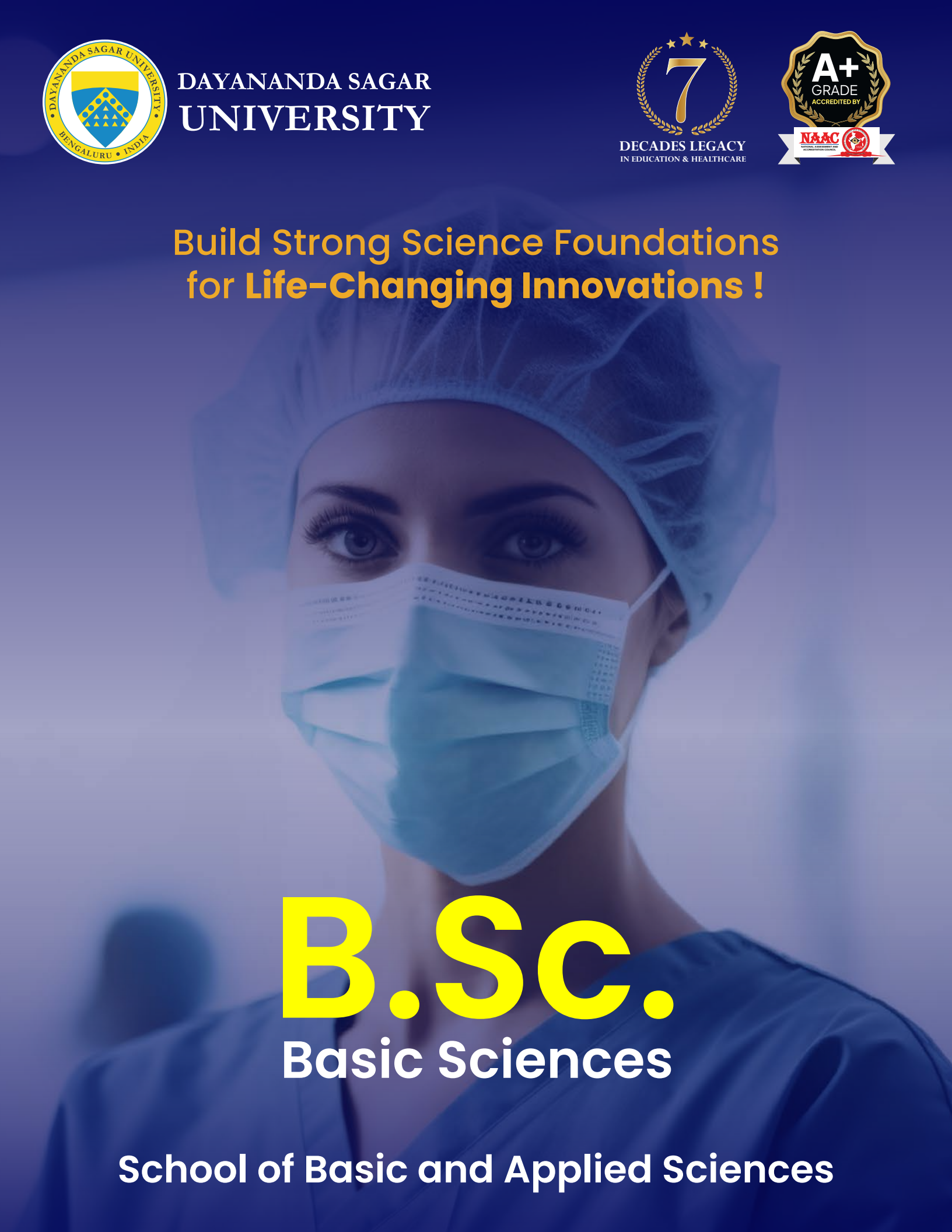
DAYANANDA SAGAR UNIVERSITY

7 DECADES LEGACY IN EDUCATION & HEALTHCARE

A+ GRADE ACCREDITED BY NAAC

Build Strong Science Foundations for **Life-Changing Innovations !**



B.Sc.

Basic Sciences

School of Basic and Applied Sciences

Index

DSU
& its Rich Legacy of Excellence & Innovation

About DSU

Dayananda Sagar Institutions, founded in the 60s by the visionary Late Sri R. Dayananda Sagar (Barrister-at-Law), is committed to taking knowledge to the people and transforming today's students into responsible citizens and professional leaders of tomorrow.

Dayananda Sagar University (DSU), established through an Act of the Karnataka State in 2014, stands on a distinguished legacy shaped by decades of academic excellence. Inspired by its remarkable milestones, DSU continues to evolve as a premier institution committed to delivering high-quality, industry-relevant higher education. The University remains dedicated to meeting the growing global demand for skilled, future-ready professionals

Dayananda Sagar University (DSU) stands as a dynamic hub for transformative education, innovation, and inter-disciplinary research. With distinguished Schools across Medical Sciences, Engineering, Commerce & Management, Law, Basic & Applied Sciences, Arts, Design & Humanities, Health Sciences, and Pharmaceutical Sciences, the University fosters a rich and diverse academic ecosystem. Embracing AI-enabled learning technologies, digital pedagogy, advanced simulations, and sustainability-driven approaches, DSU equips students with the enduring skills, global perspectives, and leadership competencies essential for the future of work, and before institutional builders

University Accreditation and Rankings

TIMES ENGINEERING
TIMES ALL INDIA ENGINEERING INSTITUTES RANKING SURVEY 2023
NUMBER 1 ONE
- Top Emerging Engineering Institutes
- Emerging Engineering Institutes - Placement
- Emerging Engineering Institutes - Research Capability

IIRF -2025
EDUCATION IMPACT AWARD
Promising Private University for Academic Excellence & Learning

ICARE RATINGS KSURF
Teaching Excellence ★★★★★
Research Excellence ★★★★★

- Emerging engineering institute
- Emerging engineering Institute Placement 2022
- Emerging Engineering Institute Research Capabilities

DSU has Rank No 1 By TIMES OF INDIA 2022

ET THE ECONOMIC TIMES 2023
Excellence in Academic Facilities & Learning Resources

IIRF -2024
NATIONAL RANK– 9
TOP PRIVATE UNIVERSITIES IN INDIA (OVERALL)
STATE RANK 3 SOUTH ZONE RANK 3

IIRF -2026
EDUCATION IMPACT AWARD
Excellence in Employability & Placement Performance

TIMES BUSINESS AWARDS
BEST EMERGING UNIVERSITY 2021

34th ielts WORLD EDUCATION SUMMIT 2025 CHENNAI
OUTSTANDING UNIVERSITY WITH BEST PLACEMENTS

Great Legacy

Late Shri R. Dayananda Sagar

Late Dr. Chandramma Dayananda Sagar

The Founder President of Dayananda Sagar Institutions, Late Shri R. Dayananda Sagar and Late Dr. Chandramma Sagar had a great vision: Education for all sections of society.

They set up the Mahatma Gandhi Vidya Peetha Trust (MGVP), which started as a one-college campus and is today a multi-location destination to thousands of young men and women who walk into the Dayananda Sagar campuses in pursuit of a dream and march out as confident citizens, ready to absorb the challenges and opportunities of an exciting new world.

Dayananda Sagar Institutions played an important part in creating history by enabling easy access to good and quality education for all, winning the hearts of many, far and wide reflecting the legacy of Dayananda Sagar Institutions.

The Leadership

Dr. D. Hemachandra Sagar
Chancellor and Founder

Dr. D. Premachandra Sagar
Pro Chancellor and Founder

They are thinkers, planners, and institution builders. By profession, they are medical doctors, enriched with insights gained from hands-on work experience, learning, and sharing through interaction. Accomplished and widely travelled, they bring with them worldly wisdom in all that they do.

Dean's Message

Welcome to School of Basic & Applied Sciences (SBAS), Dayananda Sagar University

Dayananda Sagar University (DSU) run under the aegis of Mahatma Gandhi Vidya Peetha Trust (MGVPT) is a dynamic and modern University, which aims to provide quality education to aspiring student community. DSU offers programs from Under-graduate section to Ph.D program, with affordable and flexible learning options with generous credit transfer. It works closely with the student community and ensures that they get globally relevant education to realize their cherished goals in life.

The School of Basic and Applied Sciences is a force to reckon with in the campus. It has well qualified, experienced and dedicated faculty with exceptional research profiles and vision. Its areas of research interest and expertise cover a broad range from basic to modern sciences. Academic pursuit at DSU will be an inspiring, challenging and enjoyable experience which the students will cherish forever.

The School with all its facilities and fine ambience promises the aspiring young minds, an all-round development in terms of intellectual and personality development.

I am sure the journey of students at DSU will be enlightening, encouraging and rewarding.

Dr. Sunil S. More
Professor & Dean
SBAS, DSU

ABOUT - School of Basic and Applied Sciences

The School of Basic and Applied Sciences encourages holistic development of students to their full potential. It provides an opportunity for the students to choose academic and industry-oriented courses from three different combinations in B.Sc. and M.Sc. biological sciences. The school has 1:10 faculty: Student ratio and the faculty members encourage students to actively participate in major and minor research projects sponsored by external funding agencies. The School's governing bodies such as Board of Studies (BOS) and Board of Examiners (BOE) comprises members of highly reputed institutes like IISc, NIMHANS, GKVK etc. The School offers choice-based credit systems in M.Sc. program and encourages interaction among faculty members, students, and parents.

An excellent group of highly qualified, experienced and research-driven faculty provides the platform needed for the student to blossom into a well-informed and intensively trained professional to suit the needs of industry and scientific organizations. State-of-the-art laboratories and well-equipped libraries cater to the needs of the students. Emphasis is laid on continuous evaluation of students. The faculty has actively researched and availed grants from central and state government funding agencies. Some ongoing funded projects include the Isolation and Characterization of Cryptic Peptides from Marine Waste, Molecular Characterization of Canine papillomavirus, Biofuels from Agricultural waste and Characterization of Anti-venom compounds from folk medicine. The School, with all its facilities, ensures the holistic development of the student community.

Why Choose Dayananda Sagar University?

The School of Basic and Applied Sciences at Dayananda Sagar University is committed to producing globally competent graduates through:

World-Class Infrastructure: Fully equipped laboratories with cutting-edge instruments for molecular biology, chemistry, and biotechnology.

Research Excellence: Opportunities to engage in high-impact research through collaborations with leading industries and academic institutions.

Holistic Development: Workshops, internships, and hands-on projects to ensure students are industry-ready.

Global Exposure: International partnerships and participation in global scientific forums enhance learning and innovation.

These combinations are thoughtfully designed to prepare students for dynamic careers in healthcare, pharmaceuticals, agriculture, and environmental sciences. With a focus on interdisciplinary education and practical training, Dayananda Sagar University is shaping future leaders and innovators.

Eligibility for B.Sc. in Basic & Applied Sciences

Pass in PUC / CBSE/ ICSE or equivalent examination with Biology as one of the compulsory subjects in the qualifying examination. Students who have yet to study Chemistry with Biology in the qualifying examination must undergo a short-term remedial course of 2 months in Chemistry to qualify for admission to the UG programme. The course will be conducted two months before the commencement of regular academic programs.

Duration: 3 Years (6 Semesters).

B.Sc. in Basic & Applied Sciences

Triple Major combinations that are offered:

B.Sc. in

- **BBG (Biotechnology, Biochemistry, Genetics)**
- **BCM(Biotechnology,Chemistry, Microbiology)**
- **BMG (Biochemistry,Microbiology, Genetics)**

Program Vision

To be a leading and dynamic undergraduate program that cultivates scientifically skilled, ethically responsible, and inquisitive graduates, preparing future-ready biologists with strong research foundations who can drive innovation and advance knowledge in the biological sciences.

Program Mission

To provide students a strong foundation in biological concepts by offering extensive coursework in Biotechnology, Biochemistry, Microbiology, Chemistry, Genetics, and related disciplines.

To promote analytical thinking, laboratory competence, and research aptitude through hands-on training, inquiry-based learning, and exposure to emerging scientific technologies.

To impart ethical values, scientific curiosity, and a dedication to lifelong learning in order to prepare graduates for advanced studies, careers in research, and diverse professional roles in the life sciences.

To foster interdisciplinary understanding and practical skills that enable students to contribute meaningfully to human health, agriculture, industry, and sustainability.

BBG (Biochemistry, Biotechnology, Genetics)

This combination bridges fundamental science with transformative technologies. Biochemistry lays the groundwork for understanding cellular mechanisms, while Biotechnology focuses on the practical application of biological processes to develop innovative solutions like genetic engineering, personalized medicine, and bio-manufacturing. Genetics enhances this integration by exploring hereditary diseases, genome editing, and the creation of transgenic organisms. Dayananda Sagar University excels in this domain through a curriculum that balances theoretical rigor with practical training. Students are introduced to advanced tools such as CRISPR, PCR, and bioprocessing technologies, fostering expertise in synthetic biology, drug discovery, and sustainable agriculture. Industry collaborations and global exposure further position graduates as pioneers in biotechnology and genetics.

Scope and Job Opportunities

Clinical Biochemists: Perform biochemical analyses on patient samples to diagnose diseases, monitor treatment effectiveness, and assess overall health.

Pharmaceutical Scientists: Conduct research and development activities to discover, design, and formulate pharmaceutical products, including drugs, vaccines, and medical devices.

Biotechnologists: Apply principles of biochemistry and molecular biology to manipulate biological systems for various applications, including healthcare, agriculture, and industrial processes.

Clinical Research Associates: Coordinate and monitor clinical trials to evaluate the safety and effectiveness of medical treatments, drugs, or devices.

Research Scientists: Design and conduct experiments to investigate biochemical processes, molecular mechanisms, or disease pathways in laboratory settings.

Lab Technicians: Support laboratory operations by performing routine tasks such as sample preparation, equipment maintenance, and data entry.

Pharmacologists: Study the effects of drugs and chemicals on biological systems, including their mechanisms of action, pharmacokinetics, and therapeutic potential.

Biomedical Scientists: Investigate diseases' causes, mechanisms, and treatments using biochemical and biomedical approaches.

Analytical Chemist: Develop and validate analytical methods for chemical compounds' qualitative and quantitative analysis in various samples.

Microbiologists: Study microorganisms such as bacteria, viruses, fungi, and parasites to understand their biology, ecology, and roles in human health and disease.

BCM (Biotechnology, Chemistry, Microbiology)

This unique combination merges the principles of Chemistry, Biotechnology, and Microbiology to address pressing industrial and environmental challenges. Chemistry provides a solid understanding of molecular interactions, Microbiology focuses on microbial applications, and Biotechnology integrates these disciplines to create bio-based innovations and solutions.

Dayananda Sagar University stands out with its emphasis on sustainability and industrial applications. Students gain hands-on training in developing biofuels, eco-friendly products, and novel pharmaceuticals. Through modern infrastructure, industrial tie-ups, and expert mentorship, the university prepares graduates to lead the way in biotechnology-driven industries.

Scope and Job Opportunities

Lab Technicians: Conduct experiments, tests, and analyses in laboratory settings, assisting scientists and researchers in various biotechnology projects.

Project Managers: Coordinate and oversee biotechnology projects from inception to completion, ensuring timely execution, resource allocation, and adherence to budget and quality standards.

Microbiologists: Study microorganisms such as bacteria, viruses, and fungi, exploring their behaviour, genetics, and potential applications in biotechnology, medicine, and environmental science.

Bioproduction Operators: Operate and maintain equipment for producing biological products, following strict protocols to ensure quality, safety, and efficiency in biomanufacturing processes.

Biomanufacturing Specialists: Specialize in optimising bioproduction processes and developing and implementing strategies to improve biotechnological product yield, purity, and scalability.

Epidemiologists: Investigate patterns and causes of diseases within populations, employing biotechnological tools and methods to understand disease transmission, prevention, and control.

Biotech Analysts: Analyze biological data, trends, and market dynamics to inform decision-making in biotechnology companies, investment firms, and regulatory agencies.

Biomedical Engineer: Design and develop medical devices, equipment, and technologies using principles of biology, engineering, and biotechnology to improve healthcare diagnostics, treatment, and patient outcomes.

Biostatistician: Apply statistical methods and techniques to analyse biological data, interpret research findings, and make evidence-based conclusions in biotechnology research and dvelopment.

Medical coders: Assign alphanumeric codes to medical diagnoses, procedures, and treatments for billing, insurance claims, and healthcare data analysis, ensuring accuracy and compliance with regulatory standards in biotechnological healthcare settings.

BMG (Biochemistry, Microbiology, Genetics)

This multidisciplinary combination offers a deep dive into the molecular and genetic foundations of life. Biochemistry provides insights into the chemical processes essential for life, while Microbiology explores the vast world of microorganisms and their interactions with the environment. Genetics ties these domains together by studying heredity, genetic variation, and the mechanisms driving cellular processes. At Dayananda Sagar University, this combination equips students with advanced knowledge and hands-on experience to address challenges in healthcare, agriculture, and environmental sciences. With our well equiped laboratories and experienced faculty, students delve into cutting- edge areas such as genetic disorders, antibiotic resistance, and microbial bioengineering, preparing them for impactful careers in research and industry.

Scope and Job Opportunities

Bio-technician: Assist in genetic research projects by performing laboratory techniques such as DNA extraction, PCR (polymerase chain reaction), gel electrophoresis, and DNA sequencing under the supervision of geneticists or researchers.

Clinical research associate: Conducts and coordinates clinical trials to assess the safety and efficacy of medical interventions, including drugs or therapies, typically working within a research team at hospitals, pharmaceutical companies, or research organisations.

Clinical scientist, genomics: Applies genomic technologies and methodologies to investigate the genetic basis of diseases, conduct genetic testing, and develop personalised medicine approaches, often working in clinical settings or research institutions.

Clinical scientist, immunology: Studies the immune system's role in health and disease, including autoimmune disorders, infectious diseases, and immunotherapies, utilising immunological techniques and assays in clinical research or medical settings.

Academic researcher: Engages in scientific investigation and scholarly activities within educational institutions, pursuing research in human genetics, publishing findings in scientific journals, and contributing to advancing knowledge in the field.

Research scientist in life sciences: Conducts research in various aspects of life sciences, including genetics, molecular biology, and biochemistry, to understand biological processes, develop new technologies, and address medical or environmental challenges.

Medical research scientist: Focuses on medical research, investigating the genetic basis of diseases, developing diagnostic tools, and exploring potential treatments or preventive measures, often collaborating with clinicians and other researchers.

Pharmacologist: Studies the effects of drugs and chemicals on biological systems, including their mechanisms of action, pharmacokinetics, and therapeutic applications, with potential applications in drug development, clinical trials, or regulatory affairs.

Genetic counsellor: Provides support and guidance to individuals and families regarding genetic conditions, inheritance patterns, and available testing options, helping them make informed decisions about their healthcare and reproductive choices.

Plant breeder/geneticist: Conducts research and develops new plant varieties with desired traits, such as increased yield, disease resistance, or nutritional value, using principles of genetics and breeding techniques to improve crop production and sustainability.

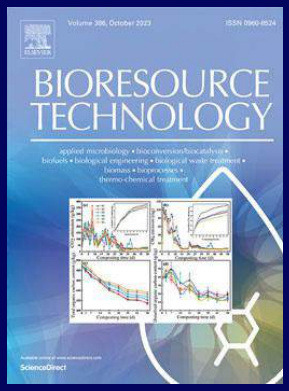
Forensic scientist: Applies scientific methods and techniques to analyse biological evidence in criminal investigations, including DNA profiling, to identify individuals, determine relationships, and provide evidence for legal proceedings, often working in forensic laboratories or law enforcement agencies.

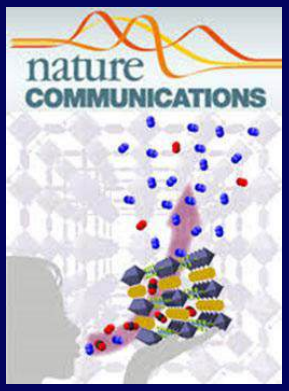
Unique Advantages of the School of Basic and Applied Sciences

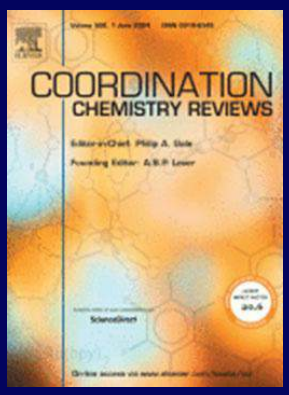
The School has highly qualified faculty with a penchant for research in diverse fields such as Venom based therapeutics, Toxicopathology, Ecotoxicology, Human Genetics, Cancer Biology, Metagenomics, Antimicrobial Resistance, Drug Discovery, Cryptic Peptides, Biomimesis and Protein Purification.

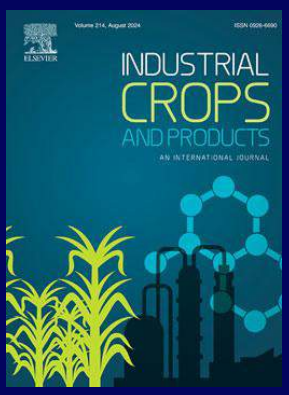
The faculty members have published in several peer-reviewed Journals of International and National repute with high impact factors, notably Scientific Reports – Nature, European Journal of Medicinal Chemistry, BMC Genomics, Journal of Human Genetics, Amino Acids, Journal of Virology, and Journal of Bacteriology etc. The School has successfully established an Animal Tissue Culture facility, a 'Fly Fish Facility (Drosophila and Zebrafish Lab) and the already existing Plant Tissue Culture Lab. The faculty has 130 + publications with around 700 citations and has presented their work at national and international conferences.

The School has received research grants from various State and Central Government Funding Agencies, such as DST, VGST, and KSCST, amounting to Rs. One Crore Thirty Lakhs has initiated collaboration with state and national research institutes such as the National Institute of Veterinary Epidemiology and Disease Informatics, University of Mysore, and IISc.









Department / Curriculum Initiatives

The students at DSU studying Basic and Applied Sciences can benefit from the many initiatives of the curriculum —

- Industrial Internships are implemented in the curriculum.
- Syllabi tuned and prepared based on the employer's feedback (for eg: GSK, Indigene, Molecular Connections)
- Feedback was obtained from Alumni and students while preparing the syllabus.
- Lecture Series - Every Friday
- SBAS integrates crosscutting issues relevant to Professional Ethics, Ge der, Human Values, Environment and Sustainability into the Curriculum with the following courses: Biosafety, Bioethics, and IPR, Research Methodology, Environment and Public Health, Agricultural and Environmental Microbiology.

SBAS assesses the learning levels of the students and organises special programmes for advanced learners and slow learners

For Fast Learners

- Extra learning material
- Journal articles for knowledge enhancement
- Mini projects
- Participation in conferences, workshops, technical competitions & events
- Guided visits to industries to be involved in personal discussions

For Slow Learners

- Remedial extra classes
- Makeup tests
- Individualised learning materials
- Target specific worksheets
- Inspirational talks & lectures
- Exposing to video and audio e-learning materials
- Detailing with more visualisation of concepts

Student-centric methods

SBAS ensures empowerment through education that includes teaching and learning strategies to develop the skills and abilities of students. This approach involves student participation, learning, and leadership.

Experiential learning, participative learning & problem-solving methodologies enhance learning experiences. We provide skill development hands-on workshops, conduct science exhibitions and science fests, take industrial visits besides visits to national research laboratories, etc.

Skill development hands-on workshops

- Seminar –Training
- Training on poster preparation and presentation
- A platform for various exhibitions and competitions
- Training to write book chapters and review articles
- Mini projects for fast learners

SBAS Student Clubs

Through student club activities, we empower the students to acquire leadership, communication/public speaking and management skills; improve their problem-solving ability; gain knowledge in various fields; develop vocational skills; and learn to work as part of a team.

- **Microbe Club Siella**
- **Watson & Crick**
- **Biochimica**
- **Priori of Genea**

Industrial Visits

The SBAS department conducts industry visits and offers students many opportunities to learn from them.

- Nandhini Dairy Visit
- BamulCheese Factory, Kanakapura
- Nestle, Nanjangud, Mysore
- Sula WineyardVisit
- Ziest Beer, Bangalore
- Merck Pvt Ltd

Research Centre Visits

- Centre for Human Genetics
- Research Centre Visit
- Baxter global research centre at Syngene-Biocon park

Conferences

- Advances and Innovations in Biotechnology Multidisciplinary Approaches to Food, Health, Environmental and Energy Issues (National)
- Frontier Areas in Chemical Biology (National)
- Advances in plant Biotechnology (National)
- Translational Research Continuum (International-e-Conference)
  Impact of Multipronged Approaches of Biotechnology on Mankind (National e-Conference)
- National conference on contextual approaches in applied microbiology (NCAAM 2023)

MoUs & Collaborations

Internships

Students undertake structured internships in research laboratories, biotech firms, and diagnostic centres to gain practical industry exposure. **Duration- 8–12 weeks** Students complete structured internships in research laboratories, biotech firms, and diagnostic centres

*Note: The internship opportunity is open to students in any semester, as per their academic schedule and convenience.

School of Basic and Applied Sciences Placements

Pre-Placement Training

DSU - School of Basic & Applied Sciences provides well-structured training for students, facilitating the skills, knowledge, and connections they need for successful placements and addressing the industry's evolving demands.

Training is vital for improving the employability of students in the Life Sciences sector. DSU - SBAS provides Effective training which enhances students' industry-specific skills, practical experience, and networking opportunities. Hands-on lab work, research projects, and internships equip students with real-world insights, boosting their confidence and competence.

Training at SBAS imparts technical skills and develops soft skills like communication and problem-solving, making graduates well-rounded candidates. Staying updated with industry trends is crucial. Moreover, interview preparation and exposure to industry experts during training prepare students for the job market.

Tailored training paths aligned with specific roles, such as research, development, or regulatory affairs, provide specialised skills for different career trajectories.

Top Recruiters

Students of the BSc & MSc Applied Sciences at DSU have been placed in many reputed companies and organisations through the years. DSU has a unique placement and training program that helps students get placed in good companies and enhance their careers for the future.

Industries Looking for Your Expertise

The courses in life sciences aim at providing students key knowledge in basics and applied areas followed by hands on practical training in various fields such as agriculture, industry, veterinary, health care, food and environmental etc

Academics

Teaching Profession in reputed institutes
Research & Development – Research opportunities in Universities, CSIR labs, NITs, IITs and Higher educational opportunities in national and International organizations

Government Sector

Junior and Senior Scientists, Scientific Assistants, Laboratory Assistant and Technical Assistants in Government Organizations like Pollution Control Board, Atomic Minerals Directorate of Exploration and Research, Indian Pharmacopeia Commission, Indian Space Research Organization, Bhava Atomic Research Centre and Defense research Development Organization.

Public Health Officers, Public Health Analyst and Environmental Health Officers
Safety Officer for Hospitals

Corporate Sector

- Patents, Copyediting and Scientific Journalism
- Clinical Database Management
- Medical Coding
- Medical Writing
- Quality Control/ Quality Assurance
- Research and Development – Industry sector
- Life Science Related Software Industry
- Drug Designing Companies
- Agricultural products based industry
- Food and Beverages industry including distilleries
- Feed and Fertilizer Industry
- Environmental and Toxicology
- Pesticide Industry
- Pharmaceutical Industry
- Mineral water Industry
- FMCG Industry
- Instrumentation companies
- Medical and Instrument marketing

Market Insights

Program Combinations	Market Insights & Opportunities	Top Recruiting Sectors
BBG (Biotechnology, Biochemistry, Genetics)	High demand in biopharmaceuticals and diagnostics, with strong growth projected in the private sector. Emerging roles include bioinformatics analyst, genetic counselor, and clinical research associate, combining these disciplines	Private: Biocon, Serum Institute, Dr. Reddy's Labs. Government: CSIR, ICMR, DBT.
BCM (Biotechnology, Chemistry, Microbiology)	Strong prospects in quality control and production within pharmaceutical, food, and beverage industries. Opportunities also exist in environmental monitoring and waste management.	Private: Cipla, Sun Pharma, Mascot International. Government: FSSAI (Food Safety Officer), public health labs.
BMG (Biochemistry, Microbiology, Genetics)	Focus on medical research and public health. Graduates are well-suited for roles in diagnostic labs, immunology, and as medical scientists. The integration of AI in data analysis is creating new pathways in this field.	Private: Metropolis Healthcare, Thyrocare, Apollo Hospitals. Government: ICMR, AIIMS, NIBMG.

Campus Features

- Incubation Centre
- State-of-the-Art Classrooms
- Wifi Enabled Campus
- Seminar Halls
- Sport Facilities
- CIL-Centre for Innovation
- Foreign Language Certification
- Training Centre
- Top Class Library Facility
- Hostel Facilities
- Infirmary
- Well-Equipped Lab Facilities
- Research Centre
- Food Court
- Student Parking Facility

Library



About Library

The Library, established alongside DSI and expanded with Dayananda Sagar Institutions (1969), Dayananda Sagar College of Engineering (1979), and Dayananda Sagar University (2014), was envisioned by the founder, Late Sri R. Dayananda Sagar, as a world-class knowledge hub. Built systematically, it accommodates 560 users and houses an extensive collection of books, CDs, DVDs, periodicals, and digital resources. Serving undergraduates, postgraduates, research scholars, and faculty, the Library reflects the University's academic excellence and is managed by a team of skilled and dedicated professionals.

SCHOOL OF BASIC & APPLIED SCIENCES

Titles	1272
Volumes	2715
National & International Print Journals	6
E-Books	250

Labs

YOUR JOURNEY TO SUCCESS BEGINS AT

DAYANANDA SAGAR UNIVERSITY

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