Cosmology and Astrophysics Group in addition to HECRC.

YEAR	No. of Papers
2009-10	14
2010-11	13
2011-12	06
2012-13	12
2013-14	08
2014-15	13

4. Seminar/Workshop Organized

(i) A number of seminar Lectures organized over the years by eminent scientists and researchers from different institutes and universities. Prof. Wei Tou Ni from Peoples Republic of China and others visited IRC and delivered lectures time to time.

(ii) Group discussions are arranged at different times where the local researchers from Department of Mathematics, Physics and HECRC, NBU took active part. A number of college teachers also regularly visit to participate in Group discussion.

(iii) IRC, Physics Department, NBU organize the following events (Sponsored by IUCAA, Pune) and North Bengal University :

UPCOMING EVENTS

1. IUCAA Sponsored Winter School on General Relativity and its Application (Nov. 23-28, 2015)

The objective of the school is to expose and refresh researchers in the area of General Relativity (GR) and its applications. This year being theHundred years of discovering GR, it gives an immense opportunity to spread awareness about recent developments in the field as well as train the young minds for their research in Astrophysics & Cosmology.

PAST EVENTS :

I. Workshop on Analysis of Astronomical DATA (December 16-17,2013)

II. Workshop on X-Ray Astronomy (March 23-25, 2013)

III. Recent Advances in Relativity, Cosmology and Astrophysics, (Feb 28-March 01, (2011).

IV. School on Recent Advances in Cosmology (SRAC) (Feb 21-26, 2011)

V. Workshop on DATA Analysis : X-Ray Pulsars and Compact Objects (Dec. 1-3, 2011)

VI. A series of Lectures on GR for PG Students by Prof. S. V. Dhurandhar, IUCAA, Pune (October 6-14, 2010).

VII. Advanced Workshop on Astronomy : Observations, Theory and Interpretation (April 5-9, 2010).

VIII. Seminar on Advances in Physics and Astrophysics (March 16-17, 2009).

5. Public Outreach Program of IRC, NBU

Activities at North Bengal University

Recent Acitivities (2015)

1. Eminent Astrophysicist Prof. J. V. Narlikar delivered a public talk on August 19 2015 at Conference Hall of the university at the Administrative building. Prof. JayantNarlikar and Prof. M. Narlikar both have been felicitated by the university. This year being the Centenary year of the discovery of Einstein's General Theory of Relativity (GR) which revolutionized the understanding of our universe and matter around us, IRC took a number of programs, the public talk by Prof. JayantVishnu Narlikar, Emeritus Professor, IUCAA, Pune is one hof the firstsuch program. Hon'ble Vice- Chancellor Professor SomnathGhosh has inaugurated the program on 19.08.2015. The title of the public talk is"Searches for Life in Our Universe". About 250 students from different schools in and around Siliguri, Jalpaiguri and Darjeeling participated in the talk. A number of teachers from School, Colleges and NBU are also present. It was an active interactive session, at the end of the talk which brought out the encouragement and enthusiasm among all.

PAST Activities at NBU(2009-2014)

1. **A number of programs taken to observe International year of Astronomy in 2009. Prof. Dipankar Bhattacharya, IUCAA, Pune, delivered Lectures.**

2. **Prof. AjitKembhavi, Prof. NareshDadhich, Prof. MangalaNarlikar and Prof. J. V. Narlikar delivered public talk at NBU time to time.**

Activities Outside IRC, NBU (2009-15)

3. **A series of Lectures by IUCAA faculty Dr. KanakSaha, have been organized by IRC, NBU at the following places :**

(i) NBU on August 5, 2015

(ii) A B N Seal College, Coochbehar on August 11, 2015

(iii) Coochebehar College, Coochbehar on August 11, 2015

(iv) P.D. Womens College, Jalpaiguri on August 12, 2015

(v) St. Joseph College, Darjeeling on August 13, 2015

4. One day IUCAA sponsored Workshop on **Mathematical Aspects of General Relativity** at Department of Mathematics, Salesian College, Siliguri on **Aug. 22, 2014.**

5. Seminar on Non-linear Dynamics and Astrophysics, Dept. of Mathematics, NBU (October 9, 2010)

6. Workshop on Advances in Physics and Astrophysics, Siliguri B. Ed. College (October 13, 2010).

7. **Workshop on Small Telescope making for School Children (In association of North Bengal Science Centre and IUCAA, Pune) on May 29-30, 2009. There were twenty schools participated in making telescope and at the end the telescopes are handed over to the respective Schools.**

8. **Dr. B. C. Paul, Coordinator, IRC, NBU delivered a number of popular lectures at North Bengal Science Centre, Matigara and Don Bosco School, Siliguri.**

CENTRE FOR REMOTE SENSING APPLICATIONS
NORTH BENGAL UNIVERSITY

1. Name & address of the CENTRE: - Centre For Remote Sensing Applications, North Bengal University,Dist. Darjiling-734013 (Funded by ISRO, Bangalore)
2. Year of Establishment of the centre: - 2002
3. Built up area of the centre:-1500 sq.feet
4. Name of the Director:- Prof.Somnath Ghosh,Vice- Chancellor,North Bengal University
5. Joint Director & Academic Co-ordinator :- Dr. Sushma Rohatgi
6. Grants received from ISRO/DOS under NNRMS SC-T Fund Received from :-

- 1. ISRO (2002) –Rs.29 lakhs for Equipment

-Rs.8 Lakhs for building against matching grant from University

Expenditure:-

- Rs. 12 lakhs for Software

EASI/PACE ver 7.0, SPANS ver 7.0, ARCINFO ver 8.1, ARCVIEW 3.2a,MAPINFO ver.7.5, FUGAWI moving map

- Rs.1 lakh for GPS – Garmin 12 CX
- Rs.16 lakhs for Computers, UPS, Printer, Plotter, Air conditioner)

All the items had been procured in the financial year 2001-2002
Grant received from the NBU for Two Computers, one Laptop and 206 books

7. List of the different programmes offered by the centre :-

The courses fall mainly under three categories:
(A)One year Post Graduate Diploma Course on" Remote Sensing & GIS Applications"
(B) Six Months Diploma course for teachers & research scholars on "Remote Sensing & G.I.S Applications"(introduced in 2010)
(C)One year M.phil Course on" Remote Sensing & GIS Applications" (stared in 2002 and continued till 2007, and as per the guidelines of UGC to convert one year M.Phil into TWO years course CRSA has reintroduce M.Phil in 2011 after the formulation of new syllabus for TWO YEARS M.phil as prescribed by UGC)

8.Course Objectives:

The courses are designed to introduce the student to the rapidly expanding fields of R.S & GIS techniques. The course emphasizes the potential of data capture to a GIS from remotely sensed images that may be used as an interdisciplinary approach to spatial decision-making and problem solving.Each course consists of both a lecture and 'hands on' laboratory sessions each week.

9.Learning Outcome:

On successful completion of this course the students will

- Be able to manage, manipulate and analyse relevant data using GIS technology.
- Be able to recommend the optimum Remote Sensing technique and

programme of processing for a particular problem.

- Be able to make large scale maps using Air photo.
- Be able to make large scale maps using high resolution satellite data
- Be aware of the hardware and software requirements for the R.S. & GIS lab.

10.Intake in Each Academic Session:

(A)For PG Diploma course:- 10 seats

(B)Six Months course for teachers & research scholars :-15

(C)M.phil Course:- 10 seats

11.Library:

CRSA Seminar Library is a specialized scientific library on R.S & GIS.

The library is open to all students and staffs & supports the education and research.

12.. Details of the previous batches of students (M.Phil):-

Year of entry	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
No.of Students	10	10	9	17	20

(CRSA had increased the seats in the sessions 2005-2006, & 2006-2007, because of the demand and the cut off point for entry during the session was 60%)

15.Number of Students in P.G.Diploma in RS & GIS Applications –

Year of entry	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
No.of students	8	15	9	7	4

Students are coming from the various discipline such as :-Botany,Computer Science,Environmental Science,Economics,Geography, Physics,Mathematics,Zoology

Students are coming from the various Places such as :-West Bengal, Sikkim, Bihar, Rajasthan, Andhra Pradesh, Uttar Pradesh

13. List of the Resource persons:-External:-Dr. P.P.N Rao, Director,NESAC,Shillong, Dr. A.Jeyram, General Manager, RRSC, Kharagpur, Dr.Subbunaglu, NRSC, Hyderabad, Prof.N.Patel, BISRA, Ranchi, Dr.G.N.Saha (NATMO), Prof. H.R.Betal (Calcutta University), Dr. B.Basu (PCI),Dr. P.Rohatgi (Calcutta University),Partho Chakrabarty (PCI),Prof.A.K.Pal, Debjyoti Bhowmik (Erdas Imagine) ,Subroto Saha (Regal)

14.Details of the ongoing projects & project completed during the last five years:-

- Geomorphological Mapping Natural resource mapping & Catchment Area treatment plan of the projects (i) EIA/EMP of TLDP stage III and (ii) EIA/EMP of TLDP stage IV-2003-2005
- Perspective plan of North Bengal-2003-2004
- Rainwater Harvesting Plan of North Bengal University-2006
- Predicting Flood Inundation using RS & GIS techniques : A case study

of North Bengal- Funded by ISRO under RESPOND programme (2010-2012)

- EIA/EMP of Mangdhechhu H.E.Project,Bhutan- Funded by NHPC,India(2009-2011)
- Master Plan of Dalkhola Municipality,West Bengal- Funded by Dalkhola Municiality(2011-2012)
- Documentation of Heritage sites of North Bengal-2010-11

15.Placement record of the past students:-

Beside teaching in Colleges & HS schools, students are working in reputed RS & GIS based companies & Government Organisation such as:- Roltas India, Kolkata,OPSIS System, Kolkata,Regal Service, Kolkata, Jalpaiguri Municipal Corporation, MANTAK Consultancy, Noida,Siliguri Jalpaiguri development authority,SYESALIT co.,Central Inland Fishery Research Institute,Barrackpur,DST funded project, Burdwan University,TCS,Banasthali University & State Remote Sensing Dept.-Sikkim & West Bengal