CONSOLIDATED REPORT

DBT STAR COLLEGE SCHEME,

HANDIQUE GIRLS' COLLEGE

GUWAHATI, ASSAM

PERIOD: 2015-18

Submitted to

DR GARIMA GUPTA

SCIENTIST E

THE STAR COLLEGE SCHEME

DEPARTMENT OF BIOTECHNOLOGY

GOVERNMENT OF INDIA

NEW DELHI

THREE YEARS CONSOLIDATED REPORT : 2015-18

DBT STAR COLLEGE SCHEME, HANDIQUE GIRLS' COLLEGE, GUWAHATI

1.	Name of the College	:	HANDIQUE GIRLS' COLLEGE
2.	Status(Govt./ Govt. Aided/ Autonomous/Pvt)	:	Govt. Aided
3.	Women's College or Co-educational	:	Women's College
4.	Urban/Rural	:	Urban
5.	NAAC Ranking + Year	:	B (2.87 in a 4 point scale), 2010
6.	No. of departments supported under DBT Star College Scheme	:	5 (Five)
7.	Supported Departments under DBT Star College Scheme	:	Botany, Chemistry, Microbiology, Physics, Zoology.
8.	About the College and the DBT-Support	:	

Handique Girls' College, Guwahati, is an eight-decade old institution of higher education for women. It offers three year B.A., B.Sc. and B.C.A programs, and two year post graduate Programs in Assamese, Botany, Chemistry and Zoology. The College also conducts a one-year Postgraduate Diploma program in Computer Applications. The academic programs of the College are affiliated to the Gauhati University. It has around 2300 students enrolled in the different academic programs at the undergraduate and postgraduate levels

The College received funding support during 2014-15, from the DBT under its Star College Scheme for implementation of the project for strengthening of Life Science and Biotechnology education and training at the undergraduate level. The departments of Botany, Chemistry, Microbiology, Physics and Zoology in the College are supported under this scheme. The most important outcome of this scheme has been that faculty are beginning to think in interdisciplinary terms and this is being reflected in the project work with which their students are engaging. Also, with greater access to experimental facilities made possible with the fund, the students in all the supported departments now have a greater opportunity to acquire and practise lab skills.

I. STUDENTS :

A. Name of course: B.Sc. (Major & General)

B. Dissertation / Projects : Departmental

Session 2015-16 :

Sl. No.	Department	Activity Details	Standard
1	Botany	Effect of different fertilizers on the growth of Phytoplanktons	BSc 4 Sem Botany Major
2.	Chemistry	Synthesis and characterisation of Iron(II) complexes of 1,10-phenanthroline (phen) and 2,2/-bipyridine (bpy)	BSc VI Semester students
		Biocatalytic reduction of nitro compounds using *Daucus carota*	BSc VI Semester students
		Synthesis and characterisation of Iron(II) complexes of 1,10-phenanthroline (phen) and 2,2'-bipyridine (bpy)	BSc VI Sem students
		Biocatalytic reduction of nitro compounds using Daucus carota	BSc VI Sem students
3.	Microbiology	To check potability of water from various sources	General course students
4	Physics	UV-Visible and FTIR study of ZnS nanoparticle material prepared by olive leaf extract	BSc VI Sem students
		Brawnian motion: Measurement of diffusion co-efficient	
		Determination of surface tension of milk under different conditions	
		Quantum dots synthesis and characterization	
		UV-Visible and FTIR study of ZnS nanoparticles using oyster mushroom extract	
		To design and study the performance of a differentiator using an operational amplifier	
		Band gap and refractive index study of ZnS nanoparticles	

		Construction of OPAM base integration circuit	
		Construction of a black body and determination of stafens' constant	
		To design an astable multivibrator with the help of transistor and LED	
		To study the operation of OPAM as adder and substractor	
		UV-Visible and FTIR study of ZnS nanoparticles by using button musroom extract	
		Synthesis and characterization of CdTe QDs	
		To design an unregulated power supply	
5	Zoology	Study on the "Detection of normal microflora likely to be present in the saliva and body mucous of Euphlyctis cyanophlyctis and to study the behavioural pattern of the species on a few parameters in (food, feeding habit and locomotion)"	BSc VI Sem students

Session 2016-17 :

Sl. No.	Department	Activity Details	Standard
1	Botany	Study on endophytic microorganisms associated with Curcuma longa L grown in greater Guwahati (Lead by Dr B N Das and Dr P Doley)	BSc IV Sem
2.	Chemistry	Synthesis and Characterization of Urea-Formaldehyde Composites	BSc VI Sem
3.	Microbiology		
4.	Physics	OPAM as differentiator	BSc VI Sem
		Brownian motion	
		To construct a light emitting diode using astable multivibrator circuit and 555 timer	
		Determination of electrical conductivity of soil sample under different condition	

		Mathematical graphs using electrical and electronic circuit	
		Construction of an OPAM based integrator circuit and study its characteristics	
		Ag/ZnO NPs-synthesis, characterization and application	
		DC to AC convenor/inverter	
		Study of the structural & electronic problem of Sc and Ti doped SWCNT by using DFT.	
		Synthesis of CdS nanoparticles using oyster mushroom extract: A green approach	
		To determine the Einstein coefficient by using Black Body	
		To determine the capacitance of a capacitor by studying the performance of an integrator using an OPAM	
5	Zoology	Study of Antibacterial Activity of Honey against Bacillus sp. In comparison to Amikacin and Gentamicin	BSc VI semester
		Study of the normal microflora in the saliva and body mucous of Euphlyctis cyanophlyctis .	

Session 2017-18 :

Sl. No.	Department	Activity Details	Standard
1	Botany	Effect of organic and inorganic fertilizers on the growth of phytoplanktons	BSc IV Semester
2.	Chemistry	Investigation of Simple and Cheap Source of a Natural Indicator for Acid – Base Titration	BSc VI semester
3.	Microbiology		
4.	Physics	To construct and study the mechanism behind a dynamo and verify its results using an output	BSc VI semester

		To construct a metal detector	
		To construct a mobile phone detector	
		To design a mini tesla coil	
		OPAM as amplifier output behaving same as logarithmic and exponential	
		Metal detector circuit	
		Surface tension of different liquid	
		Green synthesis of ZnO nanaoparticles using datura stramonium and its UV-Visible study	
		Designing a inverter circuit using transistors and MOSFETS	
		Functioning of astable multivibrator	
		To design an astable multivibrator with a 555 timer	
		Automatic street light controller	
		Experimental detection of conductivity of potato and carrot	
		To study OPAM as function generator, square wave generator and triangular wave generator	
		Preparation of ZnO nanoparticles using datura stramonium leaf extract and analysizing FTIR and Dielectric properties	
		555 astable circuit to generate a continuous sources of pulse	
		Project on Dynamo	
		OPAM as a non inverting comparator	
		To design and setup an astable multivibrator and calculate the time period and duty circle	
		X – Ray diffraction study of synthesized ZnO nanoparticles	
		Construction and characterization of OPAM based clipping circuit	
		OPAM as non inverting comparator	

		Fabrication of mini tesla coil and to determine its mutual inductance	
5	Zoology	Phytochemical screening of secondary metabolites form leaf extract of *Catharanthus roseus.*	BSc VI semester
		Study of effect of heavy metal contamination on hepatic protein fractions in *Channa punctatus*.	
		Study of effect of heavy metal contamination on hepatic protein fractions in *Clarius magur*.	
		Comparative study of microbes from the effluent of Gauhati refinery and ground water and developing a pure culture.	
		Comparative study of certain hematological parameter of two catfishes *Heteropneustis fossilis* and *Clarius magur*.	
		Study of effect of heavy metal contamination on hepatic protein fractions in *Heteropneustis fossilis.*	
		Isolation of microbes from the gut of *Channa striatus* and study of their glycosidic activity.	
		Isolation, culture and identification of bacteria from gut of *Clarius magur* collected from two sites of Assam-Deepor beel and Kalpa Beel.	
		Effectiveness of various spices in inhibiting the spoilage of food.	

Ongoing Student projects: (DEPARTMENTAL)

Sl no	Topic	Year	Major / Semester
1.	Study of human salivary activity kinetics and inhibitory effect of beetle nut and tobacco.	2018	Zoology Major, VI Sem
2.	Study of haemoglobin content in different age groups of females.	2018	Zoology Major, VI Sem
3.	Study of microbial colony in raw milk sample collected from cow, goat and buffalo by colony counting method.	2018	Zoology Major, VI Sem
4.	Study of effect of green tea Jatrapha stem, charcoal and medicated mouth wash on oral bacteria by colony counting method.	2018	Zoology Major, VI Sem
5.	Study of plant extract preparation using aqueous, polar and nonpolar solvents and qualitative phytochemical analysis.	2018	Zoology Major, VI Sem

6.	TLC profile of different extract of the plant *Moringa oleifera* using methanol, chloroform and aqueous solvent.	2018	Zoology Major, VI Sem
7.	Study of antibacterial activity of leaf extract of *Moringa oleifera* against *E coli.*	2018	Zoology Major, VI Sem

Inter Departmental

Session	Departments involved	Activity Details	Standard
2015-16	Microbiology Zoology	i. A study of antimicrobial activity of epidermal mucus of "*Channa punctatus"* exposed to lead stress	VI semester students
	Microbiology Zoology	Study of airflora in the context of bacteria Study of airflora in the context of bacteria	VI semester students
	Microbiology, Zoology and Chemistry	ii. Cobalt oxo cubane complexes the complex as inhibitor against *Escherichia Coli* and *Staphylococcus aureus*.	VI semester students
	Botany, Chemistry, Microbiology, Physics and Zoology	To culture, extract , estimate and characterization of the protein from *Escherichia coli*	V Semester students
	Chemistry & Home Science	Extraction Characterisation and Application of natural dye from Jorot tree (*Bixa orellana Linn*)	VI Semester
2016-17	Microbiology Zoology	A comparative study of antibacterial activity of spices *Syzygium aromaticum, Zingiber officinale* & *Curcuma longa*	VI Semester
	Zoology Microbiology	Comparison of antimicrobial activity of neem in *Escherichia coli* an *Bacillus* sp	VI Semester
	Zoology Microbiology	Isolation of microbes from the gut of Drosophila melanogaster & study of their glycosidic activity	VI Semester
	Zoology Botany	Isolation of microbes from the gut of Channa punctatus and study of their glycosidic activity	VI Semester
2017-18	Microbiology Zoology	Measurement of fungal growth isolated from spoiled tomato by biomass (mycelial dry weight method)	VI Semester
	Microbiology Botany	Determination of bacterial growth (*E. coli*) by measurement of optical density and colony forming	VI Semester

		units.	
	Microbiology Zoology	Isolation and identification of microorganisms from infected fruit.	VI Semester
	Microbiology Zoology	Study of Antibacterial Activity of Honey against Bacillus sp. in comparison to Amikacin and Gentamicin	VI Semester
	Microbiology Zoology	Study of bacterial growth by CFU.	VI Semester
	Chemistry Zoology	TLC Profile of Different Extracts of the plant *Moringa Oleifera* using Methanol, Chloroform and Aqueous Solvents	VI Semester
	Microbiology Zoology	A comparative study of blood groups among women in Handique college campus.	VI Semester
	Microbiology Zoology	Measurement of fungal growth by colony diameter method.	VI Semester
	Microbiology Zoology	Study of blood group and its inheritance pattern	VI Semester
	Microbiology Botany	Measurement of bacterial growth by optical density method and colony count method.	VI Semester
	Microbiology Zoology	Isolation and identification of bacteria and fungus from spoiled potato.	VI Semester

Ongoing Student projects: (INTERDEPARTMENTAL)

Sl no	Topic	Year	Major / Semester
1.	To study the nasal flora of human being.	2018	Zoology & Botany major, VI Semester
2.	To isolate and study micro organisms from healthy skin	2018	Zoology & Botany major, VI Semester
3.	Study of WBC count among different individuals and its clinical correlation.	2018	Zoology & Botany major, VI Semester
4.	To isolate and study the normal flora of human throat	2018	Zoology & Botany major, VI Semester

C. In House Trainings/ Workshops Organized

BOTANY DEPARTMENT

Sl No.	Topic	Resource Persons	Duration and Date	Participants	No. of participants
1	Bioinformatics and its application	Dr. Pranjan Barman, Deptt. of Biotechnology, Gauhati Unuversity, and Mr. Hemchandra Deka, IIT, Guwahati.	10 Days (October 2015)	Botany Major	27

CHEMISTRY DEPARTMENT

Sl No.	Topic	Resource Persons	Duration and Date	Participants	No. of participants
1	Preparation of Solution. **(Interdisciplinary)**	Faculty members Chemistry Department	1 Day, May 10, 2016	BSc 2nd Sem Botany, Chemistry, Microbiology, Physics Zoology	49
2	Laboratory skill for HS Students	Dr K K Rajbongshi Department of Chemistry	1 day Dec 13, 2017	HS Students of Dispur Academy	17

MICROBIOLOGY DEPARTMENT

Sl No.	Topic	Resource Persons	Duration and Date	Participants	No. of participants
1	Good laboratory practices	Dr. Madhurima Goswami Microbiology Department	1 Day, Feb 3, 2016	Botany Major	14
2	Instrumentation & Microbiology	Dr. Madhurima Goswami Microbiology Department	1 day Feb 15,2016	Botany Major	14
3	"Basic Microbiological Techniques" Sub topics: i) Isolation and	Dr. Madhurima Goswami & Dipika Krishnatreya Microbiology Department	2 days 13-14 May 2016	Botany, Zoology & Home Science Major	09

	identification of microbes from spoilt fruits and vegetables. ii) Aerobic culture from throat swab. iii) Effect of antibiotic on bacterial growth Single Radial immunodiffusion technique **(Interdisciplinary)**				

PHYSICS DEPARTMENT

Sl No.	Topic	Resource persons	Duration and Date	Participating departments	No. of participants
1	Identification of electrical components and Soldering	Physics Department faculty members	1 Day, May 12 2016	BSc 2nd Sem Botany, Chemistry, Microbiology, Physics Zoology	35

ZOOLOGY DEPARTMENT

Sl No.	Topic	Resource person	Duration and Date	Participating departments	No. of participants
1	Protein isolation from insect and mammalian tissue and SDS PAGE electrophoresis	Hiranmoy Sharma Asstt. Prof. Department of Zoology, D.N. Govt College, Arunachal Pradesh.	2days 30th April & 1st May,2016	Zoology, Botany, Microbiology	24
2	Molecular weight determination of protein bands of SDSPAGE from standard graph.	Dr Dip Jyoti Haloi Asstt. Prof. Department of Zoology, Handique Girls' College.	2nd May,2016	Zoology, Botany, Microbiology	20

D. Summer / Other Training Attended

Sl No.	Instiute/ Organisation	Period	Participants	No. of participants
1	Assam Agricultural University, Guwahati Campus	1-30 July 2015	2nd Semester Botany Major	03
2	Summer Training at Dept. of Chemistry, Gauhati University	July 2016	5th Semester	01
3	Assam State Zoo, Guwahati	2016	5th Semester Botany Major	02
4	"Science Academies' Summer Research Fellowship Programme, Indian Academy of Science, Bangalore.	2016	Physics Major	01
5	National Initiative on Undergraduate Science-Biology Camp at HBCSE, Mumbai	7-11 Nov 2016	1st Semester Botany Major	02
6	Internship under the guidance of Dr. Pranab Dutta, Department of Plant Pathology Assam Agriculture University on the topic "Efficacy of Silver & Zinc oxide nanoparticles against *Sclerotinia sclerotiorum*"	4 - 21st January, 2017	4th Semester Botany Major	01
7	Project work under Dr. N.C Adhikary, PSD, IASST	January to April, 2017	6 Sem Zoology Major	02
8	Cotton University	24-25 Feb 2017	4th Semester Botany Major	03
9	Summer Training at IIT Guwahati (FAST SF) [Work on Organic Chemistry]	May-July 2017	5 th Semester Chemistry Major	01
10	Summer Training , University of Calcutta (FAST SF) [Work on Relativity and Cosmology]	May-July 2017	5 th Semester Physics Major	01
11	Cotton University	21 June-21 July 2017	4th Semester Physics Major	03
12	Tezpur University, Tezpur	6 June-5 July 2017	5th Semester Botany Major	01

E. Visit to Research Institute

Sl no.	Leading Department	Institute/Industry	Period of Visit
1	Chemistry	Saha Institute of Nuclear Physics	January 2015
2	Microbiology	Assam Veterinary College, Khanapara, Guwahati	August 2015
3	Botany	Agriculture field station, Kahikuchi, Assam	October 2015
4	Microbiology	Indian Council of Agriculture and Research,Rani National Research Centre(Pig), Rani	November 2015
5	Botany	Assam Bioresource Centre, Under ASTEC	March 2016
6	Botany	Department of Biotechnology, IIT Guwahati	March 2016
7	Microbiology	"Blancea" packaged drinking water plant, Bijoynagar.	March 2016
8	Chemistry	Visit to Kolkata (IACS and S.N. Bose Institute)	January 2017
9	Botany	Visit to NBPGR, Barapani (6 Sem Major)	15 March 2018
10	Botany	Visit to FRI, Dehradun (4 Sem Major)	19 March 2018

II. FACULTY

A. Name of Department: Botany

Sl. No.	Name of Teacher	Designation	Specialization
1	Mr. Madhab Ch. Talukdar	Assoc. Professor	Cytogenetics & Plant Breeding
2	Dr. Bandana N Das	Assoc. Professor	Cytogenetics & Plant Breeding
3	Dr. Manashi K Hazarika	Assoc. Professor & HoD.	Plant Physiology
4	Mr. Jayanta K Manta	Assoc. Professor	Plant Taxonomy
5	Dr. Pranab Bujarbaruah	Asst. Professor	Ecology
6	Dr.Prabhali Doley	Asst. Professor	Plant Pathology
7	Aswathy Ravindran	Lecturer (Contractual)	Cytogenetics & Plant Breeding
8	Purbalima Bhuyan	Lecturer (Contractual)	Microbiology
9	Pushpita Hore	Lecturer (Contractual)	Cytogenetics & Plant Breeding
10	Rajreepa Talukdar	Lecturer (Contractual)	Plant Pathology

Name of Department: Chemistry

Sl. No.	Name of Teacher	Designation	Specialization
1	Dr. Hiranya K. Choudhury	Assoc. Professor	Physical
2	Dr.Tapan Thakuria	Assoc. Professor & HoD	Physical
3	Dr. Kamal K Rajbongshi	Asst. Professor	Organic
4	Dr. Kandarpa Phukan	Asst. Professor	Organic
5	Mr. Bapan Saha	Asst. Professor	Inorganic
6	Dr. Akhthar Hussain	Asst. Professor	Inorganic
7	Dr. Priyanka Baruah	Lecturer (Contractual)	Organic
8	Ms. Tukki Sarkar	Lecturer (Contractual)	Physical
9	Dr. Abhijit Gogoi	Lecturer (Contractual)	Organic
10	Dr. Mamon Dey	Lecturer (Contractual)	Inorganic

Name of Department: Microbiology

Sl. No.	Name of Teacher	Designation	Specialization
1	Dr. Madhurima Goswami	Asst. Professor & HoD	Microbiology
2	Nilakshi Talukdar	Lecturer (Contractual)	Microbiology
3	Mr. Madhab Ch. Talukdar	Guest faculty	Cytogenetics & Plant Breeding

Name of Department: Physics

Sl. No.	Name of Teacher	Designation	Specialization
1	Mr. Nabajit Dutta	Assoc. Professor	Electronics & Radiophysics
2	Dr. Anuradha D Purkayastha	Assoc. Professor & HoD	Particle Physics
3	Mr. Shakeel Zamal	Asst. Professor (on study leave)	Nuclear Physics & Cosmic Radiation
4	Dr. Farhin Hazarika	Asst. Professor	Solid State Physics
5	Dr. Uday S Senapati	Asst. Professor	Condensed Matter Physics
6	Dr. Kishore Dutta	Asst. Professor	Condensed Matter Physics
7	Dr. Kopinjol Baishya	Asst. Professor	Condensed Matter Physics

Name of Department: Zoology

Sl. No.	Name of Teacher	Designation	Specialization
1	Mrs. Nirmali Medhi	Assoc. Professor & HoD	Cell Biology
2	Dr. Dipjyoti Haloi	Asst. Professor	Entomology
3	Dr. Eva Rani Kalita	Asst. Professor	Animal Physiology & Biochemistry
4	Dr. Innifa Hasan	Asst. Professor	Fish Biology
5	Dr. Y Rajeev Singh	Lecturer (Contractual)	Animal Physiology & Biochemistry
6	Dr. Jayashree Das	Lecturer (Contractual)	Cell & Molecular Biology
7	Mr. Suraj Chetry	Lecturer (Contractual)	Entomology
8	Dr. Shyamolima Gogoi	Lecturer (Contractual)	Entomology
9	Ms. Bandita Baruah	Lecturer (Contractual)	Animal Physiology & Biochemistry

B. Internal Faculty trained for Skill Improvement:

Sl.No.	Name of Faculty	Department	
1.	Dr. Madhurima Goswami	Microbiology	i) Hands-on Training on Mammalian Cell Culture and Molecular Diversity of Microbes from February 17–20, 2015 at the State Biotech Hub, Assam. ii) One-day workshop on 'Biotech Park and Innovation' organized by the Centre for Innovation and Future Studies and Guwahati Biotech Park at the Assam Administrative Staff College on 28/03/2018
2.	Dr. Evarani Kalita	Zoology	i) Hands-on Training on Recent Advances in Practical Curricula of UG courses in Zoology from March 9-15, 2015, at the Department of Zoology, Gauhati University. ii) One-day workshop on 'Biotech Park and Innovation' organized by the Centre for Innovation and Future Studies and Guwahati Biotech Park at the Assam Administrative Staff College on 28/03/2018
3.	Mr. Shakeel Zamal	Physics	Workshop on Accelerator based Multi - disciplinary Scientific Research at Gauhati University on November 16, 2015.
4.	Dr. Kamal K Rajbongshi and Dr. Dipjyoti Haloi	Chemistry and Zoology	Workshop on Research Based Pedagogical Tools for Teachers of Undergraduate Colleges sponsored by the Newton

			Programme of the British Council and DBT, Govt. of India at IISER, Pune from March 10 -12, 2016.
5.	Bandita Baruwa	Zoology	i) 7-days Summer Workshop and hands-on training on techniques in Biochemistry and Molecular Biology at Gauhati University from July 6 – 11, 2015. ii) Advance Training on homology modelling, protein-protein, protein-ligand interaction and docking at Gauhati University from March 16 -18, 2016.
6.	Aswathy Ravindran	Botany	Workshop on Scientific Research Paper writing on July 14 and 15, 2017, at Gauhati University.
	Dr. Sabita Mahanta	Mathematics	National Science Teacher's Workshop in the 3rd India International Science Festival at Chennai on October 14 and 15, 2017.
7.	Dr. Manashi Kalita	Botany	Workshop on Rooftop Farming organized by the Centre for Innovation and Future Studies at the Assam Administrative Staff College on December 8, 2017.
8.	Dr. Jayashree Das	Zoology	Workshop on Singleplex and Multiplex PCR: Applications organized by Institutional Biotech Hub on January 2-6, 2018.

C. Awareness Generation Programmes etc. :

Sl.No.	Name of Department	Programme
1	Botany, Chemistry, Microbiology, Physics, Zoology	Outreach programme for class IX and X organized under DBT Star College Scheme, Handique Girls' College, at Bongshar H S School, Bongshar, Kamrup(R), Assam on 08-06-2016. 137 students were exposed to basic concepts and tools in the study of botany, chemistry, microbiology, physics and zoology.
2	Chemistry	i) Chemistry experiments and Chemistry Magic show at the Ishan Vikas programme, held at IIT – Guwahati on 17 December 2015, sponsored by the Ministry of Human Resource Development, Govt of India. ii) Resource Person in a seminar held at Nalbari College and spoke on *Origin of Quantum Theory* on 05 February 2016. iii) Resource Persons in the Training Programme for Science and Mathematics Teachers of Assam organized by Sarba Shiksha Abhiyan and Assam Science Society during March, 2016. iv) Demonstration of experiments in the UGC-sponsored workshop for High School Science Teachers on Chemistry syllabus - Class IX and X, held at Rangia College, on 6 – 10 June 2016.

3	Microbiology	i) Awareness programme on Health and Hygiene at Doimuguri L.P. school and visit by the school's students to the Microbiology lab. March 23 and 26, 2018.

III. GUEST FACULTY INVITED

Sl. no.	Name	Designation	Host Institute	Duration of Visit	Topic of Lecture/ Discussion
1	Prof Ashok K Ganguli	Director	Institute of Nano Science & Technology, Mohali, Punjab	13 October 2015	Nanotechnology in Nature and for the Future
2	Dr Tapash Kr Choudhury	Professor	North Bengal University	19 -13 March 2016	Course in Immunology
3	Dr. Debashis Kar	Professor	Dept of Zoology Assam University, Silchar	23 March 2016	Fundamentals of Limnology and Aquaculture Biotechnology
4	Dr. Jogen Chandra Kalita	Professor	Dept of Zoology Gauhati Unuversity	27 April 2016	Reproductive Biology
5	Dr Hiranmoy Sharma	Asstt. Prof.	Department of Zoology, D.N. Govt College, Arunachal Pradesh.	30 April & 1 May, 2016	Protein isolation from insect and mammalian tissue and SDS PAGE electrophoresis
6	Dr R K Bhola	Professor	Department of Zoology Gauhati University	May 7,11,14 2016	Lecture Series on Insect Nuroendocrynology
7	Dr. Pranjan Barman	Assistant Professor,	Dept. of Biotechnology, Gauhati Unuversity,	10 Days (June 2016)	Bioinformatics and its application
8	Mr. Hemchandra Deka, IIT, Guwahati.	Assistant Project Scientist,	Department of Biosciences and Bioengineering IIT Guwahati	10 Days (June 2016)	Bioinformatics and its application
9	Dr. M.C. Kalita,	Professor	Department of Biotechnology, Gauhati University	5 Nov 2016	Abundance of Bio-resources Potential in NE

					India: What can Biotechnology do
10	Dr Kumanand Tayung	Associate Professor	Department of Botany Gauhati University	8 Nov 2016	Microbial Diversity and their Bioprospection
11	Dr. Arun Chattopadhyay	Professor	IIT Guwahati	9 Nov 2016	Transforming Science to Technology at Nanoscale
12	Prof. K.D. Krori	Retd Prof, and UGC Emeritus Fellow	Cotton College	11 Nov 2016	Einstein's Theory of Relativity
13	Prof Anil K Goswami	Retd Principal & Fellow of Royal Astronomical Society	Cotton College	11 Nov 2016	Radio Astronomy
14	Dr. Samir Kr Pal	Professor	S.N. Bose Natinal Centre for Basic Sciences, Salt Lake City, Kolkata	13 Feb 2017	Unrevailing atomic dance for essential consequences
15	Dr P J Handique	Professor	Dept.of Biotechnology Gauhati University	14 March 2017	Recent advances in bioscience and associated career prospects
16	Dr Amitabh Ray Choudhury	Professor	Calcutta University	21 Nov 2017	Enigma of Mass

IV. LIST OF NEW

A. Techniques :

Microbiology Department

1. Pure culture technique.
2. Use of air sampler in enumeration of air microflora.
3. Single radial immunodifussion technique
4. Linear measurement of bacterial cells.
5. CFU count in colony counter
6. Flocculation test
7. Extraction of protein from *Escherichia coli*.
8. Preparation of buffers.
9. Working knowledge of sonicator & BOD incubator.

10. Bio-waste segregation and management.
11. Sterilization techniques.
12. Sub-culture techniques.
13. Maintenance of stock culture.

Chemistry Department

1. Preparation of acetanilide from aniline (for 5th semester students of Chemistry Major) :

An alternative protocol was developed for the preparation of acetanilide from aniline.

B. Practicals :

Botany

Protein Lab: Extraction of protein from plant tissues, quantitation, analysis by PAGE.

(Name of the Plants: *Parkia roxburgii*, *Artocarpus heterophyllus*, *Pleurotus sajarkaju*)

Zoology

i. Spectrophotometric procedures for quantitation of proteins, carbohydrates and nucleic acids.
ii. Protein sample preparation from insects and mammals, quantitation and PAGE analysis.
iii. Isolation and identificationof gut microbes from fishes & Insects.
iv. Culture of Drosophila and monohybrid & dihybrid cross experiments.
v. Preparation of enzyme homogenate and study of enzyme activity and kinetics through Michaelis Menten curve and Lineweaver burk plot.

Microbiology Department

1. VDRL Test
2. Potability of water by MPN test.
3. Quality of milk testing by methylene blue reductase test.
4. Isolation of Rhizobium from root nodule.
5. Isolation of microorganisms from pickle, jam and bread.
6. Biochemical tests-Indole test, Methylene blue, Voges Proskauer and Citrate test**.**
7. Quality Control test.

C. Demonstrations :

Microbiology Department

1. Isolation and enumeration and identification of Fungi from soil in Liquid and Solid media.

D. Minor Research Projects :

Botany

1. Project Title : Studies in the genome of Plumbagorosea

   Principal investigator : Dr B N Das
   Funding Agency : Umatara Tea Company, Dibrugarh (Assam)

2. Project Title : Karyomorphological studies in certain species of Bauhinia with special reference to conservation
   Principal investigator : Dr B N Das
   Funding Agency : Paramount Tea Marketing, Kochi

3. Project Title : Karyomorphological analysis and total genomic DNA extraction in different species of Phlogacanthus available in KarbiAnglong (Assam)

   Principal investigator : Dr B N Das
   Funding Agency : Assam Science Technology and Environmental Council.

Physics

1. Project Title: Study of optical, electrical and antibacterial activity of green synthesized Zinc Oxide nanoparticles
   Principal investigator: Dr. Uday S Senapati

V. IMPACT OF DBT SUPPORT

1. **Greater access to experimental infrastructure and opportunities for development of laboratory skills :**

   The funding received by the beneficiary departments has been used, largely to procure multiple pieces of extensively used equipment and also to obtain equipment which was needed but unavailable. The funding has also made lab consumables more available. This has led to students having greater access to laboratory facilities, enabling them to engage more effectively with the practical component of the syllabus. This is illustrated by the following examples

a) In Physics, the increased access to test and measurement equipment, along with the greater availability of electronic components, now allows students to fabricate different types of circuits for their syllabus-related practicals and also for their VIth Semester Projects. Earlier, readymade circuits were procured from the market in limited numbers and students did not have the scope of learning through real hands on experience.
b) In Botany, students now have greater access to microscopes and quality stains which has lead to a qualitative improvement in cytogenetic work engaged in by the students.
c) In Microbiology, the new BOD incubator and tabletop incubator, together with the availability of a precision balance and quality chemicals have facilitated more reliable microbial cultures, which have seen a large number of students from all departments taking up project work in Microbiology.
d) In Chemistry, students have access to larger numbers of analytical equipment like colorimeter, conductivity meter, precision balance which finds extensive use in practical classes and project work. Equipment like the Soxhlet apparatus and the fractional distillation unit have allowed a number of students to venture into natural products chemistry.
e) In Zoology, Drosophila culture has been facilitated by the BOD and stereozoom microscope which the Department has acquired.

The above mentioned examples are only a liited representation of the much wider impact of the Star College Scheme. It need to be mentioned that the increased access to quality equipment and consumables, has seen students in all the departments getting more precise results for their experimental work and this has not only led to their gaining in confidence but also is a great motivating factor.

2. **Fostering Interdisciplinarity :**

A very positive fall out of the Star College scheme has been the increased interaction amongst the participating Departments. This has found expression in the large number of student projects which have been undertaken on topics which require inputs from more than one Department.

3. **Change in the cut off percentage for under graduate admission :**

Department	Cut-off percentage			
	2014-15	2015-16	2016-17	2017-18
BOTANY	77.0	78.2	75.5	81.7
CHEMISTRY	80.2	80.8	86.3	86.2
MICROBIOLOGY(subsidiary)	-	-	-	-
PHYSICS	74.8	74.4	78.0	79.7
ZOOLOGY	80.0	81.0	85.0	84.5

4. Enrolment in Science Courses :

Admission to the science courses in the College for the last three years has seen a seat to applicant to seat ratio of 1:6. The average annual increase in the number of applications received, for the last three years has been a modest ten percent

5. Students moving up to PG courses :

Department	Average number of students admitted into PG courses (in %)
BOTANY	58.9%
CHEMISTRY	55%
MICROBIOLOGY(subsidiary)	-
PHYSICS	64.7%
ZOOLOGY	64.8%

In addition to the above given data on students moving up to postgraduate courses, in the last three years, twenty one students have obtained admission into postgraduate courses in Microbiology in different universities.

5. Any other relevant information :

The DBT Star College Scheme not only helps in establishing newly introduced PG Courses in Botany (2014) and Zoology (2014), but also encourages in opening PG Course in Chemistry (2016) with great demand.
The college has the plane to request DBT, Govt. of India to incorporate more number of departments of the College under the scheme.
