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## SHARDA SCHOOL OF BASIC SCIENCES & RESEARCH



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THE  
**#WORLD**  
IS HERE. WHERE ARE YOU?

CREATING  
**ACHIEVERS**  
IN BASIC SCIENCES  
& RESEARCH



**FIST LAB**  
Sponsored by  
DST



# 25 YEARS OF AN UNPRECEDENTED JOURNEY OF EXCELLENCE.

Sharda Group is a multi-million dollar conglomerate with operations in India & Uzbekistan and plans to expand further to the other CIS countries and Africa. The Group is on a vertical tangent of growth spearheaded by Mr. PK Gupta who lives by the treatise - It takes a vision to change the game.

**1995**  
SHARDA  
GROUP

**1996**  
SHARDA GROUP  
OF INSTITUTIONS  
(SGI)

**2005**  
RISHAV  
SHELTERS

**2006**  
SHARDA  
HOSPITAL

**2009**  
SHARDA  
UNIVERSITY

**2013**  
SHARDA  
LAUNCHPAD

**2016**  
SHARDA  
TECH

**2019**  
SHARDA  
UNIVERSITY  
UZBEKISTAN

**2020**  
MAXWELL  
BIOTECH

**2021**  
SHARDA  
WORLD SCHOOL

**HINDUSTAN**  
CAMPUS

**ANAND**  
CAMPUS

**SHARDA**  
UNIVERSITY  
Beyond Boundaries

**SHARDA**  
UNIVERSITY  
UZBEKISTAN

**SHARDA**  
HOSPITAL

**SHARDA**  
TECH

**SHARDA**  
LAUNCHPAD

**RSPL**

**SHARDA**  
WORLD SCHOOL

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# SHARDA UNIVERSITY

*Experience the joy of being a part of  
India's truly global university*

Sharda University has over the years become one of the leading centres of education, research and innovation in Delhi NCR region. Established through an act of State Legislature of Uttar Pradesh (14 of 2009), Sharda University offers over 130+ UGC recognised programme/plans (including diploma) in various disciplines. It's a part of the renowned Sharda Group with operations in areas like Education, Healthcare, Infrastructure and IT.

Being the only global university in India that has seen students from 95+ countries experience world-class facilities, and having 270+ global academic partnerships, Sharda University offers a truly international learning environment & produces achievers across the globe. That's why it says,

**"The World is Here, Where are You?"**



*Continuing its legacy as a world-class institution, Sharda University has earned Membership status with ASIC, UK for its commendable areas of operation.*



*Engineering Programmes  
Accredited by NBA*



*Ranked 23 across India in the  
Green Institutional Rankings 2022.*



**RATED AMONG 101-150 RANK  
BAND IN UNIVERSITY CATEGORY**



**PROUD TO BE PLACED IN  
EXCELLENT BAND**



ARIIA RANKING 2021



**SHARDA-IIC**  
is listed among top 10 Universities  
FOR THE NORTH REGION (NRO)  
WITH 4-STAR RATING FOR THE YEAR 2020-21



**SHARDA IS  
RANKED 5<sup>TH</sup>  
IN INDIA**

in the number of patents granted

As per India Today issue dated 10th August, 2020







## SHARDA SCHOOL OF BASIC SCIENCES & RESEARCH

Established with the aim of developing top scientists, the Sharda School of Basic Sciences & Research has evolved into one of the leading Schools for interdisciplinary science in Delhi-NCR. The School is committed to providing a transformative learning experience in a collaborative and diverse environment. The School's advanced laboratories; and focus on research and innovation gives students a feel of practical and immersive education.

### KEY FACTS & FIGURES

- » One of the leading Schools for Basic Science & Research in Delhi NCR.
- » All faculties are Ph.D. holders from reputed institutions.
- » Well equipped laboratories and research facilities.
- » Research in areas like conducting polymers and device applications, thin film deposition, atmospheric aerosols, glaciology, remote sensing technology, nano-physics, Solar cells, Dye sensitized solar cells, Ferromagnetic materials, Super capacitors etc.
- » Many research projects sponsored by various agencies like DST, DRDO, MSME, MOES, ISRO, USAID.
- » Guidance for competitive examinations such as NET/GATE. A number of students have cleared such exams and have got admission in IITs/IISC/NITs.
- » Separate library, laboratories, well-equipped classrooms, ICT enabled and workshops for hands-on training of the students.
- » Alumni pursuing higher studies in Internationally acclaimed institutions such as Penn State University, University of Massachusetts, Sate University of New York among others.

- » **Interdisciplinary research centre "Centre for Advanced Research in Applied Mathematics and Physics" established in the School and funded by an international company - ISHAAT SALMAN AL-TERAIS CONTRACTING CO. RIYADH, SAUDI ARABIA (KSA).**
- » **Glacio-hydro metrological process at Naradu Glacier, Fabrication of Soil & Photo-electrochemical solar cells, origin & development of filters, etc. are few of the current projects running in the campus.**

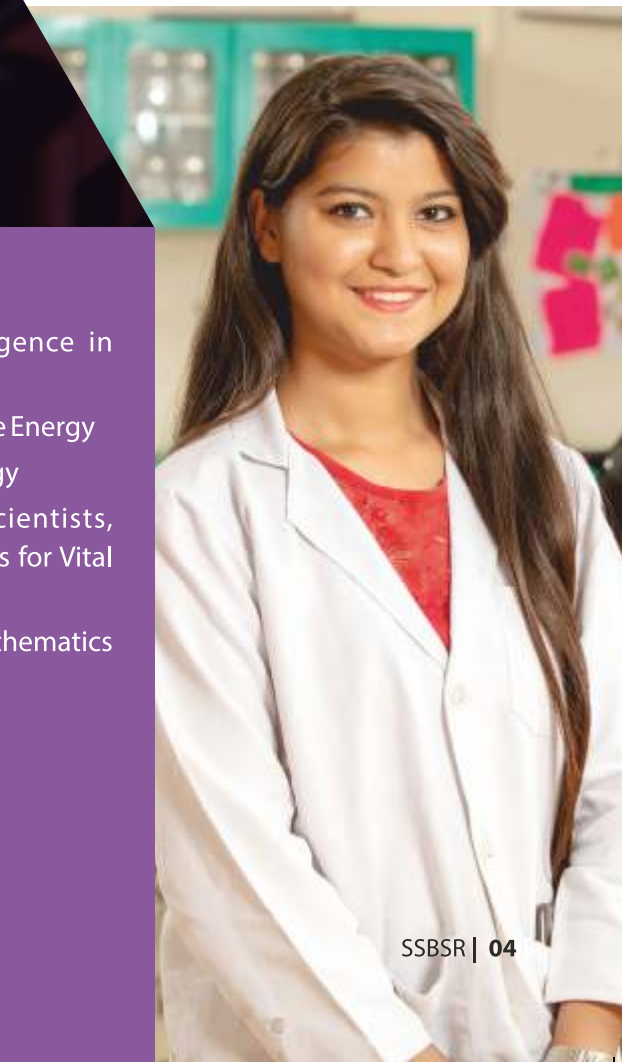


### Placement Partners



### CENTRE OF EXCELLENCE

- » Centre of Excellence in Artificial Intelligence in Medicine, Imaging & Forensics
- » Centre of Excellence in Solar Cell & Renewable Energy
- » Centre of Excellence in Virology & Immunology
- » Bio-POSITIVE (Biological-Platform of Scientists, Innovators, and Technologists for Inventions for Vital Environment) Lab.
- » Centre for Advanced Research in Applied Mathematics & Physics
- » Central Instrumentation Facility (CIF)





## FACULTY THAT'S TRULY INSPIRING

School of Basic Sciences & Research faculty comprises of Emeritus Professors, Professors and others who have been accorded prestigious national and international awards and fellowships in recognition of their outstanding scientific achievements. The School also regularly organises guest lectures to give new insights into new approaches to teaching.



*"School of Basic Sciences & Research acts as a platform where the intellectual and creative attributes of future scientists are developed and enhanced. The School emphasizes upon the overall development of students so as to enable them to become effective leaders of tomorrow."*

**Prof. (Dr.) Shyamal Kumar Banerjee**

Dean, SBSR and Professor (Mathematics)  
Ph.D.

Prof.(Dr.)Shyamal Kumar Banerjee has done from Ph.D from BHU. Thereafter, Dr. Banerjee joined Inter University Centre for Astronomy and Astrophysics, Pune as a Post-Doctoral Fellow under the Homi Bhabha Professors Fellowship with Padma Vibhushan Prof. Jayant Vishnu Narlikar, the renowned astrophysicist and the Founder Director of IUCAA. He was awarded UGC sponsored Visiting Associate at IUCAA, Pune by the UGC in the year 2000 and he has been still continuing as the UGC sponsored visiting associate at IUCAA, Pune. Prof. Banerjee has done "Specialization Course on Virtual Teacher" from California University, Irvine.

Prof. Banerjee in his long professional career, has worked in various capacities as Prof. & Dean (Academic) in School of Engineering and Technology, Amity University; Senior Professor and Associate Dean (Academic Planning & Monitoring) at school level in UPES, Dehradun. Member, UPES Board of Management, Chairman, Library Steering Committee, Chairman, Time Table Committee, Chairman Examination Disciplinary Committee.

- 34 years of Research and Teaching Experience
- 20+ Research Publications and author of 6 books
- Received Post-Doctoral Fellowship under the highly prestigious Homi Bhabha Professor's Fellowship, by BARC Mumbai



**Prof. (Dr.) Seyed E. Hasnain (Distinguished Professor, Dept. of Life Sciences) Ph.D.**  
Prof. Hasnain is a Padma Shri awardee and recipient of Germany's Highest Civilian Award, equivalent of India's Bharat Ratna. He has a total of 40+ years of experience and has mentored 150 Ph.D/MD/Post-Doctoral students, four of whom received the prestigious INSA Young Scientist Medal.



**Dr. Anupam Agarwal (Associate Professor & HoD Dept. of Chemistry & Biochemistry) M.Sc, Ph.D. (Chemistry)**  
14 years of Research and Teaching Experience, 15+ Research Publications and author of 2 books, Received Post-Doctoral Fellowship from University of Western Ontario, Canada.



**Prof. (Dr.) Prabir K Paul (HoD, Dept. of Life Sciences) M.Sc., Ph.D.**  
28 Years of teaching and research experience . M.Sc and Ph.D from Department of Botany , University of Delhi . Published more than 50 research papers in international journals. Reviewer in six international journals. Research area is plant-microbe interaction.



**Prof. (Dr.) U.V. Balakrishnan (Dept. of Mathematics) M.Sc, Ph.D.**  
Gold Medallist for M.Sc. (Mathematics), Calicut University in 1976. Ph.D. (Mathematics-Theory of Numbers) 1985, from TIFR. Bombay. 40 Years in Academic Field (Research & Teaching) (School of Mathematics, TIFR from 1976-1995). He has total more than 40 years of experience. His research area is Number theory and Cryptography.



**Prof. (Dr.) R. C. Singh (CoE & Dept. of Physics) M.Sc, Ph.D.**  
More than 32 years of experience. Published more than 30 research papers. Conferred Bharat Vidya Shiromani Award, Pride of International Education Excellence Award during Indo-Nepal Friendship Summit at Kathmandu and Albert Nelson Marquis Lifetime Achievement Award 2017.



**Prof. (Dr.) Mohit Sahni (Associate DSW, Dept. of Physics) M.Sc (IIT Roorkee), Ph.D (MNNIT, Allahabad)**  
16 years of teaching and research experience. Published 40 research papers in National and International journals. Presented research papers in India and abroad. Reviewer of 3 international journals. Research interests in ferromagnetic and ferroelectric.



**Prof. (Dr.) S. Packirisamy (Dept. of Chemistry & Biochemistry) M.Sc, Ph.D.**  
Ph.D from IIT Kharagpur and 39 years of research experience. Ex-Deputy Director, VSSC/ISRO. Visiting Scientist, Michigan Molecular Institute, USA, Research Associate, Case Western Reserve University, USA, UNESCO Fellow, Tokyo Institute of Technology, Japan.



**Prof. (Dr.) Geeta Durga (Dept. of Chemistry & Biochemistry) M.Sc, NET (UGC-CSIR), Ph.D.**  
20 years of teaching and research experience. Published 3 book chapters and several research papers in reputed international Journals. Attended several short term courses, national/international conferences, FDPs, etc. The research area include optoelectronic materials, biomaterials & fibre reinforced composites.



**Prof. (Dr.) Tanmoy Chakraborty (Dept. of Chemistry & Biochemistry) Ph.D.**  
Published more than 50 research papers in journals of international repute & 8 Books and several book chapters. Research interest includes Theoretical and Computational Chemistry, Conceptual Density Functional Theory, QSAR/ QSPR Studies, Material Science.



**Prof. (Dr.) Pramod K. Singh (HoD, Dept. of Physics & Environmental Science) M.Sc, Ph.D.**  
20 years of teaching experience. Ph.D. (BHU, Varanasi) and Post-Doctorate from South Korea, Norway and Turkey. Reviewer of more than 30 International research journals. Published more than 150 research papers in international journals. Working on one project on Material Science (DRDO), Govt. of India.



**Dr. R.K. Pavan Kumar Pannala (Associate Professor & HoD, Dept. of Mathematics) M.Sc., CSIRNET, Ph.D.**  
M.Sc. in Mathematics from IIT Kharagpur, CSIR NET qualified and Ph.D. from UPES, Dehradun. His specialization area is semi-analytical solution of Financial Mathematical PDE models. Now presently working on data envelopment analysis. He has more than 13 years of teaching experience.



**Prof. (Dr.) Khursheed Alam (Dept. of Mathematics) M.Sc, Ph.D.**  
Obtained M.Sc. and Ph.D degree in Mathematics from Jamia Millia Islamia. Associated with Sharda Group of Institutions (SGI), since July 2006. He has more than 12 years of teaching experience and research. His research area is Fractals using Wavelet, Image Processing, Non- Linear Dynamical Systems and Chaos Theory.



**Prof. (Dr.) Anoop Mukhopadhyay (Dept. of Physics) M.Sc, Ph.D., Post Doc.**  
Ph. D. Jadavpur University, Post Doc at Australia and Germany. He has more than 185 Publications in SCOPUS/SCI Journals (Citations: 4424, h-index:35, i-10 index:113), handled Projects worth of about 90 Crore INR and guided 10 Ph. D. Students, 3 Post-doctoral students in diverse fields in physics of materials e.g., structural, functional and biomaterials.



**Prof. (Dr.) Ashok Kumar (Dept. of Physics) M.Sc, Ph.D.**  
M.Sc. from IIT Kanpur and Ph.D. from Johns Hopkins University. Research experience at Massachusetts General Hospital, Harvard Medical School and at Stanford University. Heads the Sharda University Centre of Excellence for Artificial Intelligence in Medicine, Imaging & Forensics.



**Prof. (Dr.) N.B. Singh (Dept. of Chemistry & Biochemistry) M.Sc, Ph.D.**  
Dr. Singh was an Alexander von Humboldt fellow and has worked at TH Aachen, University of Clausthal, University Kassel and TU Dortmund University, Germany. His Google scholar citations are 5500, h index 34 and iTen 127. He has over 50 years of teaching and research experience.



**Prof. (Dr.) Ajay Kumar Tyagi (Dept. of Chemistry & Biochemistry) M.Phil, Ph.D.**  
35 years of industrial research experience exclusively in the field of organic/polymer synthesis, modification, application, processing while designing and developing new materials of strategic applications. Published 39 research papers, 2 Book Chapters and 8 patents.



**Prof. (Dr.) Vinay K. Verma (Dept. of Chemistry & Biochemistry) M.Sc, Ph.D.**  
16 years of research and teaching experience. Published a number of research papers and book chapters in the Journals of International repute. Current research interest includes conceptual Density Functional theoretical calculations and experimental study.



**Prof. (Dr.) Vinod Joshi (Dept. of Life Sciences) M.Sc, Ph.D.**  
42 years of Research, Administrative, Training and Teaching experience in Dengue, H1N1, Malaria, Breast Cancer, Hepatitis C virus, Dracunculiasis and Cutaneous Leishmaniasis. 50+ Publications in Journals of National & International repute, 1 patent and 8 book chapters. Received many grants from National & International funding agencies in DMRC, Jodhpur.





**Dr. Sangeeta Gupta (Associate Professor, Dept. of Mathematics)**  
**M.Sc., Ph.D.**  
 Obtained M.Sc. and Ph.D. Degree from Dr. B.R. Ambedkar University Agra. More than 15 years experience of teaching Mathematics at graduate and post graduate level. Her research area is Operations research and Optimization techniques.



**Dr. Munendra Singh (Associate Professor, Dept. of Physics)**  
**M.Sc., M.Phil, Ph.D.**  
 More than 16 years of teaching and research experience. Published several research papers in reputed journals and presented several research papers in international conferences. Areas of interests are Cosmic Rays and Space Physics, Solar influence on Earth's weather, Signal Analysis and Image Processing and Radio- medical Physics.



**Dr. Meenal Gupta (Associate Professor, Dept. of Physics)**  
**D.Phil, Post Doctorate from Raman Research Institute, Bangalore**  
 14 years' teaching and research experience, Published 23 research papers in international journal, 5 book chapters. Lifetime membership of International Liquid Crystal Society. Editor of SCIREA journal of Materials.



**Dr. Annette Angel (Associate Professor, Dept. of Life Sciences)**  
**M.Sc., Ph.D.**  
 11 years of Research, Training, Teaching and Administrative experience. Expertise in the field of Dengue, H1N1 Viruses and Zoonotic diseases. Published 12 papers, 6 book chapters and 106 gene sequences of Dengue & H1N1 viruses. Member of World Society for Virology.



**Dr. Soumi Sadhu (Associate Professor, Dept. of Life Sciences)**  
**M.Sc, Ph.D.**  
 10+ years of Research, Teaching and Administrative exp.; published papers in high impact factor journals; worked as Woman Scientist at ICMR. Member of Immunology Society and Flow Cytometry Society. Expertise in Immunology of infectious diseases, cancer and pediatric immunodeficiency diseases.



**Dr. Anshu Kumar (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, Ph.D.**  
 M.Sc. in Mathematics from CCS University, Meerut & qualified CSIR-NET and obtained his Ph.D. degree from NIT, Allahabad in 2017.



**Dr. Alpna Mishra (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, Ph.D.**  
 Done B.Sc. and M.Sc. in Mathematics from Dr. B.R. Ambedkar University, Agra and obtained her Ph.D. degree in the field of "Mathematical Modelling" with a scholarship from DST. Total teaching experience of more than 9 years.



**Dr. Prem Shankar Jha (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, Ph.D.**  
 Ph.D. in Statistics in the Department of Statistics, Banaras Hindu University, Varanasi in 2017 on the topic "Estimation of Population Parameter's Using Auxiliary Variable in Finite Population in the Presence of Non-Response".



**Dr. Anu Sirohi (Asst. Professor, Dept. of Mathematics)**  
**M.Sc. (Statistics), M.Phil, UGC-NET-JRF, Ph.D.**  
 She has been completed her Ph.D. in Statistics from Banasthali Vidyapith Jaipur, Rajasthan, India. Ph.D. thesis is entitled as "Survival Models for Mortality Experience of Infant and Child Under-five: An Evidence from India". Her research interest is Survival models, Demography, Regression and Multicollinearity.



**Dr. Varun Mohan (Associate Professor, Dept. of Mathematics)**  
**M.Sc, MBA (HR), Ph.D (Mathematics)**  
 Ph.D. from Dr. Bhim Rao Ambedkar University, Agra 2016. His main research field is in Mathematical study of fluid flow. He has many publications in UGC approved national journals, and conference papers to his credit. He has attended many FDPs, Conferences, seminars and workshops.



**Dr. S. Shankara Narayanan, (Associate Professor, Dept. of Physics)**  
**Ph.D.**  
 Doctorate on 'Ultrafast spectroscopy and biocompatibility of nanocrystals from S N Bose National Centre for Basic Sciences. Awarded JRF and SRF from CSIR, India. Post doctoral research experience in the study of anisotropic nanocrystals such as gold nanorods and gold nanoprisms and nanoplasmonics.



**Dr. Abhilasha S Mathuriya (Associate Professor, Dept. of Life Sciences)**  
**M.Tech., Ph.D.**  
 16 years of research, teaching and administration experience. BRICS Young Scientist Alumni (2017). 26 high impact factor paper publications, 18 books/book chapters, filed 18 patents, in which 1 is granted. Handling nationally and internationally funded research projects.



**Dr. Bennet Angel (Associate Professor, Dept. of Life Sciences)**  
**M.Sc., Ph.D.**  
 15 years of Research, Training, Teaching and Administrative experience. Published 18 papers, 6 book chapters and submitted more than 100 gene sequences in the NCBI database. Member of Indian Virology Society & World Virology Society. Reviewer in Journals and funding agencies.



**Dr. Mohd. Shahid Baboo (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, Ph.D.**  
 He has joined Sharda group of institutions in 2007. He did M.Sc in Mathematics from Jamia Millia Islamia, New Delhi. He qualified CSIR-NET. Recently, he has been awarded Ph. D degree in Mathematics from Jamia Millia Islamia.



**Dr. Sweta Srivastav (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, Ph.D.**  
 She has 9 years of teaching experience and taught many under-graduate and post graduate courses of Mathematics including mathematical software. She has published 13 international and 4 national research paper. Presently, she is leading a research group in the field of Mathematical modeling and Graph theory in advance level.



**Dr. Nidhi Sahni (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, Ph.D.**  
 M.Sc. and Ph.D. in Mathematics from DDU Gorakhpur University, Gorakhpur. Her area of research is special functions and she worked as a junior research fellow in a major research project during her Ph.D.



**Dr. Santosh Kumar (Asst. Professor, Dept. of Mathematics)**  
**M.Sc, CSIR NET-JRF, GATE, Ph.D.**  
 Ph.D. degree from Aligarh Muslim University, Aligarh in 2016. He has published many research papers in reputed Journal indexed in Scopus and have attended many conferences and workshops.



**Dr. Surya Kant Pal (Assistant Professor, Dept. of Mathematics)**  
**M.Sc, M.Phil, Ph.D.**  
 M.Phil. & Ph.D. in Statistics from Vikram University, Ujjain. He has 6+ years teaching and research experience. He is an expert of Statistics, Regression Analysis, Predictive Analytics and Multivariate Analysis. He has published 70+ research papers in Journals of National & International repute.



**Dr. Neha Bhardwaj (Asst. Professor, Dept. of Mathematics)**  
**M.Sc., Ph.D.**  
 Ph.D. degree in Mathematics from Delhi Technological University. MSc Applied Mathematics from IIT Roorkee. Area of research is Approximation Theory. More than 13 years of teaching and research experience. Published 16 research papers in reputed national/international journals. Co-author of one book on Engineering Mathematics.



**Dr. Krishna Kumar Pandey (Asst. Professor, Dept. of Physics)**  
**M.Sc, Ph.D.**  
 18 years of teaching experience. Published several Research Papers in National and International Journals. Research interests are Acoustics and Ultrasonics, Ultrasonic Characterizations of different Materials, Study of molecular interactions in different liquid mixtures, Solid Polymer Electrolytes and its applications in energy storage devices.



**Dr. Sunil Chauhan (Asst. Professor, Dept. of Physics)**  
**M.Sc, M.Tech, Ph.D.**  
 Published 25 research papers in International Journal of repute and has expertise in Multiferroic Materials. His publications have received more than 530 citations and hindex is 12.



**Dr. Pargin Bangotra (Asst. Professor, Dept. of Physics)**  
**M.Sc, Ph.D.**  
 M.Sc. (Physics) and Ph.D. (Nuclear and Radiation Physics) from Dr. B.R. Ambedkar National Institute of Technology, Jalandhar. Senior Research Fellow under research project sponsored by the Department of Atomic Energy and Board of Research in Nuclear Sciences with collaboration of Bhabha Atomic Research Centre (Mumbai).



**Dr. Noopur Srivastava (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, Ph.D.**  
 M.Sc, Ph.D. (CSIR), Lko), M.Sc., Lucknow University), CSIR -NET. More than 13 years experience. Expertise in design and synthesis of antitubercular molecules, lead identification and optimization of new chemical entities (NCEs) as antitubercular agents.



**Dr. Vivek Srivastava (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, Ph.D.**  
 4 years of teaching experience in Biochemistry, 4 years of Postdoctoral research in areas of Cancer biology, Epigenetics, Post-translation modifications of proteins, DNA damage response & DNA repair mechanism, 10 research papers in peer reviewed International journals with high impact factor.



**Dr. Richa Tomar (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, NET-JRF, Ph.D**  
 Ph.D. from Delhi University in Materials Science having 14 research publications in SCOPUS/SCI indexed reputed journals, one international patent and 4 published book chapters. Research interest includes synthesis of nanomaterials and nanocomposites.



**Dr. Preeti Jain (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, M.Tech, NET-JRF, GATE qualified, Ph.D.**  
 Ph.D. in Coordination Chemistry from Gautam Buddha University and M.Tech. in Chemical Analysis from IIT Delhi. Her research interest involves the "Development of novel Chemotherapeutics and their theoretical and experimental investigations".



**Dr. Shashank Sharma (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**Ph.D.**  
 12 years of teaching and research experience, published nearly 30 research papers in national & international journals, 01 book, 05 book chapters, articles in reputed newspapers. Research area includes electrochemistry & environmental chemistry.



**Dr. Sandhya Gupta (Asst. Professor, Dept. of Physics)**  
**M.Tech (IIT Delhi), M.Phil (Gold Medalist), Ph.D.**  
 20 years of teaching and research experience. Published book chapter and research papers in reputed international journals. Research interests in polymer electrolytes, Energy storage devices and Optical Fiber Sensors.



**Dr. Venus Dillu (Asst. Professor, Dept. of Physics)**  
**M.Tech, Ph.D.**  
 Ph.D. (Delhi Technological University), M.Tech. (NIT Jamshedpur). Published 17 papers in various international journals and international conference proceedings. Filed 1 patent and has received several awards from the Optical Society for paper presentations.



**Dr. Preeti Rani (Asst. Professor, Dept. of Physics)**  
**M.Sc, Ph.D.**  
 Published 6 research papers in International Journals of repute. Expertise in photonic crystal and fibers. Member of SPIE and OSA.



**Dr. Mridula Guin (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, Ph.D.**  
 Obtained her M.Sc. from Burdwan University and Ph.D. from IIT Bombay. She has more than 6 years of teaching experience, published 14 research papers in journals of international repute. Her research area is focused on computational studies on weak intermolecular interactions and energy systems.



**Dr. Sonia Khanna (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, Ph.D (CSIR-JRF/NET) GATE**  
 Ph.D from Guru Nanak Dev University. More than 13 years of teaching experience. Published 1 copyright, 2 patents, 17 articles and 4 book chapter in international journals. Expertise in synthesis, characterization and biological investigation of metal complexes and inorganic-organic hybrids.



**Mr. Paratpar Sarkar (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, CSIR-UGC NET (Life Sciences), Ph. D (Pursuing)**  
 Experience of 14+ years in teaching membrane biochemistry, enzymology and enzyme technology, genetics, immunology, biomolecules, metabolism of carbohydrates and lipids. Research areas are silico studies on natural product and their nano-conjugates for the application on cancer cell lines.



**Dr. Anindita De (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**M.Sc, Ph.D.**  
 5 years of teaching experience. Research interest: Synthesis, characterization and uses of transition metal complexes with novel ligands. Ph.D. from IIT Kanpur and M.Sc. from University of Burdwan.



**Dr. Ashish Kumar Chalana (Asst. Professor, Dept. of Chemistry & Biochemistry)**  
**Ph.D**  
 Integrated BS-MS from IISER-TVM (Inspire fellow), Ph.D from Shiv Nadar University, NET (UGC-CSIR), Post-doctoral fellow from IIT Delhi. His research interest includes synthesis of novel small molecules, nanoparticles which has application towards heavy metal detoxification & detection of various metal ions.



**Dr. Amit K. Das (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc., Ph.D**  
 10+ years of experience in academic and industrial R&D. Expertise in extraction & analytical sciences of bioactive molecules, developing and commercializing value added products and Quality Assurance. He has publications in form of research papers and book chapters to his credit with international publishers of repute.





**Dr. Jatin Kumar (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
Research areas include genetic diversity assessment for crop conservation and sex determination in plants employing various molecular markers. He has 11 research publications in international journals and submitted 2 novel sex-specific sequences to NCBI gene bank.



**Dr. Piyush Kumar Gupta (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
Works in the area of nanomaterials, drug delivery and tissue engineering. Inventor of 2 international and 2 national patents and published 16 research papers and 3 review articles in peer-reviewed international journals. Editorial member of journal of human physiology.



**Dr. Savita Rani (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
Her present area of interest includes healthy foods and cereal science. She has authored and co-authored several articles in reputed journals and also works as reviewer for various journals.



**Dr. Soumya Pandit (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
Post-PhD worked as PBC fellow at the Zuckerberg Institute for Water Research (ZIWR), Ben-Gurion University of the Negev, Israel. Recipient of North West University (South Africa) Post-doctoral fellowship. Published 3 Indian patents.



**Dr. Vineeta Yadav (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc., Ph.D.**  
Research work on whole genome sequencing, molecular characterization, and in-silico analysis of whole genome. She has published research articles in reputed journals. She has more than 10 years of teaching experience.



**Dr. Mohini Singh (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc., Ph.D.**  
M.Sc. Genomics from Madurai Kamaraj University (DBT-IPLS), Ph.D. from Department of Microbiology and Cell Biology, Indian Institute of Science, Bangalore. Qualified CSIR-UGC NET. Has expertise in protein purification and RNA-protein interaction.



**Dr. Smita Jain (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc., CSIR-NET JRF-SRF, Ph.D.**  
Ph.D in Biochemistry from Delhi University. Her area of specialization is exploring the adverse toxicity of xenobiotics across the highly specific and impermeable blood-brain barrier, its bioaccumulation impacting the gene-protein interactions in different human organs and fluids.



**Dr. Suman (Asst. Professor, Dept. of Environmental Sciences)**  
**M.Sc, Ph.D.**  
Ph.D. Indian School of Mines. (IIT-Dhanbad), M.Sc. (BHU, Varanasi). 11 years of experience in Teaching and Industry. Published several research papers in journals of International repute.



**Dr. Sushmita Banarjee (Asst. Professor, Dept. of Environmental Sciences)**  
**Ph.D.**  
M.Sc. from the University of Allahabad. D.Phil. research on synthesis of nanoparticles and its application in water purification. Postdoctoral research on synthesis and application of bimetallic nanoparticles as a potential catalyst for wastewater treatment and biodiesel production.



**Dr. Kanu Priya (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
More than five years of teaching and research experience. Major specialization is in pharmacology and toxicology, cytotoxicity, and molecular biology. Several research articles have been published in renowned journals.



**Dr. Sanjay Kumar (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc, Ph.D.**  
Worked as Scientist in IVF laboratory, Al Ain, UAE, established IVF in animal model. Worked as PDF Fellow at Mayo Clinic, Rochester, US. Expertise in clinical biomarker and assay development and cell-signaling with particular interest in cancers and kidney disease. Experience of six and half years post Ph.D.



**Dr. Sharad Agrawal (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc, Ph.D.**  
Completed his M.Sc. and Ph.D. in Biotechnology. Has expertise in enzyme production via SSF/SmF, protein purification, enzyme characterization etc.



**Dr. Sujata Pandit Sharma (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
Experience of 11+ years in the field of Food Safety, Food Science/Food Technology and Nutrition. Served as Research Head for 7 years in R&D industry. Handled more than 12 projects of National and International agencies.



**Dr. Asrar Ahmad Malik (Asst. Professor, Dept. of Life Sciences)**  
**Ph.D.**  
Masters from the University of Glasgow, United Kingdom. Post-Doctoral fellowship from University of Virginia, USA. Fellowship award from the Government of Catalunya (Spain) to pursue Ph.D from Universitat Autònoma de Barcelona, Spain.



**Dr. Subhasree Ray (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc., Ph.D.**  
Ph.D. from CSIR-IGIB. 2 years of postdoctoral research experience from University of Seoul and Yeungnam University, South Korea. Published a total of 13 research publications (Scopus/Sci/Peer reviewed). Her research interest includes production of biopolymers and biohydrogen from waste biomass, and fungal toxin analysis from fermented food.



**Dr. Nupur (Asst. Professor, Dept. of Life Sciences)**  
**M.Sc., CSIR-NET, Ph.D., Post Doctoral Fellow**  
Ph.D from CSIR Institute of Microbial Technology (IMTech Chandigarh). She was a Postdoctoral fellow in Czech Republic for 3.8 years. Her specialization is in culturing anoxygenic phototrophic bacteria and characterizing its chemotaxonomic, phenotypic, and genotypic attributes.



**Dr. Shruti Singh (Asst. Professor, Dept. of Environmental Sciences)**  
**Ph.D.**  
Ph.D. in Glaciology. 3 research projects on Himalayan glaciers as Co-PI. The projects are funded by renowned National/International agencies like SAC, ISRO and MoES, Govt. of India and the United States Agency for International Development (USAID), University of Colorado, U.S.A.



**Dr. Km. Rachna (Asst. Professor, Dept. of Environmental Sciences)**  
**M.Sc., Ph.D.**  
Ph.D from Sharda University, Published 10 research articles in reputed journal (Scopus/SCI Index). Her research interest is Synthesis and application of Nanomaterial's and Polymer Nanocomposite as adsorbent for waste water treatment and Development of soft actuators based ionic polymer blend membrane.

## FACULTY WITH EXPOSURE OF MOST PRESTIGIOUS INSTITUTIONS ACROSS THE GLOBE





RESEARCH & INNOVATION  
AT PAR WITH THE BEST

**Research Labs**

- Atmospheric Research Laboratory (ARL)
- Computer Lab (Mathematics)
- Computational Chemistry Lab (CCL)
- Advanced Molecular Biology Research Lab
- Advanced Polymer Material Research Lab (APMRL)
- Microbial Bio Process Lab
- Diseases Biology & Interventions
- Cell Culture Lab
- Zoology Lab
- Nuclear Physics
- General Physics Lab
- Organic Chemistry Lab
- Inorganic Chemistry
- Physical Chemistry
- Nano Material Lab
- Bio-informatic Lab
- General Physics
- Electronic Physics
- Optics Lab

**Externally Funded Projects**

- Number of Projects-26
- Total Funds-7.18 crores (approx.)
- Funding Agencies-ICMR, DRDO, NIDM, DST-SERB, ISRO, MoES, DST-ASEAN

**Conference/ Workshop/FDPs**

- International and National Conferences: 20
- Faculty Development Programmes: 64
- Workshops: 30

**Consultancies**

Faculty members to provide consultancies to the Industries.

**Research Publications**

- Number of Research Publication-777
- Published in reputed International and National Journals with highest impact factor 62.03
- Number of Books/Book chapters-209

**Patents**

Number of Patents by the Faculty members and students-45

**Outreach/Exchange Programme**

- Students carry out summer internship at reputed organizations. Students of other institutions are allowed to get guidance from our able faculty members.
- School level students are being trained for Higher Education.

**Best Practices**

- Our Undergraduate and Post Graduate carry out quality research projects and publish research papers in reputed journals.
- Students are encouraged to pursue further studies at world renowned institutions and relevant mentoring is done.
- Industry-Academia linkages are encouraged.
- Various MoUs have been signed with National/international universities/industries have been signed to foster Academia-Industry integration.



# FOSTERING ACADEMIA INDUSTRY LINKAGES



MoU with Dio Shiv Foods Pvt. Ltd.



Guests from Vikram Sarabhai Space Centre (VSSC)/ISRO, Trivandrum visited Sharda campus.



Prof. Dr. Abdul Kariem Bin Hj Mohd Arof, Department of Physics, University of Malaya



Organized Special Lecture on “S. Chandrasekhar: The Joy and Perils of doing Science” By Prof. K. R. Sreenivasan.



Dr. Hee Woo Rhee, Director of Research Center for Samsung Display Co.



Dr. Nadeem Tarin, philanthropist and businessman from Saudi Arabia being felicitated during the launch of Centre for Advanced Research in Applied Mathematics & Physics

# CONVOCATION 2021 (GLIMPSES OF SBSR DEGREE AWARD CEREMONY)





# SCIENCE PROGRAMMES DESIGNED FOR SUCCESS

Sharda School of Basic Sciences & Research programmes are designed to develop science professionals focussed on doing innovative research for the benefit of mankind. Students are trained to make the most of the opportunities in prestigious organisations in India and Abroad like IIT; ISRO; DRDO; BARC; CSIR; DST; MOES; IISC; INST; University of Greenwich, UK; University of Massachusetts Amherst, USA; Pennsylvania State University, USA; Wuhan University of Science and Technology, China; University of Technology, Malaysia; The State University of New York, USA; National Chiao Tung University, Taiwan among others.



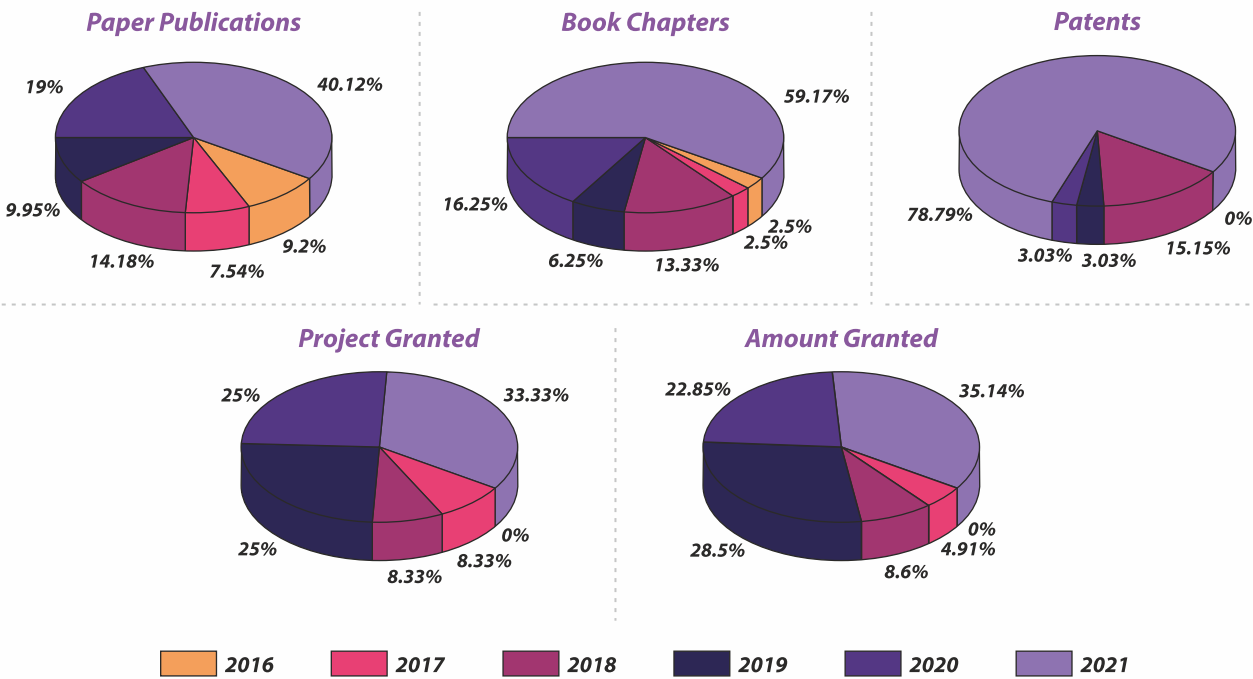
APPROVED BY  
UNIVERSITY GRANTS COMMISSION

## PROGRAMMES

	Certificate in Faculty (Total Credits-46)	Diploma in Faculty (Total Credits-92)	Bachelor (Honours) in Faculty (Total Credits-132)	Bachelor (Research with Honours) in Faculty (Total Credits-184)	Master in Faculty (Total Credits-232)	PGDR in Subject (Total Credits-248)
B.Sc. (Physics)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Chemistry)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Mathematics)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Zoology)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Data Science & Analytics)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Food Science & Technology)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Biochemistry)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Biotechnology)	1 Year	2 Years	3 Years	4 Years	-	-
B.Sc. (Microbiology)	1 Year	2 Years	3 Years	4 Years	-	-
M.Sc. (Biotechnology)	-	-	-	-	1 Year	2 Years
M.Sc. (Microbiology)	-	-	-	-	1 Year	2 Years
M.Sc. (Microbiology Specialization in Industrial Microbiology)	-	-	-	-	1 Year	2 Years
M.Sc. (Microbiology Specialization in Molecular Biology)	-	-	-	-	1 Year	2 Years
M.Sc. (Food Science & Technology)	-	-	-	-	1 Year	2 Years
M.Sc. (Data Science & Analytics)	-	-	-	-	1 Year	2 Years
M.Sc. (Chemistry)	-	-	-	-	1 Year	2 Years
M.Sc. (Physics)	-	-	-	-	1 Year	2 Years
M.Sc. (Mathematics)	-	-	-	-	1 Year	2 Years
M.Sc. (Environmental Science)	-	-	-	-	1 Year	2 Years
M.Sc. (Water Resource & Environmental Management)	-	-	-	-	1 Year	2 Years
Ph.D. in Subject in all Basic Sciences (Full Time / Part Time)	-	-	-	-	-	-

Sharda University is in Compliance with the National Educational Policy (NEP) 2020.

## PUBLICATION (PIE CHART)







## DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY

The Department of Chemistry & Biochemistry endeavors to be a nationally recognized model for nurturing students who can contribute to the ever changing technology of 21st century. To achieve this vision, the Department is committed to provide an excellent teaching & learning atmosphere for Under Graduate as well as Post Graduate students. The Department of Chemistry & Biochemistry has excellent infrastructure with quality class rooms, world class laboratories and outstanding research competence.

The Department of Chemistry and Biochemistry is engaged in research work actively since its inception in 2013. The faculty members of this Department have diversified research expertise and interest like medicinal chemistry, polymer chemistry, bioinformatics, computational chemistry, material chemistry, clinical biochemistry to name a few. The Department boasts in having one sponsored, ongoing project from ISRO, DST-SERB, MSME and more than 100 published research papers over the years in various journals of national and international repute. To cater the need of contemporary research two advanced research laboratories were also established; namely Advanced Polymeric Material Laboratory (APML) and High Computing Laboratory (HCL). In addition to Ph.D. students, the department also encourages the B.Sc. and M.Sc. students to take research problems as a part of their degree project. The motto of the Department is to give the students a glimpse of modern research and to harbor the scientific talent in those who wish to build a career out of it.

Research in the Department of Chemistry & Biochemistry is innovative, collaborative and interdisciplinary by nature. Faculty members, Ph.D scholars, post-graduate and undergraduate students, all contribute to the rich research environment. Students often visit national and multinational industries and R&D laboratories.

### Laboratories

- Instrumental analytical facility (FTIR & UV-Visible spectrophotometer)
- Chemistry Lab-1
- Chemistry Lab-2
- Chemistry Lab-3
- Advanced Polymeric Materials Research Laboratory
- Advanced Higher Computing Labs
- Advanced Biochemistry Labs

### Career Prospects

- ISRO, DRDO, BARC, CSIR, MOES & their sisters laboratories
- Pharmaceuticals (R&D)
- Polymer industry
- Forensic laboratory
- Quality control and quality assurance company
- Various manufacturing industries
- Fuel and Petrochemical industry

### Skill Enhancement Courses

- MATLAB Applications

- Functional English
- Problem solving through C++
- Functional English Lab
- Problem solving through C++ Lab

### Research Projects Funded by Government of India

- Theoretical and Experimental Study of Intermediate Band Solar Cell having potential for Alternative Source of Energy Funded by Department of Science and Technology (DST), New Delhi; Budget: Rs. 45.00 Lakhs.
- Determining the functional implication of ATM-BLM interaction during DNA damage response Funded by Department of Science and Technology (DST), New Delhi; Budget: Rs. 18.00 Lakhs.
- Synthesis and characterization of Epoxybased inorganic-Organic hybrid polymers and their evaluation as adhesives and Matrix Resins for composites for Space Applications Funded by Indian Space Research Organization, Department of Space Government of India, Antariksh Bhavan, New BEL Road, Bangalore; Budget: Rs. 34.91 Lakhs.
- Development of light emitting diodes Funded by Ministry of Micro Small and Medium Enterprises (MSME), New Delhi; Budget: Rs. 8.00 Lakhs
- Biodiesel production using nanoparticle catalysts Funded by Ministry of Micro Small and Medium Enterprises (MSME), New Delhi; Budget: Rs. 6.80 Lakhs
- Anti-bacterial nanoparticle coated fabric for biomedical applications Funded by Ministry of Micro Small and Medium Enterprises (MSME), New Delhi; Budget: Rs. 8.00 Lakhs

### International Consultancy project

Synthesis Polyborodiphenylsiloxane (PBPS) that can be used as a catalyst in the preparation of Polycarbosilane (PCS), a preceramic polymer, for the purpose of melting spinning funded by DACC Carbon Co. Ltd., (Client), 30 Unam-Ro, Deokjin-Gu, Jeonbuk, Korea.

### Major Events Organized

- One-week national online faculty development programme organized in collaboration of Guru Angad Dev Teaching Learning Centre; A Centre of Ministry of Education, Government of India under Pandit Madan Mohan Malaviya National Mission on Teachers and Training (PMMMNMTT), SGTB Khalsa Colleges, University of Delhi; June 28th to July 04th, 2021.
- Research Funding Opportunity in India by Dr. Praveen Kumar S, Scientist-F, DST-SERB, New Delhi, July 02, 2021
- Genome Editing: A perspective on the application of RISPR/Cas9 to study human diseases organized on 6th Feb, 2021
- Public Speaking and Professional Presentation skills organized on 20th Feb, 2021
- Capacity building programme on Code of Conduct :

Professional Ethics organized on 30th Jan., 2021

- Test Series for Preparation strategies of GATE, CSIR NET, TIFR and IIT JAM, 2021 Entrance Examinations conducted during September 2020 to January 2021.
- "Amino Acids and Trisubstituted Methanes (TRSMs) as Versatile Synthons: Rays of Hope for Autophagic Cell death and Tuberculosis respectively?" organized on 07th May, 2020.
- Hands-on-training Workshop in "Learning Tools in Research", 9th – 11th August, 2020
- Preparation Strategy to Crack CSIR-UGC NET and GATE Examinations, 20th August, 2020
- First Chemistry-In-House symposium (GHS-2018), 20th April, 2018.
- Quiz Series for preparation of UGC-NET exam for PG student (30th March 2016)
- Industrial visit to Chemsys Limited (12th Feb. 2016)
- Special invited lecture for UG and PG students on Chemistry Lab Safety and Fire Fighting (08th March 2016), "Let's Dream for Successful Career Ahead" – Career Counseling (05th Feb. 2016), How to Write a Research Paper (29th Sept. 2015)
- Training programme on Chem-Draw (09th Oct. 2015)
- National Conference on Drug Designing (27-28th March 2015)
- Workshop on patent, intellectual property rights and ethics (21st March 2015).





Bachelor of Science (Research) Chemistry

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (Chemistry)	Major (Chemistry)	Major (Chemistry/other)	Minor/Elective (Chemistry/ Elective)
		Credits 4/5/6	Credits 4/5/6	Credits 4/5/6	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Fundamentals of Chemistry (T)	Principles of Physical Chemistry	General properties of matter / Foundation course in Mathematics / Statistic I/ Biomolecules	
		Quantitative Analysis (P)	Physical Chemistry Lab (P)	Physics Lab-II / Mathematics Lab-I / StatisticsLab-I / Biological Science Lab (P)	
	II	Bioorganic and Medicinal Chemistry (T)	Basics of Pharmaceuticals Chemistry (T)	Renewable energy resources / Programming R/ Cell biology (T)	OPE XXX
		Biochemical Analysis (P)	Pharmaceutical Chemistry Lab (P)	Physics Lab-IV/ R Programming Lab/ Cell Biology Lab (P)	
2	III	Chemical Dynamics & Coordination Chemistry (T)	Industrial chemicals and engineering materials (T)	Oscillation and waves/ Gene organization: DNA Replication and Repair mechanism (T)	OPE XXX
		Physical Analysis (P)	Inorganic materials chemistry lab (P)	Physics lab VI/ Molecular Biology Lab (P)	
				RBL 1 (Audit)	
	IV	Quantum Mechanics and Analytical Techniques (T)	Chemistry in action I (T)	Laser and its application/ Bioinformatics (T)	
		Instrumental Analysis (P)	Chemistry in action lab (P)	Physics lab VIII/ Bioinformatics Lab (P)	
				RBL 2 (Audit)	
Summer Industry Internship (Industry Connect)					
3	V	Organic Synthesis -A (T)	Analytical chemistry I (T)	RBL 3 (2)	
		Rearrangements and Chemistry of Group Elements (T)	Advanced topics in chemistry (T)		
		Qualitative Analysis (P)			
	VI	Organic Synthesis-B (T)	Biological chemistry (T)	RBL 4 (2)	
		Chemical Energetics and Radiochemistry (T)	Analytical chemistry II (T)		
		Analytical Methods (P)			
4	VII	Modern methods of Organic Syntheses-1			OPE XXX
		Advanced inorganic chemistry-I			
		Advanced analytical chemistry I			
		Advance physical chemistry-I			
		Advanced chemistry lab-I			
	VIII	Modern methods of Organic Syntheses-II			
		Advanced inorganic chemistry-II			
		Advance physical chemistry-II			
		Advanced analytical chemistry- II			
		Advanced chemistry lab-II			

**Additional Benefits:**  
Value added courses:  
(i) Computational Chemistry: Hands on training computational chemistry software  
(ii) Instrumental Chemistry: Handling of sophisticated instruments UV, IR, HPLC and AAS  
Career counselling guidance session by renowned personalities.

Vocational	Compulsory Co-curricular	Training/Survey/ Research Project	[Minimum Credit] For the year	Cumulative minimum credits required for award of certificate/ Diploma/Degree
Minor (other)	Minor	Major		
Credits 3	Qualifying	Credits 4		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Modern trends in chemical analysis: Step forward from laboratory to industry-I	Food, Nutrition and Hygiene		46	{46} Certificate in Bioorganic and Medicinal Chemistry
Modern trends in chemical analysis: Step forward from laboratory to industry-II	First Aid and Health			
Modern trends in chemical analysis: Step forward from laboratory to industry-III	Human Values and Environment studies		46	{92} Diploma in Chemical Dynamics and Analytical Techniques
Modern trends in chemical analysis: Step forward from laboratory to industry-IV	Physical Education and Yoga			
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	40	{132} Degree in Bachelor of Science Chemistry
	Communication Skills and Personality Development	Community Connect (Qualifying)		
		RBL 5	52	{184} Degree in Bachelor of Science (Research) Chemistry
		RBL 6		



Bachelor of Science (Research) Biochemistry

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (Chemistry)	Major (Chemistry)	Major (Chemistry/other)	Minor/Elective (Chemistry/ Elective)
		Credits 4/5/6	Credits 4/5/6	Credits 4/5/6	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Biomolecules	Fundamentals of Chemistry	Principles of Physical Chemistry/ Foundation course in Mathematics	
		Biological Science Lab	Quantitative Analysis	Principles of Physical Chemistry Lab / Mathematics Lab-1	
	II	Cell Biology	Basic Microbiology	Bioorganic and Medicinal Chemistry /Bioinstrumentation	Open elective
		Cell Biology Lab	Basic Microbiology Lab	Biochemical Analysis / Bioinstrumentation Lab	
2	III	Fundamentals of Genetics	Gene Organization, DNA Replication and Repair Mechanism	Chemical Dynamics and Coordination Chemistry/ Animal Biotechnology	Open elective
		Genetics Lab	Molecular Biology Lab-I	Physical Analysis Lab/ Animal Biotechnology Lab	
				RBL-I (Audit)	
	IV	Enzymology	Gene Expression and Regulation	Analytical Techniques/ Chemistry in Action I/ Bioinformatics	
				Instrumental Analysis/ Chemistry in Action Lab/ Bioinformatics Lab	
		Enzymology Lab	Molecular Biology Lab-II	RBL-2 (Audit)	
3	V	Concept of Metabolism	Hormonal Biochemistry	RBL-3	
		Immunology	Introduction to Proteins		
		Immunology Lab			
	VI	Biophysical and Biochemical Techniques in Biochemistry	Membrane Biochemistry and Bioenergetics	RBL 4	
		Genetic Engineering	Cell signaling and Cancer Biology		
		Genetic Engineering Lab			
4	VII	Biochemical Application in Forensics	Molecular Basis of Infectious Disease	RBL 5	Open elective
		Clinical Biochemistry	Plant Biochemistry		
		Clinical Biochemistry Lab			
	VIII	Advanced Methodologies in Biochemistry	Microbial Techniques	RBL 6	
		Research Methodologies	Nutritional Biochemistry		
			Nutritional Biochemistry Lab		

**Additional Benefits:**  
Value added courses:  
(i) Computational Chemistry: Hands on training computational chemistry software  
(ii) Instrumental Chemistry: Handling of sophisticated instruments UV, IR, HPLC and AAS  
Career counselling guidance session by renowned personalities.

Vocational	Compulsory Co-curricular	Industrial Training/ Survey/ Project	[Minimum Credit] For the year	Cumulative minimum credits required for award of certificate/ Diploma/Degree
Minor (other)	Minor	Major		
Credits 3	Qualifying	Credits 4		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Biochemical and analytical Trends in Biochemistry-I	Food, Nutrition and Hygiene		21	{46} Certificate in Biochemical Laboratory Techniques (CBLT)
Biochemical and analytical Trends in Biochemistry-II	Health and Hygiene		25	
Biochemical and analytical Trends in Biochemistry-III	Physical Education		25	{92} Diploma in Enzymology and Molecular Biology (DEMB)
Biochemical and analytical Trends in Biochemistry-IV	Human values and Environmental Studies		21	
	Analytical Ability and Digital awareness	Industry Connect (Qualifying)	20	{132} Degree in Bachelor of Science
	Communication Skills and Personality Development	Community Connect (Qualifying)	20	
			28	{184} Bachelor (Research) in Biochemistry
			24	



## M. Sc. Chemistry

### TERM: I

#### THEORY SUBJECTS

- Inorganic Chemistry-I
- Organic Chemistry-I
- Physical Chemistry-I
- Analytical Chemistry-I
- Introduction to MATLAB & its application

#### Practical

- Inorganic Chemistry Lab-I
- Organic Chemistry Lab-I
- Physical Chemistry Lab-I
- Research Based Learning-1

### TERM: II

#### THEORY SUBJECTS

- Inorganic Chemistry-II
- Organic Chemistry-II
- Physical Chemistry-II
- Analytical Chemistry-II
- Renewable Energy Sources: Solar And Hydrogen Energy
- Community Connect

#### Practical

- Inorganic Chemistry Lab-II
- Organic Chemistry Lab-II
- Physical Chemistry Lab-II
- Research Based Learning -2

### TERM: III

#### THEORY SUBJECTS

- Molecular Spectroscopy
- Inorganic Chemistry-III/ Physical Chemistry-III/ Organic Chemistry-III
- Inorganic Chemistry-IV/ Physical Chemistry-IV/ Organic Chemistry-IV
- Environmental Chemistry / Polymer Science and Technology

#### Practical

- Organic Chemistry Lab-III/ Physical Chemistry Lab-III/ Inorganic Chemistry Lab-III
- Dissertation-Part-A

### TERM: IV

#### THEORY SUBJECTS

- Inorganic Chemistry-V/ Physical Chemistry-V/ Organic Chemistry-V
- Inorganic Chemistry-VI/ Physical Chemistry-VI/ Organic Chemistry-VI
- Medicinal Chemistry/ Science and Technology of Nanomaterials
- Open Elective

#### Practical

- Dissertation-Part-B

#### Additional Benefits:

Value added courses:

- Computational Chemistry: Hands on training computational chemistry software
  - Instrumental Chemistry: Handling of sophisticated instruments UV, IR, HPLC and AAS
- Career counselling guidance session by renowned personalities.

## OUR ONLINE EDUCATION PRACTICE ONCE AGAIN RECEIVES TOP GLOBAL HONOURS



## PROUD TO RECEIVE ADVANCED E-LEAD CERTIFICATE

Sharda University took commendable digital initiatives to ensure that the students academics do not suffer due to Covid-19 situation. It has brilliantly adopted a multi-pronged strategy of inclusive e-learning solutions (remote only) to cope up with the prevailing crisis in Indian education system. The iCloud LMS software that the University subscribes to is cloud-based and highly advanced. Even for the students residing in remote areas, teachers are pro-actively providing them with class-notes and assignments with solutions over WhatsApp and Email or even through Audio lectures.

Sharda's University's endeavours during the Covid-19 crisis found special mention in the speech of Dr. Ramesh Pokhriyal 'Nishank', Former Union Education Minister who graced the 2020 Convocation of the University.



#### Highlights of Sharda University's focus on Online Education:

- Live online classes are conducted through ERP, Microsoft Teams, Google Meet etc.
- Timetable, session plan, attendances, feedback are uploaded on ERP and chat/discussion happen through these online platforms.
- Virtual labs are conducted
- Students engagement through consultative meetings, Chat/discussions through Google/Zoom classrooms, Flip classes, real time online projects, virtual gallery walk.
- Continuous Assessments are being practised where the quizzes/assignments/projects are floated to students through the online platforms and evaluated through the same.
- Online proctored End term papers are conducted for all.
- Online feedbacks are taken twice in a semester and open house discussions through consultative meetings and action taken report prepared and shared.





## DEPARTMENT OF ENVIRONMENTAL SCIENCES

The Department of Environmental Sciences offers M.Sc Water Resource and Environmental Management, M.Sc Environmental Sciences and Ph.D in Environmental Sciences. The Department has achieved a landmark of producing two DAAD Fellow and two students as Post Doc fellow in Lulea University, Sweden. The department is having research programmes funded by national and international agencies and has offered many fellowships (JRF/SRF/RA) to the students through these fundings. The department of Environmental Sciences has a well-equipped Environmental Laboratory. The laboratory has several instruments needed for air monitoring, physico chemical analysis of water and waste water. In addition, it has working space for full time Ph.D research scholars. The faculty members are having interest in interdisciplinary research on topics such as air pollution, solid waste management, glaciology, waste water etc.

### Career Prospects

- Pollution control board agency
- Climate change agency
- Environmental forecasting
- Remote sensing organizations

### Laboratory

- Environmental Science Laboratory

### Projects/Workshops /Conferences (National & International)

- Supported in organising the 19th edition of International

Conference on Cryptology (**INDOCRYPT-2018**) jointly organized by Scientific Analysis Group (SAG), DRDO, Delhi and Sharda University, Greater Noida during December 09-12, 2018 held at India Habitat Centre, New Delhi.

- Supported in the **“National Instructional Workshop on Cryptology (NIWC-2017)”** during October 06-08, 2017 at RTDC, Sharda University, Greater Noida, Funding CRSI
- Organised Guest Lecture of Prof. J Narayan, The John C. C. family distinguished Chair in Material Engineering, distinguished Director of NSF Centre for Advanced Materials and Smart Structures, Department of Material Science and Engineering, North Carolina State University, Raleigh (USA), held at Sharad university, Gr. Noida on December 15, 2017 “Mind Matters” a talk by Mr. Rahul Pandey organised on 07/04/2015, Room No. 102, Block-III, Sharda University.
- **“SANLAYAN 2013-a Talent Hunt”** programme of Sharda University organised on November 16, 2013 at Sharda University, Greater Noida, India
- Supported in organising **“Multifunctional Materials Energy and Environment”** held during August 21-23, 2013 at Sharda University, Greater Noida, India
- **“Workshop on Positive Degree Day Modelling of Glaciers”** during 28th -29th September, 2012 at Sharda University, Greater Noida, Funding Agency: South Asia Water Initiative (SAWI), Abu Dhabi Dialogue Knowledge Forum, Small Grants Programme (ADKFSGP)

- Supported in organising **“National Conference on Semiconducting Materials and Nano Devices”**, during September 14-15, 2012, RTDC, Sharda University, Greater Noida, India
- Supported in organising **“National Seminar on Futuristic Materials for Device Applications”** on July 27, 2012 organised by Research and Technology Development Centre, Sharda University and Sponsored by Defence Research and Development Organization, New Delhi, India
- **National Conference on Environment and Energy Materials(NCEEM)** ON June 27-28, 2020 organised by Department of Environmental Sciences

### Environmental Awareness Events

- **Water Day 2021:** Celebration of World Water Day on 22nd March, 2021.
- **“National Wetland Day”** on 2nd February, 2021, Sharda University, Greater Noida
- **“Ozone Day”** on 16th September, 2020, Sharda University, Greater Noida
- **“Environment Day”** on 5th June, 2020, Sharda University, Greater Noida
- **Ozone Day** - on 16th September 2019 at Sharda University, Greater Noida.
- **Educational Trip, 2019:** Educational Trip to Vigyan Bhawan on World Leopard Day on 23rd October
- **Educational Trip 2019:** Educational Trip to Expo Mart
- **“Earth Day-2018”** on 22nd April, 2017 at Sharda University, Greater Noida, Funding Agency: Ministry of Earth Sciences, Govt. of India and Sharda University
- **“Water Conservation”** Event in collaboration with CMS VATAVARAN Environment and Wildlife Film Festival and Forum on 13th October, 2017, Held at Sharda University, Greater Noida.
- **“Earth Day-2017”** on 22nd April, 2017 at Sharda University, Greater Noida, Funding Agency: Ministry of Earth Sciences, Govt. of India
- **“Earth Day-2016”** on 22nd April, 2016 at Sharda University, Greater Noida, Funding Agency: Ministry of Earth Sciences, Govt. of India
- **“Save Water Save Life-2015”** held on 30th September, 2015 at Sharda University, Greater Noida, Funding Agency: Sharda University,
- **“Earth Day-2015”** held on 22nd April, 2015 at Sharda University, Greater Noida, Funding Agency: Sharda University
- **“Earth Day-2013”** on 22nd April, 2013 at Sharda University, Greater Noida, Funding Agency: Ministry of Earth Sciences, Govt. of India
- **“Earth Day-2011”** on 22nd April, 2011 at Sharda University, Greater Noida, Funding Agency: Ministry of Earth Sciences, Govt. of India

### Research Projects Funded By National/international Organisation:05

#### Sponsored Projects (ONGOING)-1 Nos.: Grant Rs. 20,00,000/-

- **“Integrated Studies of Himalayan Cryosphere (ISHC)”** Energy Balance study on Batal Glacier, Himachal Himalaya, sponsored by Space Applications Centre, ISRO, Ahmedabad, **Grant - Rs. 20,00,000.00**

#### Sponsored Projects (COMPLETED)-04 Nos.: Total Grant: Rs. 1,63,03,300.00

- Contribution to High Asia Runoff from Ice and Snow (CHARIS), funded by United States Agency for International Development (USAID), USA, **Grant - \$ 1,12,100**
- Study of Glacio-hydro-meteorological Processes at the Naradu Glacier, funded by Department of Science and Technology (DST), Govt. of India, **Grant - Rs. 50,55,000.00**
- Snout Monitoring, Mapping, Mass and Energy Balance and Assessment of Biophysical Environment of Naradu Glacier, H.P., funded by Dept. of Sc. & Technology (DST), New Delhi, India, **Grant - Rs. 19,61,800.00**
- Case studies of impacts of climate change on hydrological regime in Nepal, India and Afghanistan, funded by South Asia Water Initiative (SAWI), ICIMOD, Kathmandu, Nepal, **Grant - \$ 31,000.00**

### Conferences

International Conference on Energy and Environmental Materials(INCEEM-2021) on 29-31st July organized by Department of Environmental Sciences

### Awards for Research and innovation received by faculty

Felicitation to faculty of Environmental Sciences with an award for innovation and Recognition from Anveshna for mentoring students in innovative project on solid waste management and energy production.

### Fellowship

International US Ful Bright Fellowship to faculty for Post-Doctoral Research

### Laboratory

Well - equipped Atmospheric Research Laboratory of Department of Environmental Sciences with instruments such as Respirable Dust Sampler, Gaseous Pollutant Sampler, Fine Particulate Sampler, MFC, Heavy metal Sampler and water analysis instruments.



M.Sc.-Environmental Science

<b>TERM: I</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Climatology and Oceanography</li><li>• Applied Environmental Chemistry</li><li>• Natural Resource Management</li><li>• Fundamentals of Instrumentation Techniques</li><li>• Hydrology Basics and Water Management</li><li>• Energy Economics and Policy</li></ul> <b>Practical</b> <ul style="list-style-type: none"><li>• Water Pollution &amp; Monitoring Lab</li><li>• Research Based Learning (RBL1)</li></ul>	<b>TERM: II</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Concepts of Environmental Toxicology</li><li>• Environmental Law and Audit</li><li>• Remote Sensing and GIS Application</li><li>• Global Climate System and Sustainable Development</li><li>• Disaster Management</li><li>• Research Methodology</li></ul> <b>Lab</b> <ul style="list-style-type: none"><li>• Remote Sensing &amp; GIS Lab</li><li>• Community Connect Course</li><li>• Research Based Learning 2</li></ul>
<b>TERM: III</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Water Treatment and Purification Techniques</li><li>• EIA and Risk Assessment Analysis</li><li>• Environmental Pollution and Control</li><li>• Health Safety and Environment</li></ul> <b>Practical</b> <ul style="list-style-type: none"><li>• Project (RBL3)</li><li>• Environmental Data Analysis</li></ul>	<b>TERM: IV</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Research</li><li>• Project (RBL-4)</li></ul> <b>Practical</b> <ul style="list-style-type: none"><li>• Industrial Training Report</li></ul>

**Additional Benefits:**  
Value added courses:  
(i) Computational Chemistry: Hands on training computational chemistry software  
(ii) Instrumental Chemistry: Handling of sophisticated instruments UV, IR, HPLC and AAS  
Career counselling guidance session by renowned personalities.

M.Sc. -Water Resources and Environmental Management

<b>TERM: I</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Water Resources &amp; Management</li><li>Environmental Chemistry</li><li>Environmental Pollution</li><li>Solid and Hazardous Management</li><li>Earth Ecology and Environment/ Environmental Biotechnology</li><li>Technical Presentation</li></ul> <b>Practical</b> <ul style="list-style-type: none"><li>• Water Pollution &amp; Monitoring Lab</li><li>Research Based Learning (RBL1)</li></ul>	<b>TERM: II</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Environmental Legislation and Audit</li><li>Climate Change &amp; Sustainable Development</li><li>Environmental Toxicology</li><li>Glaciology &amp; Climate Change</li><li>Remote Sensing Techniques &amp; GIS</li><li>Energy Sources and Global Scenario/ Water Sanitation and Health</li></ul> <b>Practical</b> <ul style="list-style-type: none"><li>• Remote Sensing &amp; GIS</li><li>Community Connect Course</li><li>Research Based Learning 2</li></ul>
<b>TERM: III</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• Research Methodology</li><li>Biodiversity Conservation and Management</li><li>Fundamentals of Hydrology</li><li>Instrumentation and Techniques</li><li>Biostatistics/Disaster Management</li><li>Open Elective</li></ul> <b>Practical</b> <ul style="list-style-type: none"><li>• Environmental Data Analysis</li><li>Project (RBL3)</li></ul>	<b>TERM: IV</b> <b>THEORY SUBJECTS</b> <ul style="list-style-type: none"><li>• IEnvironmental Impact &amp; Risk Assessment</li><li>Water Purification &amp; Treatment Processes</li><li>Project (RBL4)</li></ul>

**Additional Benefits:**  
Value added courses:  
(i) Computational Chemistry: Hands on training computational chemistry software  
(ii) Instrumental Chemistry: Handling of sophisticated instruments UV, IR, HPLC and AAS  
Career counselling guidance session by renowned personalities.





## DEPARTMENT OF LIFE SCIENCES

The Department of Life Sciences offers undergraduate and postgraduate courses in various disciplines such as Biotechnology, Microbiology, Food Science and Technology, Life Science (Botany and Zoology), Industrial Microbiology and Molecular Biology. All these courses encompass promising areas of research and employability.

The Department has well equipped laboratories for research and routine lab experiments. The faculty members are dynamic and pursue interdisciplinary research in the areas of plant biotechnology, crop improvement, protein biochemistry, drug discovery, virology, fermentation and industrial biotechnology, food processing and development of novel food products etc.

### Career Prospects

- Pharmaceutical (R&D) Industry
- Diagnostic Laboratories
- Hospitals
- Food & Brewery Industry
- Marketing Research

### Laboratories

The Department has following five well equipped laboratories catering to the need of courses

- Cell and Molecular Biology Laboratory
- Microbiology Laboratory
- Plant Tissue Culture Laboratory
- Animal Cell Culture Laboratory

- Virology Laboratory
  - Bioprocess engineering Laboratory
  - Biochemistry & Enzyme Engineering Laboratory
- Food Technology Laboratory The Department also has a herbal garden and an animal house for in-vivo experiments.

### Projects/Workshops/Conferences (National & International)

- Hands on Training programme on GMP, Food Quality Control and Food Safety was held on February 4-10, 2020 at Auto Expo 2020, Greater Noida.
- Industrial Visit to Yakult Danone Pvt. Ltd. Sonipat Haryana was organized February 13, 2020.
- An educational tour has been arranged by the Department for B.Sc. Zoology students to Bharatpur on March 13-14, 2020.
- An Webinar on 'Agri-Business Opportunities for Students' in Food Processing and Agro Industries was conducted on May 28, 2020.
- The Department organized 7 days E-FDP cum workshop on "Waste to Bio-energy" on June 28, 2020.
- A webinar on "Preparation of Competitive Entrance Exams for MSc. and PhD programmes" was conducted on September 2, 2020.
- Webinar on "Gender Sensitization: An Inclusive Philosophy" was organized by Department on September 29, 2020.
- Food Safety Training and Certification (FoSTaC) programme

by FSSAI, Govt. of India was organized by the department on October 11, 2019.

- National workshop cum e-FDP on "Transformation of Food Processing from Laboratory to Industries" was organized by the Department during October 12-16, 2020.
- An orientation programme for the newly admitted First Year students was organized by the Department from October 19-22, 2020.
- Every year organises 'National Conference on Recent Advancement in Biotechnology & Bioengineering' at Sharda University, 2019
- The Food Safety and Standards Authority of India (FSSAI), Ministry of Health and Family Welfare, Govt. of India in collaboration with ISO AQMCS a training partner and Department of Life Sciences, School of Basic Sciences & Research, Sharda University conducted a "Food Safety Training and Certification (FoSTaC)" programme on October 11, 2019.
- Department celebrated World Food Day, "QUIZZY FOOD MANIA" on October 16, 2019.
- Department organized "The Foodpreneurs Quest" on October 16, 2019, a competition in which students participated and incubated new business ideas.
- 3rd National Conference on "Biotechnology & Bioengineering-Innovation and Advancement for Sustainable Future" was organized during November 7-8, 2019.
- The Department also organized an educational visit to Indian Agriculture Research Institute (IARI), Pusa, New Delhi, on November 7, 2019.
- The school with School of Engineering & Technology, Sharda University jointly organized a special lecture on "Job Prospects in Atomic Energy Sector" on November 15, 2019 for final year students of SBSR and SET.
- An industrial Visit to Diosiv Foods Pvt. Ltd., Lohamani, Ghaziabad, UP was conducted on November 16, 2019 by various students.
- Many patents have been filed by the department in last three years.
- Several research papers have been published in various peer-reviewed journals.
- Regularly organises workshops on various research activities.
- A MoU was recently signed between AIBTM, Greater Noida and Sharda University.
- At present many projects funded by Government agencies like DBT, DRDO&INSA are running in the Department.
- Many of our students have qualified UGC-CSIR NET and GATE and are now working in industry or have enrolled in higher degree programme in India as well as abroad.
- The Department organizes Industry Academic meet annually to prepare the students for the requirement of industry.

- Hands-on-training/Workshops are organized in the Department frequently to update the students in modern techniques.
- Department also organizes scientific talk by eminent scientist from India and abroad time to time.

### Achievement

**Project-** Currently 4 government funded project is going on (total budget more than 1 crore) in the Department of Life Sciences. Dr Abhilasha Singh Mathuriya and Dr Vinod Joshi are the Project Investigators of DST-ASEAN, DRDO and ICMR project respectively.

**Patents-** The faculties and students of the Department of Life Sciences have filed 20 Indian patents in the past six months (2021) in the area of nanomaterials, nanocomposite, bioenergy, microbial fuel cells, and antimicrobial materials.

### Publications

The faculties of the Department of Life Sciences have published 37 SCI and Scopus indexed articles in peer-reviewed International Journals like Bioresource Technology, Journal of Cleaner Production, Materials Science and Engineering C, Nanomedicine, Pharmaceuticals, Sustainability, Catalysts, Energies, European Journal of Pharmacology and so on. More than 40 book chapters have been published. Dr Soumya Pandit published 2 books (Industrial Biotechnology, CRC Press, Taylor & Francis; Scaling up of Microbial Fuel Cell, Elsevier.)

### Awards

- Dr. Piyush Kumar Gupta recently bestowed with the following awards like INSA-Visiting Scientist Award, RSC-Nanoscale Horizons Award, Springer Nature Award, and an Associate Member of the Royal Society of Chemistry (AMRSC), London, UK.
- Dr. Abhilasha Singh Mathuriya recognized as a Member of the Royal Society of Chemistry (MRSC), London, UK.
- Dr. Sanjay Kumar, Dr. Annette Angel, Dr. Kanupriya, and Dr. Bennett Angel were awarded with university seed grants.

### programmes organized

Department has organized various programmes on the following themes:

- Workshop on "Innovative Research Sensitization; Knowledge Consolidation on National and International Research Funding Organizations"
- Debate competition on "National Education Policy" at International Day of Education
- Cancer Awareness programme on the occasion of International Cancer Day
- Five days virtual Faculty Development programme and Workshop on "Good Laboratory Practices"
- 5-Days e-Symposium cum Training Workshop on "Resilience Pathways for Natural and Manmade Disasters"
- Celebrating a Women on International Women's Day
- Guidance for Competitive Examination Preparation
- Women Training on "Investor awareness programme"



Bachelor of Science (Research) Biotechnology

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (Biotechnology)	Major (Biotechnology)	Major (Chemistry/ Physics)	Minor/ Elective ( Elective)
		Credits 4/2	Credits 4/2	Credits 4/2	Credits 4/5/6
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Fundamentals of Biochemistry + Biochemistry Lab	Introduction to Microbiology + Microbiology Lab	Introduction to Basic Chemistry + Introduction to Basic Chemistry Lab	OPE XXX
	II	Cell and Molecular Biology + Cell and Molecular Biology-lab	Basics of Pharmaceuticals Chemistry (T)	Renewable energy resources / Programming R/ Cell biology (T)	
2	III	Genetics + Genetics Lab	Immunology + Immunology Lab	Biophysics + Biophysics Lab + RBL-I	OPE XXX
	IV	Genetic Engineering + Genetic Engineering lab	Enzyme Technology + Enzyme Technology Lab	Nano-Toxicology + Nano-ToxicologyLab + RBL-II	
Summer Industry Internship (Industry Connect)					
3	V	Metabolic Pathways + Industrial Biotechnology + Industrial Biotechnology Lab	Dev Bio of Animals + Dev Bio of Plants	Research Based Learning III	
	VI	Plant Biotechnology + Animal Biotechnology + Plant Biotechnology Lab	Bioprocess Technology + Genomics	Research Based Learning IV	
4**	VII	Clinical Biochemistry + IPR and Bioethics + Clinical Biochemistry Lab	Reproductive Biology + Epidemiology & Biostatistics + Animal Behavior		OPE XXX
	VIII	Bioreactors and downstream processing + Bioreactors and downstream processing Lab	Cell Signaling & Cancer Biology + Advanced Bioinformatics		

\*\* Indicates the Courses that are subject to the UPHC guidelines.

Vocational	Compulsory Co-curricular	Training/Survey/ Project/RBL	{Minimum Credit} For the year	(Total Credits) After completion {Minimum Credits} [Max Duration in years]
Minor	Minor	Major		
Credits 3/4	Qualifying	Credits 0/2/4/8		
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Essential Techniques in Life Sciences (Vocational course)	Food, Nutrition and Hygiene		46	{46} Certificate in Biotechnology
Essential Techniques in Life Sciences (Vocational course)	First Aid and Health			
Essential Techniques in Life Sciences (Vocational course)	Human Values and Environment studies		46	{92} Diploma in Biotechnology
Essential Techniques in Life Sciences (Vocational course)	Physical Education and Yoga			
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industrial Connect (qualifying)	40	{132} Bachelor in Biotechnology
	Communication Skills and Personality Development	Community connect (qualifying)		
		Research Project (RBLV)	52	{184} Bachelor (Research) in Biotechnology
		Research Project (RBLVI)		



Bachelor of Science (Research) Zoology

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (Zoology)	Major (Zoology)	Major (Zoology)	Minor/ Elective
		Credits 4/2	Credits 4/2	Credits 4/2	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Cytology, Genetics and Infectious Diseases + LAB: Cell Biology & Cytogenetics Lab	Introduction to microbiology + LAB: Microbiology Lab	Introduction of Basic Chemistry + LAB: Introduction of Basic Chemistry Lab	
	II	Biochemistry and Physiology + LAB: Physiological, Biochemical & Hematology Lab	Human Physiology and Histology + LAB: Human Physiology and Histology Lab	Medical Diagnostics and Public Health + LAB: Medical Diagnostics Lab	OPE XXX
2	III	Molecular Biology, Bioinstrumentation & Bio techniques + LAB: Bioinstrumentation & Molecular Biology Lab	Animal Cell Biotechnology + LAB: Animal Cell Biotechnology Lab	Biophysics + LAB: Biophysics Lab + RBL-1	
	IV	Gene Technology, Immunology and Computational Biology + LAB: Genetic Engineering and Counselling Lab	Forensic Serology + LAB: Forensic Serology Lab	Nano toxicology + LAB: Nano toxicology Lab + RBL-2	OPE XXX
Summer Industry Internship (Industry Connect)					
3	V	Diversity of Non-Chordates, Parasitology and Economic Zoology + Diversity of Chordates and Comparative Anatomy + LAB: Lab on Virtual Dissection, Anatomy, Economic Zoology and Parasitology	Endocrinology& Reproductive Biology + Medical Zoology	RBL-3	
	VI	Evolutionary and Developmental Biology + Ecology, Ethology, Environmental Science and Wildlife + LAB: Lab on Environmental Science, Behavioral Ecology, Developmental Biology, Wildlife, Ethology	Advanced Immunology + IPR	RBL4	
4	VII	Medical Virology + Epidemiology & Disease Surveillance + Omics Biology + Cognitive science + LAB: Omics Biology Lab			OPE XXX
	VIII	Bioprocessing & Enzyme Engineering + Pollution and Diseases + Drug development & Vaccinology + Genetic Disorders & Cancer + LAB: Bioprocessing & Enzyme Engineering Lab			

Vocational	Compulsory Co-curricular	Industrial Training/Survey/ Research Project	{Minimum Credit} For the year	{Cumulative Minimum Credits} required for award of Certificate/ Diploma/Degree
Minor	Minor	Major		
Credits 3/4	Qualifying	Credits 0/2/4/8		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Essential techniques in Life Sciences	Food, Nutrition and Hygiene		21	{46}  Certificate in Medical Diagnostics and Public Health
Essential techniques in Life Sciences	First Aid & Health		25	
Essential techniques in Life Sciences	Human Values and Environment studies		46	{92}  Diploma in Molecular Diagnostics And Genetic Counseling
Essential techniques in Life Sciences	Physical Education and Yoga			
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	20	{132}  Degree In Bachelor of Science in Zoology
	Communication Skills and Personality Development	Community Connect (Qualifying)	20	
		Project	28	{184}  Bachelor (Honors With Research) in Zoology
		Project	24	



Bachelor of Science (Research) Microbiology

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (Microbiology)	Major (Microbiology)	Major (Microbiology)	Minor/ Elective
		Credits 4/2	Credits 4/2	Credits 4/2	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Fundamentals of Biochemistry + LAB: Biochemistry Lab	Introduction to microbiology + LAB: Microbiology Lab	Introduction of Basic Chemistry + LAB: Introduction of Basic Chemistry Lab	
	II	Cell and Molecular Biology + LAB: Cell and Molecular Biology-lab	Bioinstrumentation + Bioinstrumentation lab	Microbial Diversity + Microbial Diversity Lab	OPE XXX
2	III	Bacteriology + LAB: Bacteriology Lab	Immunology + LAB: Immunology Lab	Biophysics + LAB: Biophysics Lab	
	IV	Enzyme Technology + LAB: Enzyme Technology lab	Nanotoxicology + LAB: Nanotoxicology Lab	Bioinformatics + LAB: Bioinformatics Lab + RBL-2	OPE XXX
Summer Industry Internship (Industry Connect)					
3	V	Virology + LAB: Virology lab	Medical Microbiology + LAB: Medical microbiology Lab	Industrial Microbiology + Industrial Microbiology Lab + RBL-3	
	VI	Microbial Physiology and Metabolism + Food and Dairy Microbiology	Recombinant DNA technology	Environmental Microbiology + Environmental Microbiology Lab + RBL4	
4	VII	Mycology and Phycology + Mycology and Phycology Lab	IPR and industrial ethics + Biostatistics	Fermentation Technology + Fermentation Lab	
	VIII	Cell signaling and Cancer Biology + Genomics and Proteomics	Bioreactors and downstream processing + Development Downstream processing Lab	Microbial Bioenergy + Microbial Bioenergy Lab	OPE XXX

Vocational	Compulsory Co-curricular	Industrial Training/Survey/ Research Project	{Minimum Credit} For the year	{Cumulative Minimum Credits} required for award of Certificate/ Diploma/Degree
Minor	Minor	Major		
Credits 3/4	Qualifying	Credits 0/2/4/8		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Essential techniques in Life Sciences	Food, Nutrition and Hygiene		21	{46}  Certificate in Basics of Microbiology
Essential techniques in Life Sciences	First Aid & Health		25	
Essential techniques in Life Sciences	Human Values and Environment studies		21	{92}  Diploma in Microbiology
Essential techniques in Life Sciences	Physical Education and Yoga		25	
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	20	{132}  Degree in Bachelor in Microbiology
	Communication Skills and Personality Development	Community Connect (Qualifying)	20	
		Project	24	{184}  Bachelor (Research) in Microbiology
		Project	28	

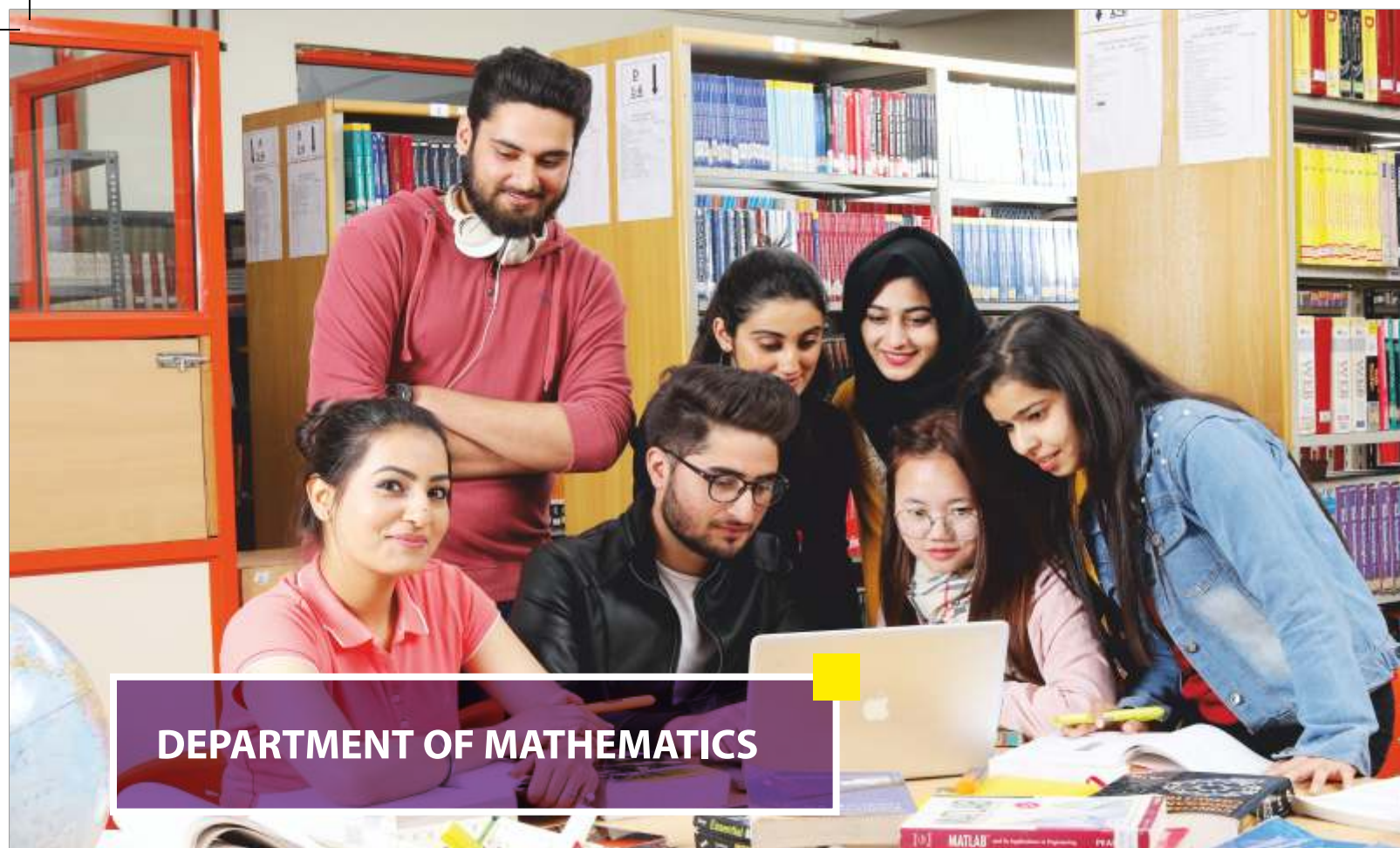


Bachelor of Science (Research) Food Science And Technology

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (Food Science and Technology)	Major (Food Science and Technology)	Major (Food Science and Technology)	Minor/ Elective
		Credits 4/5/6	Credits 4/5/6	Credits 4/5/6	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Basics of Food Technology + LAB: Basic of Food Technology Lab	Introduction to Food Biomolecules + LAB: Introduction to Food Biomolecules Lab	Introduction to Basic Chemistry + LAB: Introduction to Basic Chemistry Lab	
	II	Cereals and Legumes Technology + LAB: Cereals and Legumes Technology Lab	Fruits and Vegetables Processing Technology + LAB: Fruits and Vegetables Processing Technology Lab	Nutrition Sciences + LAB: Nutrition Sciences Lab	OPE XXX
2	III	Chemistry of Food + LAB: Chemistry of Food Lab	Fundamental of Food Engineering + LAB: Food Engineering Lab	Biophysics + LAB: Biophysics Lab + RBL-1	
	IV	Fundamental of Dairy Technology + LAB: Fundamental of Dairy Technology Lab	Meat, and Sea Food Technology + LAB: Animal Food Lab	Human Physiology and Nutrition Science + LAB: Human Physiology and Nutrition Science Lab + RBL-2	OPE XXX
Summer Industry Internship (Industry Connect)					
3	V	Basics of Food Microbiology + Technology of Food Preservation + LAB: Basics of Food Microbiology Lab	Waste Management in Food Sector + Food Processing Operation	RBL-3	
	VI	Biotechnology in Food Industry + Research Design and Methodology in Food Science + LAB: Biotechnology in Food Industry Lab	Food Safety and Regulatory Aspects + Enzymes in Food Industry	RBL4	
4	VII	Bakery and Confectionary Technology + Functional Food and Spices Technology + Analysis of Food Quality + Role of IPR in Food Sector + LAB: Bakery and Confectionary Products Lab			
	VIII	Food Toxicology and Safety + Technology of Food Fermentation + Food Packaging Technology + Biochemistry and Nutrition + LAB: Food Toxicology and Safety Lab			OPE XXX

Vocational	Compulsory Co-curricular	Industrial Training/Survey/ Research Project	{Minimum Credit} For the year	{Cumulative Minimum Credits} required for award of Certificate/ Diploma/Degree
Minor	Minor	Major		
Credits 3	Qualifying	Credits 4		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Essential techniques in Life Sciences	Food, Nutrition and Hygiene		21	{46}  Certificate in Food Science And Technology
Essential techniques in Life Sciences	First Aid & Health		25	
Essential techniques in Life Sciences	Human Values and Environment studies		21	{92}  Diploma in Food Science And Technology
Essential techniques in Life Sciences	Physical Education and Yoga		25	
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	20	{132}  Degree in Bachelor of Science in Food Science And Technology
	Communication Skills and Personality Development	Community Connect (Qualifying)	20	
		Research Project	24	{184}  Bachelor (Honors with Research) in Food Science And Technology
		Research Project	28	





## DEPARTMENT OF MATHEMATICS

Mathematics is the language of nature. Certain qualities that are nurtured by mathematics are the power of reasoning, creativity, abstract or spatial thinking, critical thinking, problem solving activity & more. To express any problem from the real world, the logic and reasoning akin to mathematics along with its concepts and structures is a must. Department of Mathematics runs undergraduate & postgraduates courses with a balance syllabus of both pure & applied mathematics and offers Ph.D programmes in various areas of specializations such as Number theory & cryptography, Fluid dynamics, Mathematical modelling, Numerical analysis, Functional analysis, Graph theory, Operations research & Special functions. Different groups are also working in advanced fields of Mathematics like chaos theory and dynamical systems. Department of Mathematics also supports other schools in their courses such as School of Engineering & Technology (SET), School of Education (SOE), School of Nursing Science & Research (SNSR) and others.

Due to high demand in Industry, the department also started B.Sc. in Data Sciences and plans to introduce some more advanced courses in the future

### Strength of The Department:

- 12 Research Scholars have been awarded Ph.D. Degrees.
- More than 100 research papers have been published in reputed National & International Journals.
- 11 books and 6 book chapters have been published by reputed publishers.

- Students strength increased by 33%.
- Highly qualified faculty members and students are being exposed by eminent personalities of the world.
- An interdisciplinary research centre "Centre for Advanced Research in Applied Mathematics and Physics" with three scholarship for research projects.

### Career Prospects

- Accountancy & Professional Service
- Banking-Retail Banking
- Computing & IT
- General Management
- Statistical Research
- Operational Research
- Engineering Sciences

### Laboratories

The Department has laboratories equipped with basic and modern computing facilities which include advanced software such as MATLAB, PYTHON, R & SPSS.

### Workshop/Career Guidance Programme/Seminars

- A Webinar on Awareness of Trends in Technology under the Memorial Lecture Series 2021 in the memory of Prof. A. H. Siddiqi on 20th January 2021.
- "An online webinar tips & trick to crack competitive examinations" like NET/SLET on 22nd July, 2020.
- "Entrepreneurship and start-ups by a renowned

Entrepreneur and startup founder" on 29th December, 2020.

- Workshop based on career counselling and hands-on practice session for all final year students | 4th April 2019
- National Workshop on Mathematical Modelling Using MATHEMATICA | 9th-13th April 2019
- Technical Seminar on "Mathematical Applications and Modelling" | Final year students | 29th April 2019
- Industrial visit to Imperial Tobacco Company of India Limited (ITC), Haridwar, Uttarakhand | 23th-24th October, 2019.

### Academic curricular Activities and Achievement:

- Dr. Selbi Jose, Director, Knowledge Resource centre, Dr. Homi Bhabha State University, Mumbai India (2020).
- Mathematics department started Sharda Mathematics Olympiad (SMO-2020).
- From the last two years, the Department has been giving coaching for NET/SLET classes
- In 2019, one student cleared Civil services and one cleared JAM in 2021.
- Four students have cleared first round of Wipro Placement drive in 2021.

### Invited Lectures

- "Industrial and Financial Mathematics" by Prof. Kum Kum Dewan, Adjunct Professor, MITS, M.P. Technical University, Gwalior, 1st November 2019.
- Invited lecture on "Data Mining and Wavelets" by Prof. P. Manchanda (Professor & Head, Department of Mathematics, Guru Nanak Dev University, Amritsar), 15th April 2019.

- Expository Lecture on "Fractal with Real life Applications" by Prof. Rashmi Bharadwaj (Professor, Department of Mathematics, Guru Gobind Singh Indraprastha University, New Delhi), 18th January 2019.
- Expert Lecture on "Role of Artificial Intelligence in Natural Language Processing and Computational Linguistics" by Prof. Ashish Chandiok on 15th February 2019.
- Expert lecture on "Vector Order and Set Order: Vector Optimization and Set Optimization" by Prof. Q. H. Ansari (Department of Mathematics Aligarh Muslim University). He did his Ph.D. from AMU, Aligarh.
- Expert lecture on "Carbon Nanotubes and its applications" by Prof. Mushahid Husain (Former- Director Nano science and Nanotechnology Centre and former Vice Chancellor M. J. P. Rohilkhand University, Bareilly), 22th February, 2019

### The following International Academicians have graced various events organised by the Department of Mathematics

- Prof. Pavel Exner (President, European Mathematical Society).
- Prof. G. Leugering (Vice president, Friedrich-Alexander University, Germany).
- Prof. Stephane Jaffard (University of Paris, East, France).
- Prof. M. Shahjahan (Memphis University, USA).
- Prof. H. Feichtinger (Vienna University, Austria).
- Prof. T. Khan (Clemson University, USA).
- Prof. R. Lozi (Nice University, France).
- Dr. Damien Provotolo (Permanent Researcher CNRS, Nice, France).





Bachelor of Science (Research) Mathematics

		Subject 1	Subject 2	Subject 3	Subject 4
		Major 1	Major 2	Major 3	Minor/ Elective
		Credits 4/5/6	Credits 4/5/6	Credits 4/5/6	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Differential Calculus & Integral Calculus + LAB	Statistics I	Engg./ B. Sc. -CS/PHY/CHY/ Economics/Commerce/ and others	Elective-1
	II	Matrices and Differential Equations & Geometry	Statistics II	Engg./ B. Sc. - CS/PHY/CHY/ Economics/Commerce/ and others	
2	III	Algebra & Mathematical Methods	Mathematical Modelling with Python	Engg./ B. Sc. - CS/PHY/CHY/ Economics/Commerce/ and others + RBL-1	Elective-2
	IV	Differential Equations & Mechanics	MATLAB Programming and Applications	Engg./ B. Sc.CS/PHY/CHY/ Economics/ Commerce/ and others. + RBL-2	
Summer Industry Internship (Industry Connect)					
3	V	Group and Ring Theory & Linear Algebra + Graph Theory & Discrete Mathematics	Real Analysis + Statistical Computing and Introduction to Statistical Softwares	RBL-3	
	VI	Metric Spaces and Complex Analysis + Numerical Analysis and Operations Research	Integral Transforms and Special Functions + Fluid Dynamics	RBL4	
4	VII	Number Theory & Game Theory + Differential Geometry & Tensor Analysis + Topology + Mathematical Analysis			Elective-3
	VIII	Cryptography + Calculus of Variations + Advanced Real Analysis + Advanced Operations Research			

Vocational	Compulsory Co-curricular	Industrial Training/Survey/ Research Project	{Minimum Credit} For the year	{Cumulative Minimum Credits} required for award of Certificate/ Diploma/Degree
Minor	Minor	Major		
Credits 3	Qualifying	Credits 4		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Basic Statistical Analysis Using Excel	Food, nutrition and hygiene		46	{46}  Certificate in Faculty
Statistical Thinking with R/Python/SPSS	First Aid and Health			
Prediction and forecasting management	Human Values and Environment studies		46	{92}  Diploma in Faculty
Advanced Statistical Analysis	Physical Education and Yoga			
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	40	{132}  Bachelor in Faculty
	Communication Skills and Personality Development	Community Connect (Qualifying)		
		Research Project	52	{184}  Bachelor (Research) in Faculty
		Research Project		

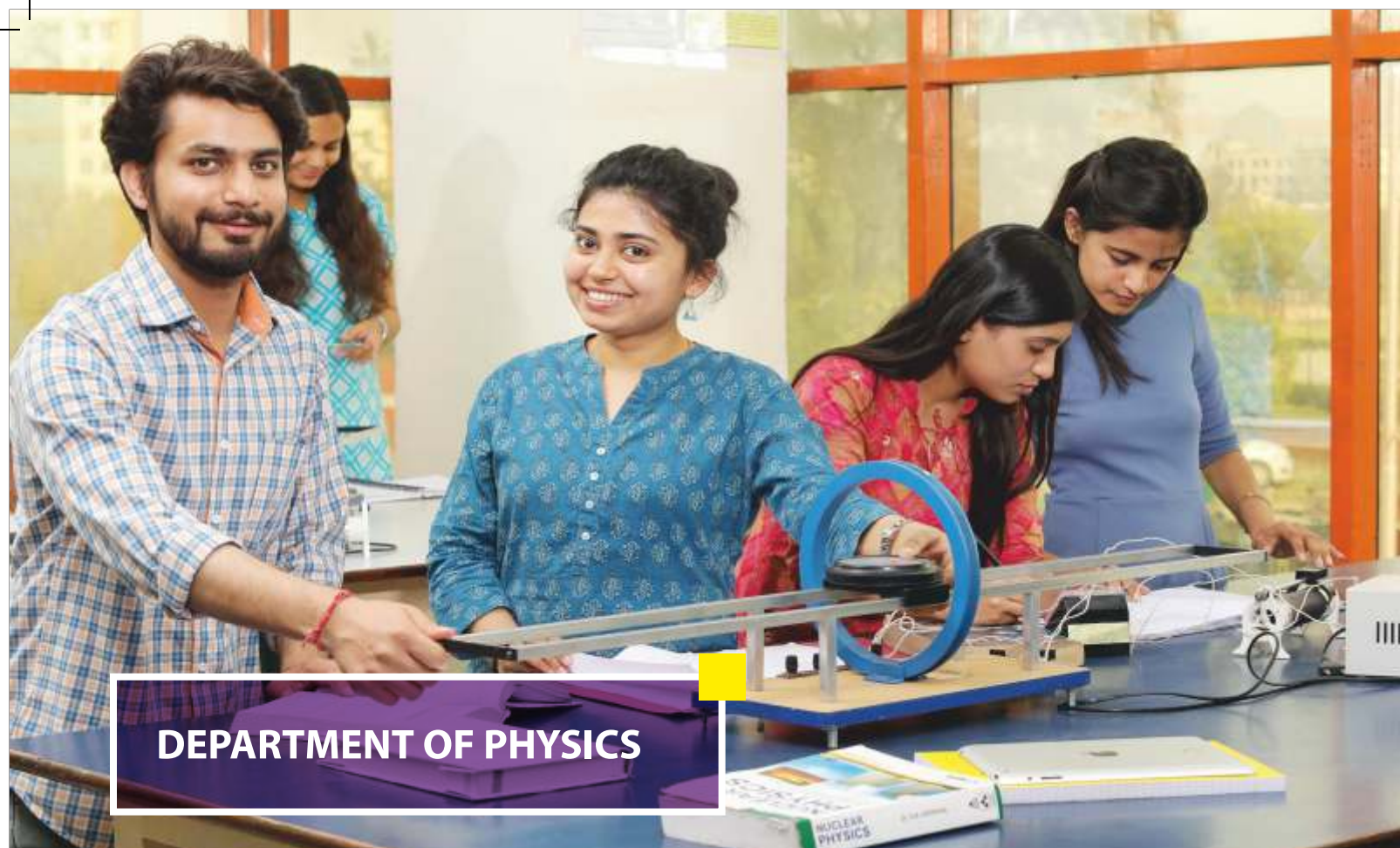


Bachelor of Science (Research) Data Science & Analytics

		Subject 1	Subject 2	Subject 3	Subject 4
		Major 1	Major 2	Major 3	Minor/ Elective
		Credits 4/5/6	Credits 4/5/6	Credits 4/5/6	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Statistics I	Foundation course in Mathematics	Fundamentals of Computers & Problem solving using C	Elective-1
	II	Parametric Statistical Inference and Distribution Theory	Linear Algebra & Discrete Mathematics	Programming R	
2	III	Sampling Theory	Numerical Analysis & Operationas Research	Data Structure & Theory of Algorithms / Others + RBL-1	Elective-2
	IV	Data preparation and Data Cleaning	Database Management Systems	Operating System + RBL-2	
Summer Industry Internship (Industry Connect)					
3	V	Data Ware housing and Data mining + Regression, time series, forecasting and Index numbers	Machine learning & Deep learning + Multivariate Analysis	RBL-3	
	VI	Statistical Analysis & Simulation + Data Scientist Toolbox	Statistical Inference + Data Visualization	RBL4	
4	VII	Wave Analytics + Advanced Statistical Inference + Probabilistic Measure Theory + Structural Equation Modelling			Elective-3
	VIII	Statistics for Cryptography + Advanced Predictive Analysis + Reliability Theory + Advanced Sampling Theory			

Vocational	Compulsory Co-curricular	Industrial Training/Survey/ Research Project	{Minimum Credit} For the year	{Cumulative Minimum Credits} required for award of Certificate/ Diploma/Degree
Minor	Minor	Major		
Credits 3	Qualifying	Credits 4		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Basic Statistical Analysis Using Excel	Food, nutrition and hygiene		46	{46}  Certificate in Faculty
Statistical Thinking with R/Python/SPSS	First Aid and Health			
Prediction and forecasting management	Human Values and Environment studies		46	{92}  Diploma in Faculty
Advanced Statistical Analysis	Physical Education and Yoga			
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	40	{132}  Bachelor in Faculty
	Communication Skills and Personality Development	Community Connect (Qualifying)		
		Research Project	52	{184}  Bachelor (Research) in Faculty
		Research Project		





## DEPARTMENT OF PHYSICS

The Department of Physics is involved in doing research in various areas of Materials Science like Ceramics, Super Capacitors, Solid Electrolytes, Ceramics and Ferrite materials. Apart from experimental areas, faculties are well experienced in High Energy Physics, Astroparticle Physics, and Medical Physics. In the field of high energy Physics and medical Physics, image processing, magneto hydrodynamics and seminal research works have been carried out where as in the field of material science and technology, our faculty members are focused around synthesis and electrochemical application of nanomaterials, ceramics, Porous Carbon and Polymer electrolyte.

We have a fully equipped laboratory known as Material Research Laboratory ([www.materialsresearchlab.net](http://www.materialsresearchlab.net)) where we have most important characterization tools like impedance spectroscopy, Keithley source major unit, FTIR, UV absorption spectroscopy. Using specialized equipment, we are able to develop electrochemical devices like Solar Cells- Dye Sensitized Solar Cell (DSSC), Perovskite Solar Cell (PSC), Quantum Dot Sensitized Solar Cell (QDSSC), Super Capacitors- Electrochemical Double Layer Capacitor (EDLC), Sensors, Fuel Cells.

### Career Prospects

#### M.Sc. Physics:

The student with M.Sc. (Physics) degree and having comprehensive knowledge of concepts in Physics has great

opportunity for employment in private as well as Government Sector. Students have career opportunities in research labs, medicals lab, academic institutions and various government owned Scientific Research and Development Organizations. Students with M.Sc. (Physics) are eligible for the post of Scientist C in different research organizations such as ISRO, DRDO and BARC. Other than these options, a Physics graduate can go for higher studies like M.Sc. (Physics), Ph.D and MTech. from India and Abroad.

#### Government sector major recruiting organizations are

- Defense Research and Development Organization (DRDO)
- Physical Research Laboratory, Ahmedabad
- Saha Institute of Nuclear Physics, Kolkata
- Indian Space Research Organization (ISRO)
- Nuclear Science Centre New Delhi.
- Bhabha Atomic Research Centre (BARC)
- Oil and Natural Gas Corporation (ONGC)
- Bharat Heavy Electricals Limited (BHEL)
- National Thermal Power Corporation (NTPC)

#### Physics graduates can get Officer Job in other government sectors like:-

- Railway Officer
- State Bank of India (SBI)
- Staff Selection Commission
- Banking Sectors

- UPSC Geoscientist and other Government Sector Services.

#### B.Sc. (Physics)

Students have career opportunities in research labs, medicals lab, academic institutions and various government owned Scientific Research and Development Organizations. The students also have the opportunity to go for Higher Studies after B.Sc. (Physics) such as M.Sc. (Physics), MBA, MCA and other courses.

#### Laboratories

- Physics lab with dark room for Science graduate and postgraduate students
- Electronics lab
- Nuclear Physics lab
- Material Research lab for M.Tech. and Ph.D research scholars.

#### Centre of Excellence on Solar Cells & Renewable Energy

The centre is mainly focused around the development of modern materials and its successful application in energy devices like Solar Cells, Supercapacitors, Sensors, Fuel cells.

#### Projects/Workshops/Conferences

- 4th International Conference on Science and Engineering of Materials ICSEM 2021, July 19-22, 2021
- Skill of Quality Engineering and Technological advances based one week FDP" Quality Engineering and Technological advances in Materials and Devices, March 8-12, 2021
- Recent Trends in Acoustics and Material Science-2020, RTAMS 2020, November 28-30, 2020
- National Conference on Functional Materials: Emerging technologies and Applications in Material Science, NCFM 2020, July 25-26, 2020
- Teaching and research Skill in the field of Engineering Materials & Nanotechnologies: One-week Online Faculty Development programme on Recent Trends in Materials and Engineering, May 25-31, 2020
- Fabrication of all solid photo-electrochemical solar cells03 | SBSR Brochure 2019-20 using polymer electrolytes (Rs. 3.0 Lacs plus salary of PI) sponsored by AICTE
- Knowledge on cutting edge research on advanced materials for interdisciplinary Research: One Day Symposium on Recent Advances in Science and Technology, October 19, 2019
- Skill oriented DST Inspire Science Camp for Students, July 29 - Aug 2, 2019
- 3rd International Conference on Science and Engineering of Materials ICSEM 2019, July 19-21, 2019
- International Conference on Science and Engineering of Materials (ICSEM-2018) January 6-8, 2018
- National Conference on Functional Materials: State of Art-March 31-April 1, 2017
- Design & Development of Filters (Rs. 8.0 Lacs) sponsored by MSME
- Prototype development of Super Capacitor (Rs. 8.0 Lacs)

sponsored by MSME

- National Conference on Multifunctional Materials, Energy and Environment
- International Conference on Science and Engineering of Materials (ICSEM-2014) January 6-8, 2014
- Indo-Japan Conference on Frontier Nanomaterials for Energy (FNE-2012) January 9-11, 2012

#### Projects Completed

- Development of nano porous TiO<sub>2</sub> electrode and modified solid polymer electrolytes for Dye Sensitized Solar cells (DSSC) (Rs. 18,14,000) sponsored by DST.
- Development of High Dielectric Constant Polymer Composite for Pulsed Power System (Rs. 7,00,000) sponsored by DRDO.
- Effect of Swift Ion Beam On Polymer Electrolyte Films (Rs. 22,58,534) sponsored by DST.
- Development of large area Dye Sensitized Solar cells (DSSC) using modified solid polymer electrolytes (Rs. 20,30,644) sponsored by DST.
- Development and characterization of ionic polymer blend membrane metal composites (IPMS) for the application of actuation devices (Rs. 31,35,000) sponsored by DRDO.

#### Ongoing Projects

- Development and characterization of swift response actuators using Carbon allotrope's based ionic polymer composites (Rs. 25,07,000) sponsored by DRDO.
- Synthesis of alkali ion (Li, Na and K) doped Bi FeO<sub>3</sub> - Graphene oxide nanostructured materials for visible light photocatalytic application (Rs. 18,30,000) sponsored by SERB 2019.

#### Projects Submitted

- Stable ionic liquid electrolyte and carbon allotropes based highly efficient supercapacitor (Rs. 39,09,246) to DST.
- Stable and efficient Dye Sensitized Solar Cell (DSSC) with 4% efficiency using solid polymer electrolyte (Rs. 29,92,640) to DST.
- Non-Porous carbon with polymer electrolytes for high performance Supercapacitor (Rs. 23,46,000) to CSTUP.
- Development of Novel Organic-Inorganic Hybrid Nanocomposite Polymer Electrolyte Materials for Next Generation Na-ion Batteries (Rs. 59,76,840) to BRICS.
- Artificial Intelligence based expert system for Ayurvedic drug discovery (Rs. 35,64,000) to DST.
- Activated carbon derived from bio-waste and its composites with Metal oxides for supercapacitors (Rs. 49,50,000).
- Thermoelectric cooling blanket for treating hyperthermia (Rs. 36,50,000) to BIRAC.
- A trap for male mosquitoes using an active acoustic device indirectly tunable to female wing beat Frequencies (Rs. 12,74,000) to BIRAC.
- Mathematical modeling of biomedical data using stochastic processes and inverse problems (Rs. 6,00,000) to SERB.



Bachelor of Science (Research) Physics

		Subject 1	Subject 2	Subject 3	Subject 4
		Major (PHYSICS)	Major (PHYSICS)	Major (MATHS)	Minor/ Elective (Chemistry/ Elective)
		Credits 4/5/6	Credits 4/5/6	Credits 4/5/6	Credits 4/5/6
		CC	CC	DSE	OE
Year	Sem	Own Faculty	Own Faculty	Any Faculty	Other Department/ Faculty
1	I	Mathematical Physics & Newtonian Mechanics + LAB: Mechanical Properties of Matter	General Properties of matter + LAB	Differential Calculus & Integral Calculus + LAB	
	II	Thermal Physics & Semiconductor Devices + LAB: Thermal Properties of Matter & Electronic Circuits	Renewable energy resources + LAB	Matrices and Differential Equations & Geometry	Fundamental of Physical Chemistry/ Application based Programming in Python+ Lab
2	III	Electromagnetic Theory & Modern Optics + LAB: Demonstrative Aspects of Electricity & Magnetism	Oscillation and waves + LAB	Mathematical methods and differential equations + RBL-1	Programming for Problem Solving + Lab
	IV	Perspectives of Modern Physics & Basic Electronics + LAB: Basic Electronics Instrumentation	Laser and applications + LAB	Mathematical Physics I RBL-2	
Summer Industry Internship (Industry Connect)					
3	V	Classical & Statistical Mechanics + Quantum Mechanics & Spectroscopy + LAB: Demonstrative Aspects of Optics & Lasers	Atmospheric and Astrophysics + Plasma Physics	RBL-3	
	VI	Solid State & Nuclear Physics + Analog & Digital Principles & Applications + LAB: Analog & Digital Circuits	(Instrumentation) + (Nanomaterials)	RBL4	
4	VII	Advanced Quantum Mechanics I + Advanced Solid-State Physics + Classical Mechanics II + Mathematical Physics II + Introduction to MATLAB and its Applications (LAB)			MATLAB and its Applications/ Elective
	VIII	Electronics and Solid State devices + Advanced Statistical Mechanics + Atomic, molecular physics and spectroscopic techniques + Advanced quantum mechanics II + LAB			

Vocational	Compulsory Co-curricular	Industrial Training/Survey/ Research Project	{Minimum Credit} For the year	{Cumulative Minimum Credits} required for award of Certificate/ Diploma/Degree
Minor	Minor	Major		
Credits 3	Qualifying	Credits 4		
SEC	AEC			
Vocational Faculty	Co- Curricular Course	Related to main Subject		
Vocational course in Electronics	Food, Nutrition and Hygiene		46	{46} Certificate in Basic Physics & Semiconductor Devices
Fundamentals of Physical and geometrical optics for eye and vision	First Aid and Health			
Nano-materials Technology and Hands on Training	Human Values and Environment studies		46	{92} Diploma in Applied Physics With Electronics
Vocational course in Computation physics using Sci Lab	Physical Education and Yoga			
Summer Industry Internship (Industry Connect)				
	Analytic Ability and Digital Awareness	Industry Connect (Qualifying)	40	{132} Bachelor in Applied Physics With Electronics
	Communication Skills and Personality Development	Community Connect (Qualifying)		
		Research Project	52	{184} Bachelor (research) in Faculty
		Research Project		



CENTRE OF EXCELLENCE



RESEARCH LABS





# WORLD-CLASS INFRASTRUCTURE

Sharda University campus combines modern teaching and study spaces on 63 acres of landscaped greenery. At Sharda, you will study in a clean, healthy environment that combines the benefits of an active global lifestyle with the resources of an international University. When you want to work together and make new friends you'll find yourself in a welcoming community filled with people from various countries. Our campus includes academic support, accommodation, sports, culture and entertainment-everything you need.

## LEARN

BROWSE THROUGH LACS  
OF BOOKS IN LIBRARIES

## EXERCISE

STAY FIT AT THE ON-CAMPUS  
GYMNASIUM

## EXPERIENCE

GUEST LECTURES, EVENTS &  
ACTIVITIES IN AUDITORIUMS  
& SEMINAR HALLS

## RESEARCH

HI-TECH LABS & RESEARCH  
CENTRES

## EXPLORE

ONE OF NORTH INDIA'S  
BIGGEST EDUCATIONAL  
HUBS

## EAT

DISCOVER MULTI-CUISINE  
OUTLETS ON CAMPUS

## PLAY

RELAX BY PLAYING MANY  
OUTDOOR & INDOOR GAMES

## CONNECT

STAY CONNECTED 24X7  
THROUGH SEAMLESS  
WI-FI NETWORK



# SHARDA LAUNCHPAD FEDERATION.

## SUPPORTING ENTREPRENEURS



AN EARLY STAGE INCUBATOR AND  
ENTREPRENEURIAL ECOSYSTEM



Sharda Launchpad Federation, a sec 8 entity established in year 2013 promoted by Sharda University aims to support the shared vision of Government of India and University towards building a bit more vibrant culture of innovation and entrepreneurship for campus, city and nation. With a house of thousands of learners, researchers, academicians and practitioners of several disciplines of learning, Sharda Launchpad Federation as a dedicated professional platform enables potential individuals, teams and early stage start-ups to access need based resources , domain expertise, Technology and business mentorship, vast entrepreneurial stakeholders network and a dynamic ecosystem to advance the entrepreneurial journey and build scalable market ready sustainable ventures of future.

SLPF as an entrepreneurial ecosystem is a dedicated facility with approx. 7000 sq.ft of area, contemporary working space with necessary technology infrastructure led by a dedicated full time leadership team to consistently advance the purpose of the incubator and design platforms to encourage, mentor and support promising ideas/early stage start-ups. The incubator as an entrepreneurial ecosystem, is working towards expanding to sector agonistic support system though prime focus areas of start up support are-Agriculture, Healthcare, Drones, EV's, Block Chain, IoT Application and SDG aligned innovations.

### Ecosystem partners and associates

The incubator is widely connected to vast pool of internal and external ecosystems, organisations, Experts, Mentors, Investors and Funds to accelerate the start-up success.

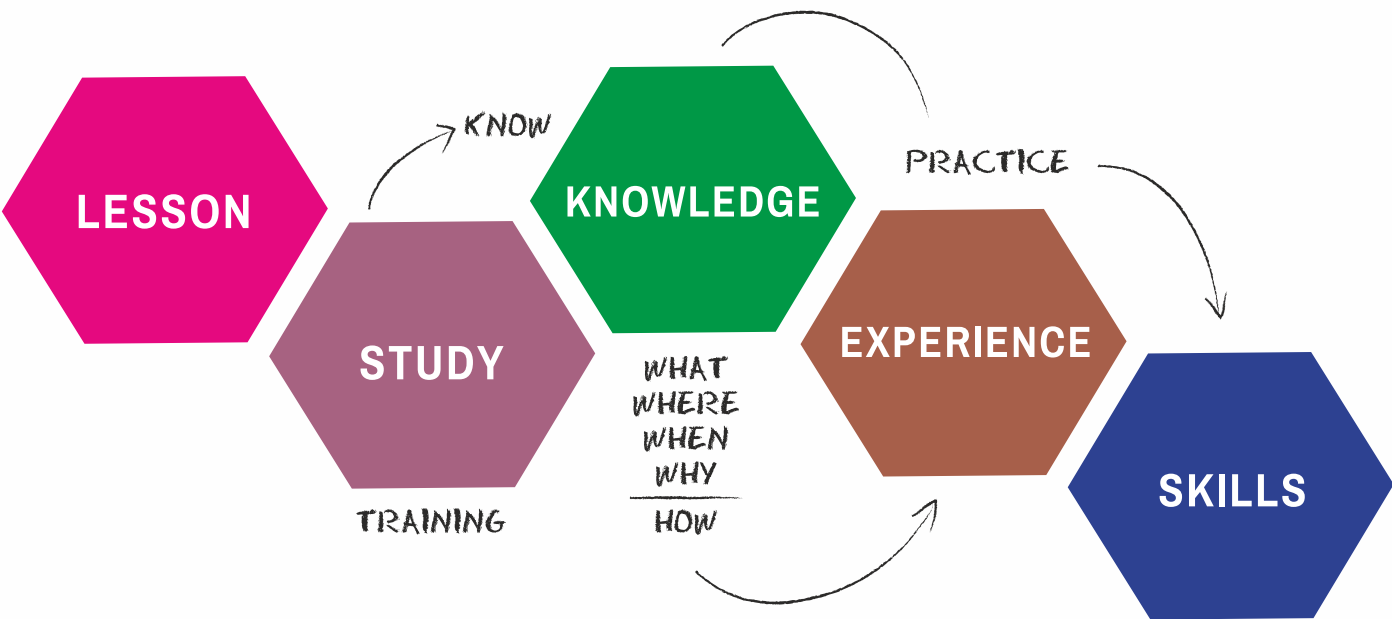
### Ecosystem Partners



Learn more about current projects, stakeholders and programmes at <https://launchpad.sharda.ac.in/events-list>

# SHARDA SKILLS

## ENHANCING COMPETENCIES TO EXCEL



Sharda Skills is the training and skill building department of Sharda University which is involved in imparting life skills to students and professionals both within and outside the campus. Sharda Skills has a team of Industry Proven Subject Matter Experts and Professionals such as Certified Psychologists, Psychotherapists and Masters having cumulative training and teaching experience of more than 2 decades in some of the leading corporates of the country.

Sharda Skills training programmes revolve around developing resilience, tenacity, creativity, problem solving, multitasking, crisis management, team skills, communication skills and personality development etc. These programmes have been made an integral part of credit base courses and the trainers of Sharda Skills put their heart and soul in nurturing every student and help them to become a better and confident human being.

Sharda Skills also imparts specific skill(s)/skillsets which can be pursued either as a hobby or for employment, business, and entrepreneurial reasons.

*Sharda Skills also provides coaching and mentoring to students who want to prepare for various competitive exams like UPSC, CAT, GRE, GMAT, SSC, IBPS etc within the campus after University hours.*





# FULFILLING CAREER DREAMS THROUGH SHARDA SCHOLARSHIP

**Upto 100% Scholarship**

**4399 students studying with Scholarship  
and Freeship worth Rs. 20.46 crore in 2021-22**

Right to Education is one of the fundamental rights of every Indian citizen. Sharda University believes that money should not be a road block for a student with innovative ideas in his mind and passion in his heart. We extend scholarships and financial assistance to meritorious students based on their academic achievements.

A number of scholarships are offered to students depending on the academic credentials and their achievements in sporting and cultural arena. The University grants full to partial waiver on tuition fees payable by the student.

**Upto 100% Scholarships granted based on Academic Merit:**

The students on their satisfactory performance in Sharda University Admission Test (SUAT), Personal Interview (PI) and depending on their merit in qualifying exams, shall be eligible for the grant of merit scholarships.

For details, visit: [www.sharda.ac.in/scholarship](http://www.sharda.ac.in/scholarship)

## ACADEMIC SCHOLARSHIP

Merit based Scholarship offered to students as per details mentioned hereunder.

## INNOVATIVE IDEA SCHOLARSHIP

10% to 100% based only innovation ideas that get selected by committee for innovation. Send your ideas to [ideas.scholarship@sharda.ac.in](mailto:ideas.scholarship@sharda.ac.in)

## SGL ALUMNI SCHOLARSHIP

On their admission in Master Degree programmes (other than Medical, Dental & Nursing) will be eligible for the award of fee waiver equivalent to 25% of their Tuition fee of first year. Last date to avail SGI Scholarship is 30th August 2022. University Scholarship Policy (2023-24) would be applicable on 2nd year.

## DEFENCE SCHOLARSHIP

5% Scholarship for Children of Military/Para Military/Govt. Security Forces, Serving & Retd. Defence Personnel on tuition fee of 1st year in all courses except Medical, Dental, Nursing & Pharmacy.

## SIBLING SCHOLARSHIP

Fee waiver of 5% in 1st year for student whose sibling is pursuing education at the university. Proof of relation is required.

## ART & CULTURE SCHOLARSHIP

Upto 100% Art & Culture Scholarship based on exemplary student performance in class XI & XII. Scholarship % would be decided by Art & Culture Committee.

## SPORTS SCHOLARSHIP

The students who have excelled in sporting activities at National & State Level will be eligible for Sports Scholarship from 10% to 100% on tuition fee in 1st year. For updated & detailed information on the nature of Sports and the Eligibility criteria you may visit the University campus or our website [www.sharda.ac.in](http://www.sharda.ac.in) \*Applicable for achievements in 2021-22 & later.

## SHARDA UNIVERSITY STAFF'S WARD SCHOLARSHIP

As one of the employee welfare schemes, Sharda University offers tuition fee waiver to ward of Sharda's staff as per University policy.

## JKPMSSS SCHOLARSHIP

Jammu Kashmir Prime Minister's Special Scholarship Scheme is given to J&K Students to pursue undergraduate studies outside the Union Territories of Jammu and Kashmir.

## MISSION SHAKTI SCHOLARSHIP

Sharda University is proud to contribute to the Mission Shakti 2022 programme by offering a 50% admission Fee Waiver to all female applicants. No wonder, Sharda is Delhi-NCRs only pvt. university with 44% female students.

## Scholarships granted based on Academic Merits:

The students on their satisfactory performance in Sharda University Admission Test (SUAT), Personal Interview (PI) and depending on their merit in qualifying exams, shall be eligible for grant of the following merit scholarships:

### All UG (SSBSR) Programmes:

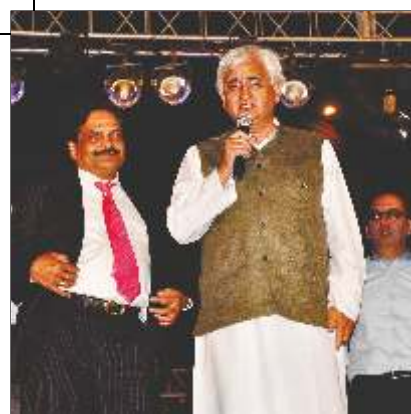
% Marks in #SSE or Equivalent Examination (overall)	Scholarship %		
	Gold	Silver	Bronze
95.00 and above	100	100	100
90.00-94.99	60	50	40
85.00-89.99	40	30	20
80.00-84.99	20	10	10
75.00-79.99	10	5	5

### All PG (SSBSR) Programmes:

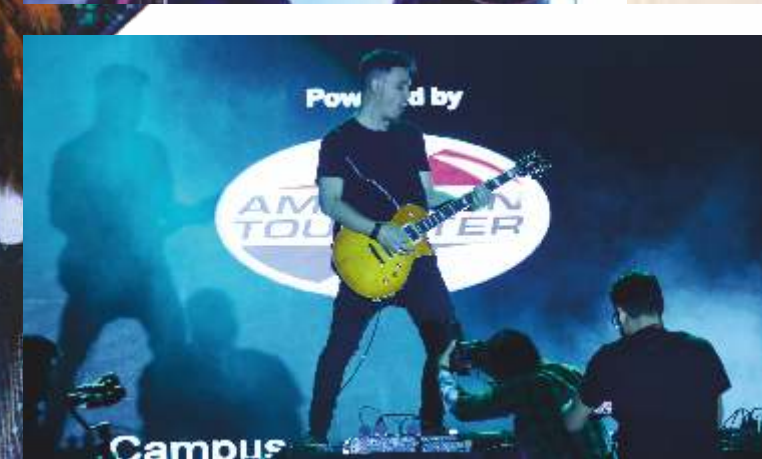
% Marks in Graduation (overall)	Scholarship %		
	Gold	Silver	Bronze
95 and above	100	100	100
90-94.99	60	50	40
85-89.99	40	30	20
80-84.99	20	10	10
75-79.99	10	5	5

Under Scholarship policy the following date parameters are applicable, Gold-upto 31<sup>st</sup> July, Silver- till 26<sup>th</sup> August, Bronze- from 27<sup>th</sup> August till Sharda University registration 2022 as notified by the University.





# CELEBRITIES VISIT @SHARDA





# CULTURAL SOCIETY OF SHARDA UNIVERSITY

The Cultural Society of Sharda University is formed of 9 Clubs, where each of the clubs will be operated by student coordinators and board members under the supervision of faculty coordinators. The cultural society will be governed overall by the following functionaries:

- The Dean of Students' Welfare
- The Associate Dean of Students' Welfare
- Faculty Advisors of Cultural Society

## FINEARTS CLUB

The Fine Arts Club brings out the hidden artistic talents of our students, cultural programmes are conducted during Independence, Sports and college day function. Students participate in Inter & Intra-College competitions. The purpose is to encourage students to express their thoughts and emotions through art.



## MUSIC CLUB

Music Club caters to the passion of student providing quality facilities like instruments, dedicated music room and a plethora of events. It serves as a platform for musicians of all genres and skill levels to showcase their talent at various events like Sufi Night and Voice of Sharda, etc. held at Sharda University.



## DRAMATICS CLUB

The Dramatics Club is for students who are interested in Performing Arts. The Club offers acting education, a creative outlet for theatrically minded students, and a variety of theatrical productions for the students to enjoy. In the past students from the Club brought accolades for the University in various events.

## DANCE CLUB

The Club was established with the mission of bringing out the hidden talents of students and also provides them a stage where they can showcase their dancing talent and interest. The Club provides lot of opportunities in the form of competition and workshops for igniting the spark of interest present in the budding technocrats and honing their skills towards showcasing their talents.

## FASHION CLUB

The Fashion Club aims to bring students together who have a passion for the fashion industry by participating in local and regional fashion events. Club members work with Fashion Merchandising students to help with events and activities on and off campus. The Club has hosted fashion shows, fashion showcases, and window dressings of local businesses.



## DIVERSITY CLUB

Sharda University has a diversified group of students from across 80+ nationalities. The Diversity Club is dedicated in raising awareness of the various cultures among all students. Throughout the year various events are organized by the students to explore different cultures like Rejoice 3D, Festivals of Light, etc.

## LITERARY CLUB

The Club aims to foster love for language, enhance literary creativity and provide an avenue for self-expression beyond the school curriculum. It is also to develop and hone the literary skills of students and inspire them to develop a taste for literature by conducting various workshops. The Club also initiates competitions in extempore, essay writing, creative writing, poetry writing, debate, elocution, quiz and reading to enhance the speech and oratorical skills.



## PHOTOGRAPHY CLUB

Photography Club of Sharda provides a platform where talent meets creativity and gives rise to productivity. Students are engaged in various activities that challenge their imaginative capabilities, assist in sharpening their photographic skills, and present an opportunity for students to learn from each other.



## ENVIRONMENTAL CLUB

The main purpose of the Environmental Club is to educate on sustainable practices, to implement change in the best interest of the environment, and to include all persons working to improve the future of our earth by conducting significant workshops and seminars.



PLACEMENTS



**Ms. VAISHALI JOSHI**  
(M.Sc. Biotechnology)  
Placed at Zyla Health



**Mr. HIMANSHU SATI**  
(B.Sc. Biotechnology)  
Placed at Phronesis Partner



**Ms. CHANDRIKA**  
(M.Sc. Biotechnology)  
Placed at Prescient & Strategic Intelligence



**Mr. RAHUL PANDEY**  
(M.Sc. Chemistry)  
Placed at Jubilant Chemsys



**Mr. ABDULAZIZ GARBA AHMED**  
(M.Sc. Mathematics)  
Research Assistant Fellow,  
National Mathematical  
Centre, Abuja, Nigeria



**Mr. DUSHYANT PRATAP SINGH RATHORE**  
(B.Sc. Physics)  
Placed at Wipro



**Md. MU'AZU TAFIDA**  
M.Sc. Chemistry  
Placed at Federal  
University Dutsin-Ma



**Mr. RAHUL VERMA**  
M.Sc. Chemistry  
Placed at Medicita  
Pharma Pvt. Ltd.



**Mr. ALLEN R. RANJAN**  
M.Sc. Chemistry  
Placed at Bharat Rasayan  
Limited



**Ms. RIYA DAS**  
M.Sc. Chemistry  
Placed at Acadecraft Inc



**Mr. ANKUSH SHARMA**  
M.Sc. Chemistry  
Placed at Cadila  
Pharmaceuticals Limited



**Mr. SUNDARAM SAMMADAR**  
M.Sc. Chemistry  
Placed at Shree Jee  
Laboratory Pvt. Ltd



**Ms. RUPALI TIWARI**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



**Ms. VANDANA**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



**Ms. BHAWNA JAIN**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



**Mr. DEEPAK K SINGH**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



**Ms. PRIYANKA PRASAD**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



**Mr. DHARAMNATH KUSHWAHA**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



**Ms. CHARU SHARMA**  
M.Sc. Chemistry  
Placed at BYJU's



**Ms. NIKITA GUPTA**  
M.Sc. Chemistry  
Placed at BYJU's



**Ms. HIMANI SHARMA**  
M.Sc. Chemistry  
Placed at BYJU's



**Ms. RIYA SINGH**  
M.Sc. Chemistry  
Placed at BYJU's



**Mr. JATIN SHARMA**  
M.Sc. Chemistry  
Placed at BYJU's



**Ms. DRISTIE KALITA**  
M.Sc. Chemistry  
Placed at BYJU's



**Mr. SAURABH SINGH**  
M.Sc. Life Science  
Placed at BYJU's



**Ms. SLASHI LEEL**  
M.Sc. Mathematics  
Placed at Socratic  
Education Private Ltd



**Ms. VAISHALI GOYAL**  
M.Sc. Mathematics  
Placed at Basic  
Education Department



**Mr. ANIKET SHARMA**  
B.Sc. Mathematics  
Placed at Acadecraft Inc



**Mr. GAURAV SHARMA**  
B.Sc. Mathematics  
Placed at Acadecraft Inc



**Mr. SAURABH SINGH**  
M.Sc Biotech  
Placed at BYJU's



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**Mr. MOHIT CHAUDHARY**  
M.Sc. Microbiology  
Placed at ACS Global  
Tech Solution



**Ms. DEEPANSHI RAI**  
B.Sc. (H) Mathematics  
Placed at BYJU's



**Ms. PARUL DHIMAN**  
B.Sc. (H) Mathematics  
Placed at BYJU's



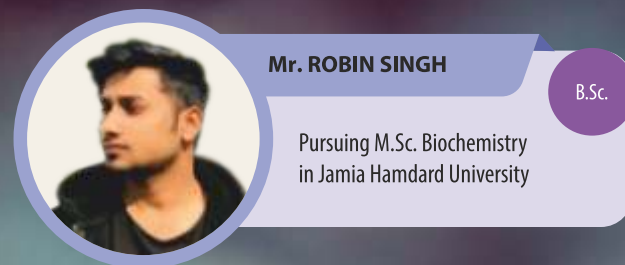
**Ms. RITIKA GUPTA**  
B.Sc. (H) Mathematics  
Placed at BYJU's



**Mr. DEEPAK KUMAR SINGH**  
M.Sc. Chemistry  
Placed at Jubilant  
Chemsys Limited



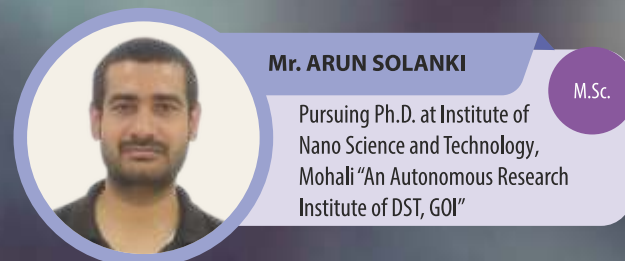
## HIGHER STUDIES ABROAD/ NATIONAL



**Mr. ROBIN SINGH**

B.Sc.

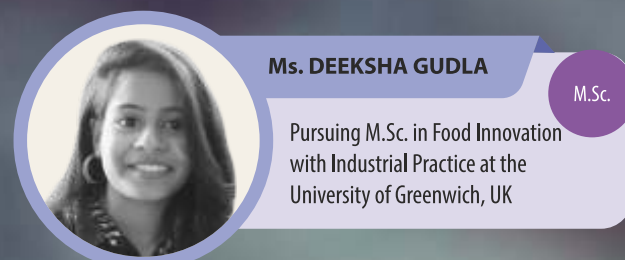
Pursuing M.Sc. Biochemistry  
in Jamia Hamdard University



**Mr. ARUN SOLANKI**

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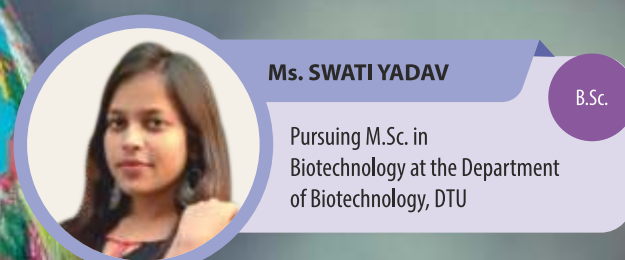
Pursuing Ph.D. at Institute of  
Nano Science and Technology,  
Mohali "An Autonomous Research  
Institute of DST, GOI"



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**Ms. SWATI YADAV**

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Biotechnology at the Department  
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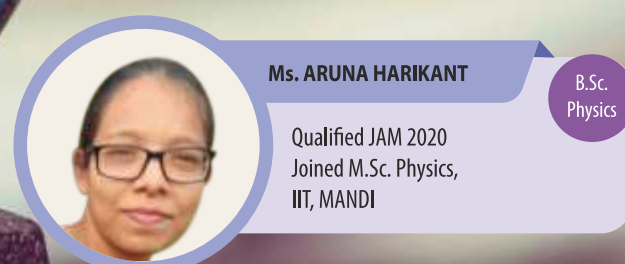


**Mr. NIRANJANA SINGH**

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**Ms. DIKSHA SINGH**

M.Sc.  
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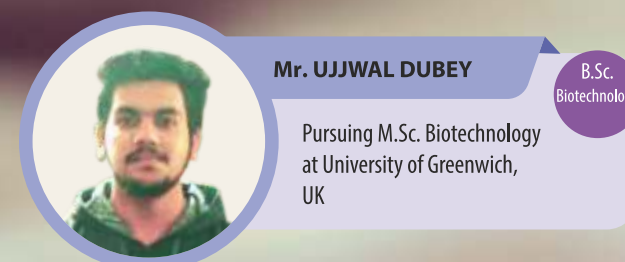
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**Mr. UJJWAL DUBEY**

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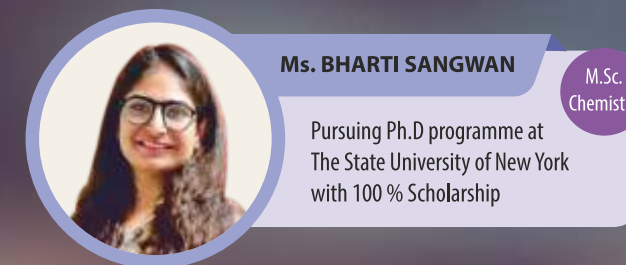
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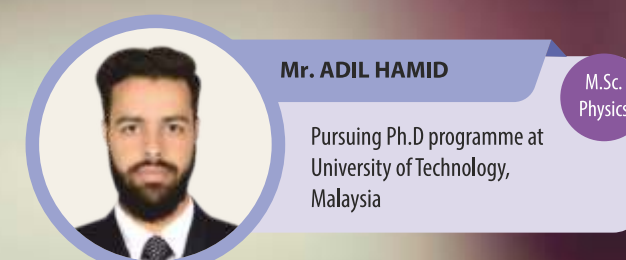
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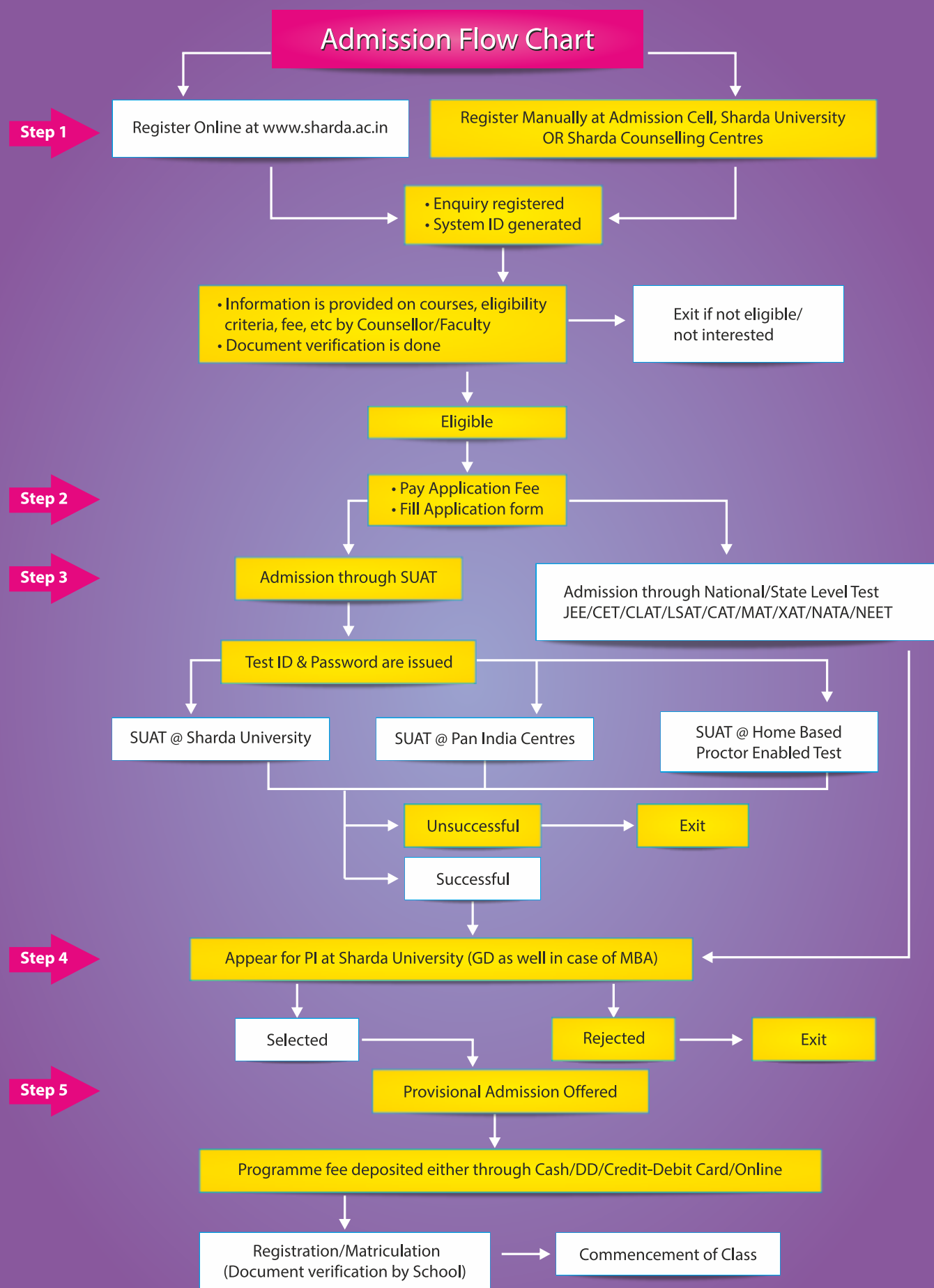


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