

## Department of Chemistry

Guru Nanak College, Budhlada, accredited 'A' grade by NAAC, Bangalore, is a premier institute for Co-education in Punjab region. Two departments of the college namely, Agriculture and Chemistry had been recommended by the Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India, New Delhi, to receive financial support under the Star College Scheme.

The objective of the Star College Scheme is to strengthen physical and life Sciences education training at the undergraduate level to encourage and attract students to pursue a career in Science field.

For implementation of the Star College Scheme, the DBT, New Delhi sanctioned the first release of an amount of Rs. 20.00 lakhs under Non-Recurring head and Rs. 6.00 lakhs under Recurring head for the financial year 2019-20. The college further utilized unspent available balance 300649/- Recurring and Non-Recurring head by the recommended DBT during the financial year 2020-21. Travel & Contingency Rs. 2.00 Lakh has not been used due Covid 19.

The objective of the Star College Scheme is to strengthen Science education and training at the undergraduate level to encourage and attract students to pursue a career in science.

### The scheme envisages:

- To increase the core instrumentation resources by procuring new equipments and upgrading existing facilities.
- To strengthen the academic and physical infrastructure to enhance the teaching and learning process of the students and to stimulate critical thinking through providing 'hands on' exposure in experimental work.
- To provide access and exposure to students to Research Laboratories and Industries in the country.
- To organize Workshops/Seminars/Guest lectures for students benefit.
- To conduct field trips/excursions for students to optimize learning.
- To provide better library facility to students and teachers in the department.

## Students Activity carried out by the Department of Science during(2019-22)

- 1. List of projects undertaken by students During

Duration 2019-20

S.No.	Title	Class	No. of students
1.	Adsorption studies for removal of acetic acid by charcoal	B.Sc III	50
2.	Removal of heavy metal ions from aqueous solution by low cost agroresidues	B.Sc. III	40
3.	Synthesis and Application of Paracetamol	B.Sc. III	60
4.	Preparation and application of activated charcoal as a perfect dye adsorber	B.Sc. III	40

5.	Comparison of pH/buffer capacity of different cold drinks	B.Sc.II	35
6.	To find adulteration food item	B.Sc. II	60
7.	Comparison of hardness of water from different areas around Budhlada	B.Sc. II	100
8.	Determination of acidic and basic radicals in various commonly used salts (Table -salt, Black - salt and Rock -salt)	B.Sc. I	120
9.	Green Chemistry	B.Sc.II	100
10.	Inorganic complex synthesis	B.Sc-III	150
11.	Global Warming and its Impact	B.Sc-II	100
12.	Laboratory Safety and first aid	B.Sc-I	120

Duration 2020-21

S.No.	Title	Class	No. of students
1.	Adsorption studies for removal of heavy metal ions by low cost adsorbents	B.Sc III	10
2.	Synthesis of Inorganic complexes	B.Sc. III	20
3.	To find adulteration in milk	B.Sc. II	25
4.	Comparison of viscosity of different liquids	B.Sc. II	25
5.	Determination of acidic and basic radicals in various commonly used salts	B.Sc. I	50
6.	Microwave enhanced reactions	B.Sc.II	25
7.	Stubble burning and its impact on environment	B.Sc-II	50
8.	Laboratory Safety and first aid	B.Sc-I	100

Duration 2021-22

S.No.	Title	Class	No. of students
1.	Comparison of viscosity of different liquids	B.Sc. II	25
2.	Comparison of surface tension of different liquids	B.Sc. II	25
3.	To find adulteration in milk	B.Sc. I	25
4.	Determination of acidic and basic radicals in various commonly used salts	B.Sc. I	50
5.	Microwave enhanced reactions	B.Sc.III	15
6.	Synthesis of Inorganic complexes	B.Sc. III	25
7.	Comparison of cleansing action of detergents	B.Sc. II	20
8.	Adsorption studies for removal of heavy metal ions by low cost adsorbents	B.Sc. III	10

- 2. Industrial Visits

During 2019-20

Name of Industry/Institute	Duration/Date	No of Students
New Malwa Rice and General Mills, Borawal	One Day (12-10-2019)	120
Pushpa Gujral Science City, Kapurthala	One Day (2-11-2019)	150

During 2020-21

Name of Industry/Institute	Duration/Date	No of Students
Shiva Protein Products Pvt Ltd Mansa	One Day (2-03-2021)	40
Nexus Sanitation Pvt Ltd	One Day (4-03-2021)	40

During 2021-22

Name of Industry/Institute	Duration/Date	No of Students
Giriraj Pipe Industries, Budhlada	One Day (30-09-2021)	25
Apiculture Visit Budhlada	One Day (09-04-2022)	25

- 3. Summer Training

During 2019-20

Training received by students from participating departments:

Department	Training Institute	Nature of Training	No of Beneficiaries
Chemistry	Department of Chemistry Punjabi University Patiala	Hands on training on Chromatography, IR, Spectrophotometry Dec 3, 2019	30

Training received by faculty from participating departments:

Detail of Training by Dr Jatinder Singh

1. One week Faculty development programme at SLIET Longowal District Sangrur June 3-7, 2019
2. Two weeks Refresher Course at Department of Chemistry Pondicherry University June 14-27, 2019

During 2020-21

Detail of Training by Dr Jatinder Singh (Sr No 1-13) & Dr Dhruva Kumar (Sr No 14-20)

1. One Week Faculty Development Program on Spectroscopic and Analytical Techniques: Applications, J.C. Bose University of Science and Technology YMCA, Fridabad, Govt of India MHRD, 25 May to 29 May 2020
2. 3 Day National E- workshop on Analytical Instruments, organized by department of Chemistry, Dr. C.V. Raman University Bilaspur, 15-17 June 2020, 3pm to 5 pm

3. One Week Faculty Development Program on Advancement in Sciences and Its Applications in Engineering, organized by Department of Science and Humanities, Hyderabad Institute of Technology and Management Telangana, 22-26 June 2020
4. Short Term Training Programme on Professional Values Ethics and Sustainable Development, National Institute of Technical Teachers Training and Research Kolkata, 29 June – 03 July 2020
5. Online Faculty Development Programme on Online Teaching -Learning Practices: Challenges & Solutions, Department of Mathematics and Computer Science, Guru Teg Bahadur Khalsa College, Sri Anandpur Sahib, 07-13 July 2020
6. Two Days online National Workshop Online Teaching – Learning using LMS-MOODLE, Guru Angad Dev Learning Centre, SGTB Khalsa College, PMMMMNMTT of MHRD, 24-25 July 2020
7. One Week FDP on E-Content Development and Delivery, Research Methodology and Autonomy, IQAC Kamla Nehru Mahavidyala Nagpur 27 July-1 August 2020
8. FDP on Impact and Strategies For Online Teaching – Learning Methodology During Covid-19 Pandemic, Sant Baba Bhag Singh University Jalandhar Punjab, 04-10 August 2020
9. AICTE Sponsored STTP-1 on Industrial Pollution And Control Strategies, Department Of Chemical Engineering, Anurag Group of Institution, Ghatkesar, Telangana, 24-29 August 2020
10. One Week Sponsored FDP on Pedagogical Techniques for Virtual Class Room, by Dr SSBUI CET, Panjab University Chandigarh & DUIET, Dibrugarh University, 02-06 September 2020
11. One Week Short Term Course on Advanced Energy Materials, Department of Physics, Dr BR Ambedkar National Institute of Technology Jalandhar Punjab, 12-16 October 2020
12. Online FDP on Entrepreneurship Development, Department of Science & Technology, Govt. of India in association with Department of Technical Education & Industrial Training, Govt, of India, Regional Centre for Entrepreneurship Development Sec 35 Chandigarh, 14-28 January 2021
13. AICTE-ISTE Approved Orientation/ Refresher programme on Refresher Course on Chemistry, A.V.C. College of Engineering, Mayiladuthurai, Tamilnadu, 08-13 February 2021
14. Online Faculty Development Programme on “Nanomaterials and Devices” (One Week) Organized by Applied Science Department National Institute of Technical Teachers Training and Research (NITTTR), Chandigarh, 25-29 May 2020
15. Faculty Development Programme on “New Pedagogies: Creative Learning & Creative Teaching - A Futuristic Approach” Organized by Dashmesh Khalsa College, Zirakpur, 20-24 June 2020
16. Online Faculty Development Programme on “Nanomaterials and their applications” (One Week) Organized by Applied Science Department National Institute of Technical Teachers Training and Research (NITTTR), Chandigarh, 26 June-02 July 2020
17. One Week Short Term Course on “Recent Trends in Advanced Materials and Devices” organized by Department of Physics and Department of Electronics & Communication Engineering, Dr B R Ambedkar National Institute of Technology Jalandhar held during 21-25 2020 September 2020
18. One-Week Online Faculty Development Program on “Outcome Based Education and Accreditation”, conducted by ISTE Telangana Section in association with JNTUH College of Engineering, Jagtial; Mahatma Gandhi Institute of Technology, Hyderabad and Swecha, during 5 - 9 October 2020.
19. Online Faculty Development Programme On “Characterization of Multifunctional Materials” (one Week) Conducted by Applied Science Department NITTTR, Chandigarh, 14-18 December 2020

20. Online Faculty Development Programme (FDP) Conducted on behalf of Department of Science and Technology, Govt. of India in association with Department of Technical Education & Industrial Training, Govt. of Punjab, 14-28 January 2021

During 2021-22

Detail of Training by Prof Bikramjit Singh (Sr No 1), Dr Jatinder Singh (Sr No 2-14) & Dr Dhruva Kumar (Sr No 15-31)

1. Webinar on Best Practices in Online Chemistry Practicals by Dr Kathleen Carrigan, Portland Community College, Oregon, USA, organized by the Department of Chemistry, St Aloysius College, Mangaluru, Karnataka, 09 January 2022
2. National Level One Week FDP on Research Methodology, Amar Sewa Mandal's Kamla Nehru Mahavidyalaya, Nagpur, 26 April- 1 May 2021
3. FDP on Accelerating Innovations in Material Science – Surface Characterization, Department of Chemistry BMS Institute of Technology & Management, Bengaluru, 18-22 May 2021
4. AICTE Sponsored One week Short Term Training Programme on Environment Protection and Management, Department of Chemical Engineering & Biotechnology, Sardar Beant Singh State University, Gurdaspur, Punjab, 14-19 June 2021
5. National level E- lecture series on Advances in Chemical Sciences, Department of Chemistry & IQAC , S. Govt. College of Science Education & Research, Jagraon, Ludhiana, 24 August 2021
6. Online one week FDP on Innovations in Applied Research for Science and Technology organized by Department of Basic Science and Humanity, KDKCE, Nagpur, 11-18 October 2021
7. One week Short Term Training Programme on Renewable Energy Sources and Emerging Technologies organized by NITTR Kolkata, 20-24 December 2021
8. Webinar on Best Practices in Online Chemistry Practicals by Dr Kathleen Carrigan, Portland Community College, Oregon, USA, organized by the Department of Chemistry, St Aloysius College, Mangaluru, Karnataka, 09 January 2022
9. DBT sponsored Webinar on Fluorescence Spectroscopy and its Applications organized by PG Department of Chemistry, D.A.V College Bathinda, 20 January 2022
10. International Webinar on Chemistry Education, Department of Chemistry Kamla Nehru Mahavidyalaya Nagpur in Association of Chemistry Teachers (ACT), Mumbai, 4-5 February 2022
11. One week FDP on Implementation of NEP 2020 in Higher Education, RKDF University, Bhupal, 17-22 February 2022
12. Six day FDP on Green Chemistry for Sustainable Development, organized by Department of Chemistry, SRM institute of Science and Technology in Association of chemistry Teachers Mumbai, 16-21 May 2022
13. 30 hours of certificate course in Instrumental Methods and Separation Techniques in Chemical Analysis organized by the Department of Chemistry, St Aloysius College, Mangaluru, Karnataka
14. National one week FDP on ICT Tools for Effective Teaching and Learning, organized by Amar Sewa Mandal's Kamla Nehru Mahavidyalaya, Nagpur, 23 -28 May 2022
15. Participated in the Online Refresher Course on "Environment Studies" from 24/12/2020 to 06/01/2021 (Two Weeks) Organized by UGC-Human Resource Development Centre (HRDC), Panjab University, Chandigarh.
16. Participated in the "Faculty Enrichment Webinar for Chemistry Teachers in Higher Education" organized by National Resource Centre for Education of this Institute on February 11, 2021 at NIEPA, New Delhi.

17. Participated in International Webinar on “Multidisciplinary Research, IWMR-2021” organized by Department of Chemistry, Guru Nanak College of Science, Ballarpur, Dist. Chandrapur on 13th March 2021.
18. Participated in the International Webinar on “Sustainable Chemistry, IWSC-2021” organized by Association of Chemistry Teachers (ACT), C/o Homi Bhabha Centre for Science Education (TIFR) Mumbai on 18th March 2021.
19. Participated in National Level one week Faculty Development Programme on “Research Methodology” from 26/04/2021 to 01/05/2021 Organized by Amar Sewa Mandal’s Kamla Nehru Mahavidyala, Nagpur.
20. Participated in the Online AICTE Recognized Faculty Development Programme on “Energy Storage Materials and Devices” from 31/05/2021 to 04/06/2021 (one Week) Conducted by Applied Science Department NITTTR, Chandigarh.
21. Participated in the Online AICTE Recognized Faculty Development Programme On “Nano sensor and Devices” from 02/08/2021 to 06/08/2021 (one Week) Conducted by Applied Science Department NITTTR, Chandigarh.
22. Completed virtual Faculty Development Program on “Additive Manufacturing Processes and its Applications” from 23/08/2021 to 28/08/2021 Organized by Department of Mechanical Engineering, Sri ManakulaVinayagar Engineering College, Puducherry-605107.
23. Completed Online Faculty Development Program on “ Developing Online Courses for SWAYAM” from 14/09/2021 to 28/09/2021 (two Week) Organised by School of Computer Science & IT and Online Program Cell Uttarakhand Open University, Haldwani in collaboration with Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi.
24. Participated in the International Webinar on “Approaches to synthesis element 120 and to probe the predicted island of stability” at The ICFAI University, Himachal Pradesh, India on 25th November 2021.
25. Delivered an oral presentation on “Efficient Green Protocol For The Condensation of Active Methylene Compounds (AMCs) With Aldehydes Using Ultrasonication in a Reusable Ionic Liquid Triethylammonium Acetate (TEAA)” in the International E-Conference on “Sustainable and Futuristic Materials (SFM-2021), organized by International Research Center And Department Of Chemistry, Kalasalingam Academy of Research And Education, Krishnankoli, Department Of Chemistry, J.M. Patel Arts, Commerce & Science College, Bhandara, And Department Of Chemistry, Kamla Nehru Mahavidyala, Nagpur, dated on November 29-30, 2021.
26. Participated in the International Webinar on “Chemistry Education” (IWCE-2021) on 4th- 5th February 2022, organized by Department of Chemistry, Kamla Nehru Mahavidyala, Nagpur, Govt. PG College, Ujjain and Association of Chemistry Teachers (ACT), Mumbai.
27. Participated in the International Webinar on “Empowering Diversity in Science” (GWB-2022) on 16th February 2022, organized by Department of Chemistry, Kamla Nehru Mahavidyala, Nagpur, Association of Chemistry Teachers (ACT), Mumbai, Kalasalingam Academy of Research and Education (KARE), Krishnankoil in collaboration with International Union of Pure and Applied Chemistry (IUPAC), Global Women’s Breakfast-2022.
28. Participated in the Two-days Workshop on “Nano-scale Characterization and Analysis” organized by Department of Applied Science, NITTTR Chandigarh from 10/03/2022 to 11/03/2022.
29. Participated in the Part-II of Nano E-Talks “Nanotechnology in Nanomedicine” organized by Maharaja Agrasen University, Barotiwala, Baddi, Solan, H.P. on 08th April 2022.
30. Completed International online Faculty Development Program on “Research Methodology” from 02/05/2022 to 07/05/2022 Organised by Amar Sewa Mandal’s Kamla Nehru Mahavidyala, Nagpur-440024, Maharashtra.

31. Completed Faculty Development Program on “Research Methodology & Survey Data Analysis” from 14/05/2022 to 16/05/2022 Organised by IQAC-MVN University, NCR, Haryana.

- 4. List of exhibitions/seminars/training courses conducted by the college:

During 2019-20

#### I. Conference Organized

A National level conference on Responsible Research and Innovations in Science and Technology (RRIST 2020) was organized department of Chemistry, Guru Nanak College Budhlada on 29.02.2020 focused on addressing worldwide concern about sustainability and development to meet socio-ecological needs and challenges. The primary objective of RRIST-2020 was to sensitize and stimulate the young mind to bring out the best among new frontiers in science with responsibility, ethics and innovation. Four resource persons were invited from renowned institutes. Research abstracts from all over India are published in abstract book.

#### II. Workshops Organized for Laboratory Staff

S.No	Activities	Duration
1	Some workshop on Lab practices viz. solution preparation, calibration of instruments.	21-8-2019
2	Demonstration of use of Fire Extinguishers & Bio safety measures	22-8-2019
3	Workshop on analytical instruments	29-8-2019
4	Workshop on handling hazardous chemicals	30-8-2019

During 2020-21

#### I. Seminars/Webinars

Sr. No.	Topic	Date	Resource Persons/Organization	Audience	No. of Participants
1	Whats your Talent	19-11-2020	Dr. Nandan Dhir, Quality Control, Head, Reckitt Benckiser	B.Sc-II, III	50
2	Water conservation and municipal waste water treatment	6-02-2021	Dr. Surinder Singh Bhinder, Dr SSBUCET, Panjab University, Chandigarh	B.Sc-II, III	50
3	Chemistry for engineering & biomedical applications	11-02-2021	Dr. Narinder Singh, Department of Chemistry IIT Ropar	B.Sc-I, II, III	70
4	Prospective of Modern Chemistry	16-02-2021	Dr Rati KantaBera, Department of Chemistry, Indian Military Academy Dehra doon	B.Sc-I, II	50
5	Electronic Spectroscopy	19-02-	Dr Varinder Kaur, Department of Chemistry Panjab University	B.Sc-II, III	60

		2021	Chandigarh		
6	Natural Products Chemistry in Daily life	26-02-2021	Dr Inderpal Singh, Department of Natural Product, NIPER Mohali	B.Sc-II, III	60



## II. Workshops Organized for Laboratory Staff

Sr. No.	Activities	Duration
1	Lab practices (Basic Manual) viz. solution preparation, calibration of instruments.	05-10-2020
2	Safety measures (handling hazardous chemicals)	02-11-2020

During 2021-22

### I. Exhibitions

Sr. No.	Activities	Duration
1	Chemistry Model Exhibition	05-03-2022
2	Botany Model Exhibition	11-04-2022
3	Physics Model Exhibition	05-05-2022

### II. Seminars

Sr. No.	Topic	Date	Resource Persons/Organization	Audience	No. of Participants
1	International Day of Person with disability	03-12-2021	Dr Dhruva Kumar Department of Chemistry Guru Nanak College Budhlada	B.Sc-III	70
2	Gender equality	24-01-2022	Bhupinder Kaur Department of Chemistry Guru Nanak College Budhlada	B.Sc-III	112
3	International Day of Happiness	20-03-2022	Dr Dhruva Kumar Department of Chemistry Guru Nanak College Budhlada	B.Sc-II	30
4	World Water Day	22-03-2022	Jaspreet Kaur Department of Physics Guru Nanak College Budhlada	B.Sc-III	45
5	International Sports Day	07-04-2022	Dr Hardeep Singh Department of Physics Guru Nanak College Budhlada	B.Sc-I	63
6	Review of literature using scopus	09-04-2022	Dr Rishi Kumar Department of Physics Guru Nanak College Budhlada	B.Sc-III	30
7	Awareness Programme on Drug Abuse	12-04-2022	Bhupinder Kaur Department of Chemistry Guru Nanak College Budhlada	B.Sc-II	97
8	Research Ethics and Methodology	18-04-2022	Dr Rati KantaBera Department of Chemistry, Indian Military Academy Dehra doon	BSc III MSc	100
9	World Earth Day	23-04-2022	Dr Jatinder Singh Department of Chemistry Guru Nanak College Budhlada	B.Sc-I, III	38

### III. Workshops Organized for Laboratory Staff

Sr. No.	Activities	Duration
1	Hands on training on Instruments	12-10-2021

- 5. Involvement of visiting faculty by department

During 2019-20

Sr. No.	Topic	Date	Resource Persons/Organization	Audience	No. of Participants
1	A Tour to Chemical Industry	5-09-2019	Dr. Gulshan Kumar Jawa, Associate Professor SLIET Longowal	B.Sc-II, III	200
2	Reaction Mechanism (IC)	5-10-2019	Dr. Ashok Kumar Malik, Punjabi University, Patiala	B.Sc-II, III	200
3	Ligand Theory (IC)	5-10-2019	Dr. Jatinder Singh Aulakh, Punjabi University, Patiala.	B.Sc-I, II	200

During 2020-21

N.A due to Covid19

During 2021-22

N.A due to Covid19

- 7. List of New Practical/demonstrations introduced in different departments in last one year:

During 2019-20

Name of Departments	Title / Name of Extra practical	Class	Number of beneficiary
Chemistry	Calibration of Instrument	BScIII	100
Chemistry	Separation of components by chromatography	BScII	100
Chemistry	Identification of radicals	B.ScI	100
Chemistry	Analysis of Vitamin C	B.Sc II	100
Chemistry	Analysis of Saline Water	B.Sc II	100
Chemistry	To determine the strength of metal ions using colorimetrically	B.ScIII	100
Chemistry	To study the adsorption by charcoal	B.ScIII	100

During 2020-21

Name of Departments	Title / Name of Extra practical	Class	Number of beneficiary
Chemistry	Instruments handling	BSc I	100
Chemistry	Detection of various radicals	BScII	100
Chemistry	Determination of pH of mixed solutions	B.Sc II	100

Chemistry	Comparison of strength of colored	B.ScIII	100
Chemistry	solutions using colorimetrically	B.ScIII	100

During 2021-22

Name of Departments	Title / Name of Extra practical	Class	Number of beneficiary
Chemistry	Preparation of primary standard of (N/10 Oxalic acid) for standardization of secondary solution.	BSc I	100
Chemistry	Study of effect of dilution on viscosity (2.5%, 5%, 10% solution of Glycerol)	BSc I	80
Chemistry	Determination of percentage of Ca <sup>2+</sup> ions from a sample of chalk by back titration method.	BSc II	100
Chemistry	Conductometric titration of weak acid (Acetic acid) with strong base (NaOH) and determination of ionization constants of weak acid	BSc III	15
Chemistry	Synthesis of chalcone using microwave Synthesis of imine using microwave	BSc III	15

- 8. Details of equipment purchased in each department from DBT grant.

During 2019-20

S. No.	Name of Equipment	Number	Date of Purchase /installation of equipment	Remark
1	MAGNETIC STIRRERS WITH HOT PLATE REMI	2	28.08.2019	Equipments Checked, Verified and Installed
2	HOT AIR OVEN 18"X18"X18" S.S NU-101/D	1	28.08.2019	
3	GLASS DIST. APP.DOUBLE GLASS 5LTR JSGW425/10	1	28.08.2019	
4	ROTARY SHAKER 25 FLASLKS NAVYUG	1	28.08.2019	
5	MICROWAVE OVEN 25 LTR MECH-1 IFB	1	28.08.2019	
6	ABBE REFRACTROMETER NAVYUG	2	28.08.2019	
7	ICE CUESER	1	28.08.2019	
8	MEALTING POINT APPARATUS NU-138D	2	28.08.2019	
9	THIN LAYER CHROMATOGRAPHY APPARATUS PT-11	5	28.09.2019	Equipments Checked, Verified and Installed
10	COLORIMETER MODEL 112 SYSTRONICS	6	28.09.2019	
11	SYSTRONICS CONDUCTIVITY METER 306 WITH CELLS	10	28.09.2019	
12	PH METER 361 SYSTRONICS	9	28.09.2019	
13	SYSTRONICS 318	5	28.09.2019	

	POTENTOMETER			
14	VACCUM PUMP	2	28.09.2019	
15	POLARIMETER RESEARCH	3	28.09.2019	
16	FREIGHT PACKING & FORWARDING CHARGES	1	28.09.2019	

- 9. Details of books & journals subscribed from DBT grant

Sr. No	Title of Book	Number of Copies	Author
1	Polymer Science	2	V.K, Ahluwalia
2	A Guide book to Mechanism inorganic chemistry	2	Sykes,P
3	Vogels T.B of Practical Organic Chemistry	3	Furniss
4	Introductory Quantum Chemistry	3	Chaucka
5	Basic Inorganic Chemistry	3	Cotton,F
6	Polymer Science Technology	3	Ghosh, P
7	Organic Chemistry -I	3	Finar,I
8	Organic Chemistry -II	3	Finar,I
9	Environmental Chemistry	2	Kaur.H
10	Advanced in Inorganic Chemistry	2	Aggarwal
11	Environmental Chemistry	1	AK Dee
12	Solid state Chemistry	1	Chakrabarty
13	A Guide Book of Mechanism Inorganic Chemistry	1	Sykes
14	Chemical Application of Group Theory	1	Cotton,F
15	Principal of Organic Synthesis	5	Normah
16	Advanced Physical Chemistry	3	Gurta
17	Introduction to Electrodynamics	5	Griffiths
18	Structure & Mechanism Inorganic Chemistry	2	Ingold,Ck
19	Principals of Polymer Science	2	Bahadur
20	Spectroscopic Methods in Organic Chemistry	2	Williams
21	Statistical Thermodynamics	2	Gupta
22	Polymer Science	1	Gowariker
23	Atomic & Molecular Spectroscopy	2	Gupta
24	Introduction to Nano Science	1	Hornyak
25	Introduction to The Chemistry of Hetrocyclic Compounds	2	Acheson
26	Organic Chemistry	1	Solomen
27	Introduction to Atomic & Molecular Spectroscopy	2	Jain
28	Green Chemistry Atb	2	Ahluwalia
29	Elements of Physical Chemistry	2	Atkins
30	Physical Chemistry	1	Atkins
31	Inorganic Chemistry	2	Weller
32	Organic Reactions	2	Kalsi
33	Fundamental of Electroanalytical Chemistry	1	Monk
34	Polymer Chemistry	1	Gruie
35	Synthesis of Natural Products Vol. I	1	Pavel
36	Synthesis of Natural Products Vol . II	1	Pavel
37	Inorganic Chemistry	1	Wulfsberg

38	Coordination Chemistry	3	A. Kumar
39	Solid State Chemistry & Its Application	1	West
40	Physical Method for Chemist	1	Daago

- 10. Qualitative improvement due to DBT Support
  1. The DBT Star College Scheme has enabled the departments to procure new equipment in multiple numbers as a result of which the students are able to handle the instruments individually which has increased their confidence level.
  2. The star college scheme has enabled the departments to purchase books and enrich the departmental library to which the students have an easy access.
  3. Sufficient availability of chemicals and glassware has facilitated practical learning for students
  4. It was possible to organize an interdisciplinary National level conference RRIST-2020 in our college with the help of DBT funds which has enabled undergraduate students of our department to participate in the conference.
  5. The scheme enabled our college to invite prominent guest speakers which provided a broad academic exposure for both students and teachers
  6. The funds provided by DBT has given the students of our college an opportunity to perform minor research work due to availability of large number of new sophisticated practical instruments. Thank you DBT
  
- 11. Problems faced, if any, in implantation of the programme and utilization of DBT grant (in two-three lines) - Nil